

## Evaluation of the *Music Television 'Shuga'* Peer Education program with young people in two settings of South Africa

A collaboration between Epicentre Health Research (South Africa)  
and London School of Hygiene & Tropical Medicine (LSHTM)

- **Project Summary**
- **Study Protocol**
  - **Appendix 1.** Scenarios for the study power calculations
  - **Appendix 2.** Data sources for assumptions underlying the study power calculations
  - **Appendix 3.** Information Sheets and Consent questions for:
    - *Activity 1.* The online surveys with young people: Volunteer information and consent
      - Parent consent for participants aged 14-17y (online)
    - *Activity 2.* The virtual Photovoice project with young people: Volunteer consent
    - *Activity 3.* The qualitative cohort IDIs with young people: Volunteer consent
    - *Activity 4.* The focus group discussions with Peer Educators: Volunteer consent
  - **Appendix 4.** Online survey questionnaire for participants (n~500 across both settings) [*Activity 1*]
  - **Appendix 5.** Qualitative research tools
    - *Activity 2.* Photovoice prompts
    - *Activity 3.* In-Depth Interview topic guides (interviews 1 & 2) (n~40 across both settings)
    - *Activity 4.* FGD topic guide with peer educators (n~20 across both settings)

## STUDY PROTOCOL

### Project summary

<b>Study title</b>	Evaluation of the <i>Music Television 'Shuga'</i> Peer Education program with young people in two settings of South Africa
<b>Key words</b>	adolescents, young people, MTV Shuga, multi-media, edutainment, peer education, HIV prevention, sexual health, evaluation
<b>Sponsor/ Funder</b>	Music Television (MTV) Staying Alive Foundation, London, UK
<b>Principal Investigators</b>	Isolde Birdthistle & Venetia Baker, London School of Hygiene & Tropical Medicine, United Kingdom Cherie Cawood, Epicentre Health Research, South Africa
<b>Rational &amp; background</b>	Set in South Africa, season 3 of the <i>MTV Shuga Down South</i> ("DS3") multi-media campaign was broadcast in 2023. The campaign uses educational entertainment to promote the health and wellbeing of young people. A new Peer Education curriculum has been developed, using Shuga DS3 scenes, themes and storylines to generate discussion, dialogue and discovery among groups of young people aged 14-25 years. Over a series of 6-9 interactive sessions, the Peer Education curriculum aims to boost the social, emotional and sexual intelligence of young people, to enable healthy and safe relationships. We propose an evaluation of the Peer Education program in two settings of South Africa (Pietermaritzburg and Cape Town) to understand: how is it delivered in diverse settings, and how and why is the MTV Shuga Peer Education program transformative for young people?
<b>Study objectives</b>	<ul style="list-style-type: none"> <li>To generate evidence of whether and how the Peer Education (PE) program in South Africa boosts <u>capability</u>, <u>o</u>pportunity, and <u>m</u>otivation for young people to develop healthy sexual relationships (guided by the "COM-B" model of behaviour adoption).</li> </ul> <p>To generate lessons that can:</p> <ul style="list-style-type: none"> <li>Deepen MTV Shuga's impact through offline human engagement and social diffusion.</li> <li>Identify models to scale up peer-led approaches to HIV and SRH programming (mixing online and offline content) in diverse settings.</li> <li>Identify strategies to link young people with sexual and reproductive health services (like HIV/STI testing, pre-exposure HIV prophylaxis (PrEP), condoms, contraception, and gender-based violence), and psycho-social resources via family, friends and professionals.</li> </ul>

<b>Evaluation design</b>	<p>Triangulation of data collected using multiple methods:</p> <ol style="list-style-type: none"> <li><b>1. An online survey</b> of young males and females (14-25y) participating in the MTV Shuga Peer Education (PE) program, conducted over 3 time points to assess influences of the program (before, soon after, and up to 4-6 weeks after the program).</li> <li><b>2. A Photovoice</b> project inviting all young people in Activity 1 to share their experiences of the PE program through their own media content, reflecting their own voice and perspective.</li> <li><b>3. A qualitative cohort</b>, nested within the above survey, comprised of in-depth interviews (IDI) over two time points</li> <li><b>4. Focus group discussions (FGD)</b> with Peer Educators</li> </ol>
<b>Study site</b>	Cape Town and Pietermaritzburg (PMB)
<b>Study population</b>	<p>14-25 year-old males and females</p> <p>Peer Educators</p>
<b>Sampling</b>	<ol style="list-style-type: none"> <li><b>1. Online survey.</b> It is estimated that <b>500</b> males and females aged 14-25y will participate in the Quarter 3, 2024 cycle of the MTV Shuga Peer Education (PE) program across both settings (PMB and Cape Town). All will be invited to participate in the online structured survey, over 3 time points.</li> <li><b>2. Photovoice.</b> All young people who participate in the online survey (Activity 1) will be invited to participate in the Photovoice project (up to <b>500</b>).</li> <li><b>3. Qualitative cohort.</b> A stratified random sample of <b>20</b> young people in each setting (total <b>40</b>) will be selected from the online survey data and invited to in-depth interviews over two time points.</li> <li><b>4. Focus group discussions.</b> <b>10</b> peer educators will be selected from each setting (total <b>20</b>) and invited to a focus group discussion (1 FGD per setting).</li> </ol>
<b>Data analysis</b>	<ol style="list-style-type: none"> <li><b>1. Online Survey:</b> We will generate descriptive summaries of engagement in the Peer Education program. Univariate and multi-variable logistic regression will be used to compute crude and adjusted Odds Ratios for the association between engagement and sexual health outcomes. Sample calculations have been based on power to detect a minimum difference of 20% in the proportion who have correct knowledge of PrEP and also the proportion who know where to go for PrEP options / HIV self-screening kit, comparing those who participate in few [<math>&lt;2</math>] versus most [<math>2+</math>] sessions.</li> </ol>

**2. Photovoice.** Thematic analysis of audio-visual data to identify patterns and themes, inductive approach

**3-5. Qualitative activities:** Thematic analysis of interview transcripts to identify patterns of meaning, hybrid inductive-deductive approach

<b>Duration of the project</b>	July to Dec 2024 (6 months)
<b>Budget</b>	US\$ 50,000

## 1. Introduction and rationale

MTV Shuga is a multimedia campaign based around a popular dramatic television series that promotes positive sexual health messaging with entertaining storylines and characters. Since the first series based in Nairobi in 2009, MTV Shuga has been broadcast on 179 terrestrial channels reaching an estimated 719 million households. The content is distributed license-cleared and cost-free to global broadcasters, and all episodes are available rights-free on internet platforms. The campaign is produced by MTV Staying Alive Foundation, who estimates that 42 million people have been reached through social media.

The MTV Shuga franchise moved to South Africa in 2018, with the “Down South” series based and produced in South Africa. With funding from Unitaid, Down South season 2 (“DS2”) was broadcast in 2019-2020, to help raise awareness and demand for HIV self-screening, as well as PrEP (pre-exposure prophylaxis for HIV) and other prevention strategies, in ways that resonate with young audiences under age 25 years. As with all previous series, the producers conducted formative work to develop and validate storylines and scripts with young people through focus group discussions. The show was complemented by wrap-around, ‘360-media’ activities including a radio series, documentary films and online resources. And in some targeted geographic areas, complementary offline programming included peer education, community events and a graphic novel distributed through schools.

In 2020-2021, we conducted an evaluation of the MTV Shuga DS2 series and its wrap-around multi-media campaign in Eastern Cape. That study was approved by the ethics committees at UKZN [Protocol reference number BREC/00000477/2019] and LSHTM [17996]. We aimed to evaluate the show’s impact on the proportion of young people who know their HIV status. Secondary objectives were to evaluate the effect of the campaign on awareness of, demand for, and use of HIV self-screening, and awareness of PrEP among young people.

Our findings have been published in peer-reviewed journals and shared in webinars, short videos and news articles. These outputs are available online: <https://www.lshtm.ac.uk/research/centres-projects-groups/mtv-shuga-evaluation#publications-and-dissemination> Across a mix of methods, evidence was consistent with a causal impact of the campaign on important HIV prevention outcomes among young people in South Africa. Using the COM-B framework, we found that MTV Shuga improved viewers’ *Capability* (awareness) and *Motivation* (interest) to adopt HIV prevention methods, like HIV self-screening and PrEP. This was evident from analyses of impact and dose (intensity) of exposure, and explained through in-depth qualitative perspectives of young people. However, we found less evidence of MTV Shuga’s influence on *Opportunity*, i.e., external factors like service access and quality, or the wider cultural milieu, or social norms influencing young people’s HIV prevention choices.

### *MTV Shuga – the Down South 3 series*

A new season of MTV Shuga Down South 3 (“DS3”) premiered in South Africa in June 2023 and is freely available online via YouTube and the MTV Staying Alive website. Shuga DS3 focuses on healthy relationships among adolescents and young people, with storylines that demonstrate examples of HIV prevention, including HIV self-screening, pre-exposure prophylaxis (PrEP), and STI testing, as well as themes on coercive relationships, bullying, gender-based violence (GBV), substance abuse, and the detection and treatment of tuberculosis (TB).

The new Peer Education program based on Shuga DS3 trains peer educators to lead groups of young people (aged 14-25 years) through a program of nine sessions designed to develop social, emotional and sexual intelligence (SESI) for healthy sexual relationships. Each session uses scenes and storylines from the Shuga DS3 series to generate discussion, self-reflection, and activities such as role-plays. At the end of each session, participants are provided with Information Sheets, summarising key facts and tips, e.g., about HIV, STI, PrEP, TB, bullying, loving relationships, sexual abuse, victim blaming, and gender equality. Participants are encouraged to keep these Information Sheets as a resource for themselves and to share with friends and family.

In 2024, Peer Education programs will take place in two settings of South Africa: (1) through schools and clubs in Khayelitsha, a township in the City of Cape Town (Western Cape province), coordinated by the community-based organisation SnapShot Mobile Cinema; and (2) with groups of out-of-school youth in urban and peri-urban areas of Pietermaritzburg (known as umGungundlovu in Zulu) in KwaZulu-Natal province, coordinated by the community-based organisation Dlananathi. In Khayelitsha, peer educator pairs will recruit new groups (of ~15 young people per group) each month between April – August 2024. In Pietermaritzburg, peer educators will recruit new groups each quarter, i.e., up to 300 young people in each quarterly cycle of April/May, July/August and October/November 2024.

### *Research context and contribution*

The intended value of this project is to address critical issues related to sexual health, HIV prevention, healthy relationships and well-being among young people in South Africa. With incidence of HIV remaining high among young people in some districts of South Africa<sup>1</sup>, deepened support and resources are needed for their health and futures. Young people, and adolescents in particular, are less likely to access the services and resources they need, relative to older populations, despite their heightened HIV risk<sup>2</sup>.

A review of the Cochrane database indicates mixed results regarding peer education effectiveness. In 2016, Lopez and colleagues showed that school-based peer education programs were effective in improving contraceptive use and sexual health knowledge among adolescents. However, a review by Mason-Jones et al., 2016 showed that school-based peer education programs had no effect on preventing HIV and sexually transmitted infections.<sup>3</sup> While peer education programs can be cost-effective, promote

<sup>1</sup> <https://www.aidsmap.com/news/sep-2021/hiv-incidence-declines-south-africa-new-infections-are-concentrating-those-over-25>

<sup>2</sup> Mabaso, M., Maseko, G., Sewpaul, R. *et al.* Trends and correlates of HIV prevalence among adolescents in South Africa: evidence from the 2008, 2012 and 2017 South African National HIV Prevalence, Incidence and Behaviour surveys. *AIDS Res Ther* **18**, 97 (2021). <https://doi.org/10.1186/s12981-021-00422-3>

<sup>3</sup> Mason-Jones AJ, et al. School-based interventions for preventing HIV, sexually transmitted infections, and pregnancy in adolescents. *Cochrane Database Syst Rev.* 2016 Nov 8;11(11):CD006417.

self-efficacy and demonstrate some evidence of success, they face significant challenges.<sup>4</sup> Programs are variable in quality and consistency, as peers often lack the in-depth knowledge and training of health professionals. With frequent turnover of peer educators and poor-quality control, such programs often propagate misinformation and misunderstandings.

In the MTV Shuga Peer Education program, media content that is based on scientific evidence and shown to be impactful, relevant and relatable to young people (in previous evaluations), provides a source of health information and discussion, to help young people identify with and internalise the storylines, messages and meaning (per social learning theory). Guided in this process by trained peer educators, this model could mitigate common peer education issues, and deepen the impact of viewing MTV Shuga.

The proposed evaluation is designed to build on this evidence base. By evaluating MTV Shuga's Peer Education program, we can enhance our understanding of media interventions that can be tailored to different groups and delivery modes to maximise their impact. The unique combination of multimedia and peer education – utilising both online and offline components - has not been extensively evaluated as an opportunity to support young people's health.

## 2. Research Question, aim, objectives

We propose an evaluation of the *Down South 3* Peer Education program to answer the following main question: How is the MTV Shuga DS3 Peer Education program transformative for young people?

More specifically, we will seek evidence of whether and how the Peer Education (PE) program in South Africa boosts capability, opportunity, and motivation for young people to develop healthy sexual relationships (per the COM model of behaviour adoption; [Michie 2011](#)).

### Objectives

Objectives of the Peer Education evaluation are to generate lessons that can:

- Deepen MTV Shuga's impact through offline human engagement and social diffusion.
- Identify models to scale up peer-led approaches to HIV and SRH programming (mixing online and offline content) in diverse settings.
- Identify strategies to link young people with sexual and reproductive health services (like HIV/STI testing, pre-exposure HIV prophylaxis (PrEP), condoms and contraception), and psycho-social resources via family, friends and professionals.

### Theory of Change

**Figure 1** depicts the theory of change guiding our study design and analysis. Previously we evaluated the impact & mechanisms of MTV Shuga's multimedia campaign (Down South 2), illustrated as Pathway A (top arrow), with a particular focus on HIV prevention. Using the COM-B framework, we found that MTV Shuga improved viewers' capability (awareness) and motivation (interest) to adopt HIV prevention methods, like HIV self-testing and PrEP. We found less evidence of MTV Shuga's influence on Opportunity, i.e., external factors like service access and quality, or the wider cultural milieu, or social norms influencing young people's HIV prevention choices.

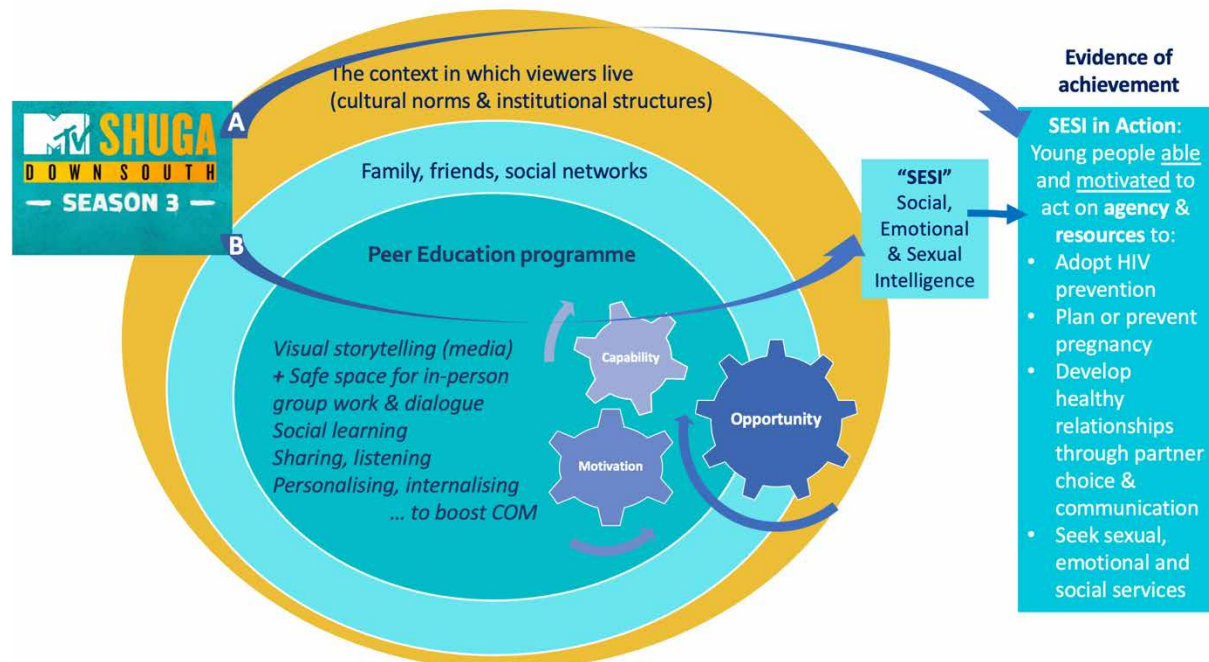
---

<sup>4</sup> Newman PA, et al. Peer education interventions for HIV prevention and sexual health with young people in Mekong Region countries: a scoping review and conceptual framework. *Sex Reprod Health Matters*. 2022 Dec;30(1):2129374.

The previous evaluation did not evaluate peer education specifically. We now wish to investigate a pathway in which MTV Shuga viewers participate in peer education that is designed to enhance and deepen the influence of MTV Shuga, with a curriculum based on the latest MTV Shuga series (Down South 3). This is illustrated as Pathway B (lower arrow).

We will seek to capture the processes and mechanisms used in the Peer Education sessions, e.g., whether the use of MTV Shuga visual content to stimulate group work, dialogue, self-discovery, and social learning boosts the capability, motivation and opportunity for young people (per the COM-B model) to access and adopt HIV prevention tools, develop healthy relationships, and seek health services

**Figure 1. Theory of change guiding the study design and analysis**



### 3. Evaluation design

We propose a mix of research methods to learn from a range of perspectives (Peer Education participants, educators and organisers) and different data types (quantitative, qualitative, and audio-visual media data). We will invite up to 500 young people aged 14-25 years to participate in: an online survey, to be conducted at the start of the Peer Education program (PE), soon after the last PE session, and approximately 4-6 weeks after the program concludes (for a total of 3 online survey rounds). All survey participants will be invited to partake in a Photovoice project to share their experiences of the PE program, in photo, video, voice-note or other media formats of their choice. A nested qualitative cohort of 40 young people will be drawn from the survey respondents, for in-depth interviews over two time points. We will also conduct two focus group discussions with Peer Educators, one group of 10 educators in each setting.

**Figure 2** summarises the data collection activities, to occur simultaneously in Cape Town and Pietermaritzburg, where the Peer Education programs take place. Conducting the activities in both program settings will allow us to document how the program is tailored to diverse contexts, and how experiences and outcomes are influenced by differences in context and implementation.

**Figure 2. Data collection activities [updated timeline: anticipated to begin 7 October 2024]**

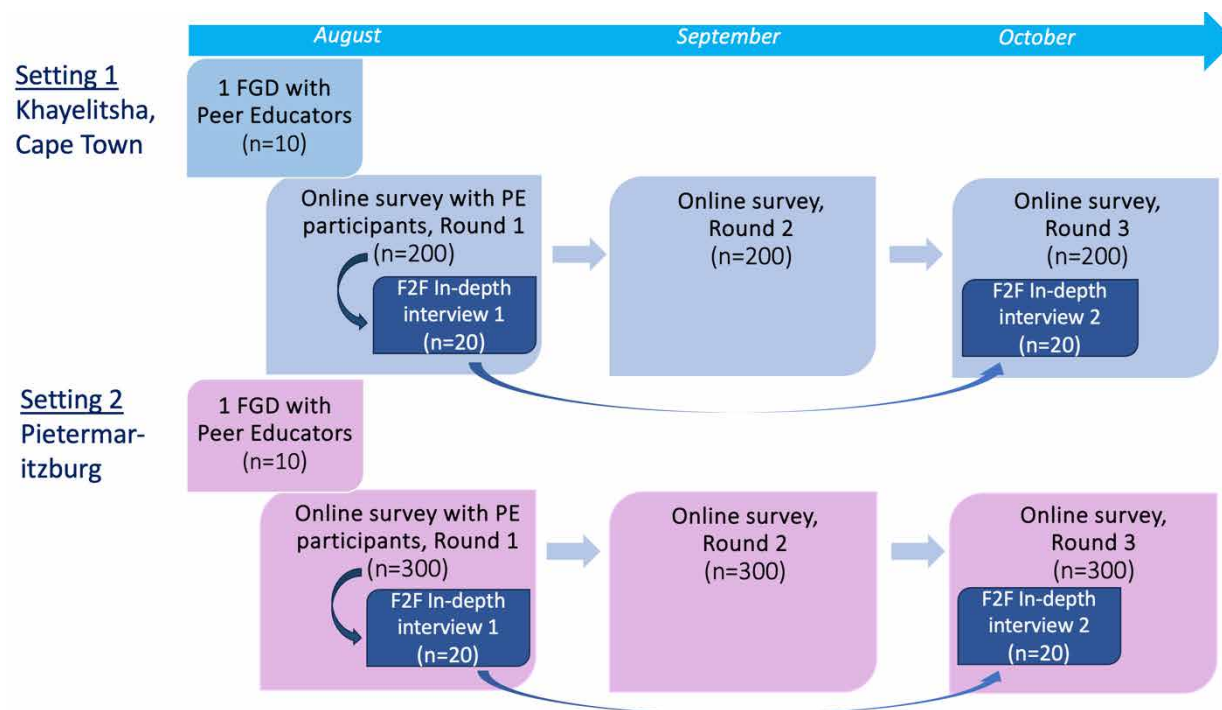
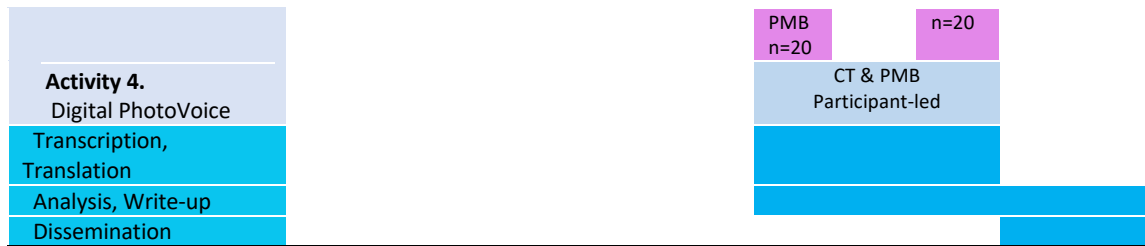


Figure 3 illustrates the timing of the evaluation activities, in relation to the Peer Education program in each setting.

**Figure 3. Timeline for the DS3 Peer Education program and evaluation activities in 2024 [Updated timeline: Peer Education delivery in Q3 is now scheduled to start on 7 October 2024]**

Down South 3	Q1		Q2		Q3			Q4			
	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
<b>Peer Education delivery</b>											
Cape Town – Khayelitsha [“CT”]	Train PEs	Facilitation of Peer Ed groups in schools and clubs									
Pietermaritzburg [“PMB”]			Train 20 PEs	Facilitation: 20 groups x 15p		Facilitation: 20 new groups x 15p			Facilitation: 20 new groups x 15p		
<b>Evaluation activities</b>											
Protocol, tools, ethics Hire, train researchers	[Timeline bar spanning Q1 to Q3]										
<b>Activity 1.</b> Peer Educator FGDs (1 per study setting)						FGD CT			FGD PMB		
<b>Activity 2.</b> Quantitative cohort (3 survey rounds)						R1 CT ~200	R2 CT ~200		R3 CT ~200		
						R1 PMB ~300	R2 PMB ~300		R3 PMB ~300		
<b>Activity 3.</b> Nested quali cohort (2 in-depth interview rounds)						IDI 1 CT n=20			IDI 2 CT n=20		
						IDI 1 PMB			IDI 2 PMB		





## 4. Procedures for data collection and analysis

### *Participant recruitment*

In 2024, the DS3 Peer Education (PE) program runs on quarterly cycles, with new participants aged 14-25 years recruited each quarter. In Quarter 3 of 2024, from July-August, it is anticipated that 300 new participants will be registered in Pietermaritzburg and 200 in Cape Town, by the community-based organisations Dlanathi and SnapShot Mobile Cinema, respectively. Every young person registered in the Peer Education program in Quarter 3 will be invited to participate in the evaluation study, via a study invitation card provided by managers and peer educators at Dlanathi and SnapShot. The invitation card will provide a link to a project website with reverse-charges (so that data charges are incurred by the research project and not the participants).

### *Confidentiality*

The study invitation will include a unique identifier code for each participant, which they can use to access the online survey (all three rounds). This will ensure data linkage across survey rounds, and limit survey access to those who are registered with the Peer Education program. In case participants lose their unique ID code, the research team will keep a separate 'link-log' file (or 'master list'), listing each participant's unique identifier code, name, age, gender, setting (PMB or Cape Town), and phone number. This will also enable participants to avoid using their real name on any surveys. They can choose a nick-name for all data collection methods. The link-log will be kept privately and securely on password-protected files and servers, accessible to the co-Investigators only. The online datasets will be de-identified to remove personal identifying information before analysis.

Confidentiality will also be maintained through the following procedures:

1. All research team members, including interviewers, will be trained on the importance of preserving confidentiality of all information collected.
2. All staff that through the course of their work have knowledge of or access to personal information about participants will be required to sign a confidentiality agreement as part of their employee contract.
3. Interviews will be conducted in a private place.
4. Information will be recorded on password protected electronic devices.
5. Fieldworkers will only have access to the data that they themselves directly collected. Data will be cleared from their devices after secure transfer to project server space.
7. Compiled data will be maintained on secure password-protected servers and encryption will ensure data access by authorised users only.

9. Data will be accessible only to study staff directly involved in this study.

10. Once the study has been completed, data excluding the identifying information will be archived for data sharing and analysis (see Data Management section below).

### *Participant consent*

The study website will include an information video about the study, explaining its purpose, what participation involves, and how data will be handled and used. The website will also provide links to the information sheets ([Appendix 3](#)) and contact information to reach the study team with any questions. The information sheets are designed to ensure participants are fully informed and free to consent or refuse participation in the study. Invitees will be guided through a series of questions to confirm their understanding and consent. They will be asked to consent to participation in a study with multiple activities: namely, an online survey (with self-administered questionnaires over 3 rounds); a Photovoice project; and in-depth interviews with a small sub-sample of young people. It will be made clear to participants that, after completing the first survey, they will be contacted by the research team in the near future about subsequent activities (follow-up survey rounds, the Photovoice project and in-depth interviews). They will have the opportunity to decline further activities at the point when they are contacted, consistent with an iterative or continuous model of informed consent.

Parental consent for all participants aged <18 years will also be required, before participants aged 14-17 proceed with the first online survey. The study website will host an online informational video for parents and consent questions ([Appendix 3, Parent Consent](#)), with details to contact the research team with any questions. When prospective participants link to the online survey and enter their age, those who are aged 14-17 years old will be informed that guardian consent is required before they can continue with the survey. They will be asked to seek guardian consent via the following 2 steps:

- 1) They will be prompted to provide a phone number for a parent or legal guardian. This will be accompanied with an explanation that the research team may contact their guardian to verify their identification and confirm their guardian consent. Awareness of this should mitigate the risk that young people pretend to be their guardian.
- 2) After the guardian phone number has been entered, the guardian Information Sheet ([Appendix 3, p7](#)) will open in a new window. YP will be asked to share this screen with their guardian, for the guardian to read and watch the embedded information video, before answering the consent questions. Upon guardian consent, the young person can continue with their own assent.

### *Compensation*

For each online survey they complete, participants will be offered \$5 worth of airtime credit, which they can convert to internet data on their preferred network. This is to acknowledge their time and contribution to the study, and will be transferred to a mobile phone number of their choice.

For participation in the Photovoice project, participants will receive \$1 airtime credit per week, to facilitate transfer of media messages (photos, videos, voice-notes, etc).

For participation in in-depth interviews (face-to-face), participants will receive \$5 worth of airtime and a travel voucher to facilitate their participation.

*For participation in the focus group discussions, participants will receive a voucher for the value of \$5 (in the form of airtime or food), as a token of appreciation and recognition of their time. Activity 1. Online Survey*

Consenting participants will be asked to complete a structured online survey (**Appendix 4**) at three time points:

- Round 1. At the start of the Peer Education program, before the PE sessions begin or after the first session;
- Round 2. After all PE sessions have been held (whether the participant attended all or not); and
- Round 3. Approximately 4-6 weeks after the final PE session was held. Those who miss Round 2 will still be invited to participate in Round 3.

The survey questions will be self-administered and designed to capture:

- Initial hopes and expectations for the PE program, in relation to their own circumstances and aspirations.
- Participation in the PE program, including attendance and level of engagement in 1-9 sessions. What they remember and enjoyed the most about the program.
- Reactions to the PE program, including their views on its usefulness, relevance, educational value, and whether their expectations were met.
- Changes over time in participants' capability (knowledge, awareness, agency), motivation (demand, interest, willingness) and opportunity (access to HIV prevention tools, SRH services and psycho-social resources) to develop healthy and consensual sexual relationships.
  - These questions will link to themes addressed in the PE program related to consent, HIV, PrEP, pregnancy, contraception, bullying, violence, coercive relationships, substance abuse, gender beliefs and roles.
- Examples of applying PE content in their own lives and to support others. This will track diffusion beyond direct beneficiaries of the PE program through social networks, to demonstrate a multiplicative effect and influence on wider norms change.
- Preferred phone numbers and other contact information, for their continued participation in the study and to receive the airtime.

Survey Round 2: After all PE sessions have been held, participants will be sent an invitation to complete survey round 2, via a private WhatsApp or text message to their preferred phone number.

Survey Round 3: Approximately 4-6 weeks after Round 2, all participants will be sent an invitation to complete survey round 3, again via private WhatsApp or text message to their preferred phone number.

With each follow-up invitation, participants will be reminded of their unique ID code, which they will be prompted to enter before proceeding with the questions. We will use their chosen nick-name for all engagement with the study. Upon completing each survey round, participants can elect to receive a data bundle, transferred to a mobile phone number of their choice, as an acknowledgement of their time and contribution to the study.

Upon approval of this study, we will pilot the survey questions with young people in neighbouring areas of our study settings, to improve the phrasing and clarity. We will remove or improve questions, but not add different questions, on the basis of pilot testing. We will also use lessons from pilot testing to ensure each survey takes no more than 20 minutes to complete.

### **Translation**

Questionnaires will initially be drafted in English and then translated into isiXhosa and Zulu, and pilot-tested in a neighbouring area, before being back-translated into English to check accuracy.

### **Survey data analysis**

Analyses of the survey data will be performed using STATA. They will test associations between engagement in the Peer Education program (the 'exposure') and indicators of social, emotional and sexual health ('study outcomes') that the program aims to influence. Attendance in the Peer Education program will be summarised descriptively and used to create the following exposure measures:

- The primary measure of exposure will be a binary variable: Attended  $\leq 1$  sessions *versus* attended  $\geq 2$  sessions
- The secondary measure of exposure will be a categorical variable, intended to capture a dose response with deeper engagement in the program: Attended  $\leq 1$ , 2-4, or 5-9 sessions

We will compare study outcomes among those in each exposure category, and estimate associations between the intervention and outcomes using multivariable logistic regression to adjust for confounding variables like age, sex, area, language, education and employment status. Effect modification by age group, study site and sexual experience (ever had sex) will be explored. Pending sufficient numbers in comparison groups, we will include interaction terms in final regression models.

### **Survey sample size and study power**

**Appendix 1** summarises the statistical power available to identify important differences in key outcomes, with a total sample size of either N=400 or N=300 (expecting 20% or 40% attrition if 500 young people are invited), based on assumptions in **Appendix 2**. The key outcomes used to calculate study power include:

- Can demonstrate correct knowledge of PrEP
- Knows where to go for PrEP or HIV self-screening ('HIVSS') kits

In summary, study power has been computed assuming the following:

- Exposure levels: ~10-40% of the participants will attend  $\leq 1$  Peer Education session (the complement is ~60-90% accessing  $\geq 2$  sessions)
- Outcome 1. ~30-50% of those accessing  $\leq 1$  session know where to go for PrEP or HIVSS kits
- Outcome 2. ~20-50% of those accessing  $\leq 1$  session will demonstrate correct knowledge of PrEP
- 10-20% minimum absolute increase in outcome due to participation in  $\geq 2$  sessions
- a maximum of ~500 individuals in total (allowing 20% attrition + refusals  $\rightarrow$  ~400 at round 3 follow up; or 40% attrition + refusals  $\rightarrow$  ~300 at round 3 follow up)
- alpha = 0.05

Under the first (optimistic) scenario where 80% of the cohort is retained at round 3 follow-up (N=400 of the initial 500), under different assumptions about participation rates in the peer education sessions and the prevalence of the two outcomes, we have good study power (>80%) to detect increases of  $\geq 20\%$  in the proportions with the outcomes, comparing those who participate in multiple sessions *versus* those who participate in  $\leq 1$  session. The study is not adequately powered to detect smaller increases, of less than 15%.

Under the second (conservative) scenario where 60% of the cohort is retained at round 3 follow-up (N=300 of the initial 500), under different assumptions about participation rates in the peer education sessions and the prevalence of the two outcomes, we have good study power (>80%) to detect increases of  $\geq 20\%$  in the proportions with the outcomes, comparing those who participate in multiple sessions *versus* those who participate in  $\leq 1$  session, as long participation in  $\geq 2$  sessions does not exceed 80%. Under this scenario, the study is not adequately powered to detect increases of less than 20%.

In all scenarios, we will be able to capture differences in other outcomes that are more common, e.g., knowledge of where to access condoms and contraception will likely be higher than PrEP and HIV self-screening which are relatively new prevention tools.

#### *Qualitative study. Activities 2-4*

The qualitative research activities seek to understand how the peer education program is implemented and received, and how it influences young people's lives (the mechanisms and impacts in each context), through the following complementary methods:

- Activity 2. Photovoice project. All survey participants will be invited to join a six-week photovoice project to share their experiences of the peer education program, their views on topics addressed in the peer education program, and personal experiences with services for social, emotional and sexual health. The Photovoice project will be hosted on a dedicated WhatsApp account, during and for a few weeks after their participation in the PE program. Participants will be sent one topic and guiding question weekly over WhatsApp and asked to respond with photos, videos, captions and voice notes. Their responses will be visible to the research team only. (further details below)
- Activity 3. A qualitative cohort study will be conducted with a small, nested sample of consenting young people drawn from the online survey. In-depth interviews (IDIs) will be conducted face-to-face with participants over two time points to understand how peer education can deepen the influence of MTV Shuga. The qualitative cohort study will examine how the peer education program influences self-efficacy, stigma, self-discovery, and the connection of young individuals to health, social, and emotional support services. The latter will help to explore the component of 'Opportunity' in the COM-B model, e.g., how/why the Peer Education program does or does not influence young people's opportunity use services. The IDIs will also seek to understand the dynamics of group learning facilitated by peers, considering contextual and social variables and assessing participants' reception towards the format and activities of the peer education program.
- Activity 4. Focus group discussions (FDGs) with peer educators will explore their experiences of the PE program and how it has affected their lives. We will also explore their expectations of the PE program, for themselves and the participants, and their perceptions of its main strengths and limitations in fulfilling its aims.

#### ***Sampling approach***

Activity 2. For the Photovoice activity, all young people who complete the first online survey and agree to further research will receive an invitation to participate in the Photovoice project via WhatsApp or text (using the contact information they provide in the online survey, Activity1).

Activity 3. For the nested qualitative cohort, a stratified random sample of 40 survey participants will be selected from the survey database (Round 1), aiming for a balance of location (equal numbers from Cape Town and PMB), gender and age.

Activity 4. Ten peer educators from each study settings (total 20) will be purposively selected to participate in focus group discussions (1 FGD per setting), ensuring that both male and females are represented.

### ***Inclusion and exclusion criteria***

The following inclusion and exclusion criteria will define eligible individuals for participation in the qualitative research activities:

#### ***Photovoice and IDIs with young people in the Peer Education program***

Inclusion criteria:

- Participants aged 14-25 years in the MTV Shuga peer education program in PMB or Cape Town.
- Consented to participate in the evaluation study, completed the first online survey and provided contact information for communications about the study
- For individuals aged 14 to 17 years: Informed assent and informed consent of their parent/guardian to participate in the evaluation study

Exclusion Criteria:

- Not participants of MTV Shuga Peer education project
- Did not provide consent to participate in the evaluation study; refusal of parent/guardian for 14-17 year olds
- Opted out of the Photovoice project or Opted out of in-depth interviews

#### ***FGDs with Peer Educators***

Inclusion criteria:

- Peer educator who is employed by Dlananathi or Snapshot Mobile Cinema to lead MTV Shuga Down South 3 peer education groups in either PMB or Cape Town
- Informed Consent confirmed in person, prior to starting the focus group discussions

Exclusion Criteria:

- Refusal

### ***Sample sizes for the qualitative activities***

In-depth interviews for the nested qualitative cohort will be conducted with 20 young people in each site: 10 males & 10 females, with equal representation by age group (14-19 years and 20-25 years). To capture important differences (in sexual experiences and emotional development) across the adolescent period, we will aim to ensure a balance across the 14-19 year age group.

One focus group discussion will be held at each site, with 10 peer educators in each group. The selection of participants will aim to maintain a gender balance reflecting the distribution of peer educators within the implementing organisation.

**Table 1: Sample size and composition of the qualitative methods**

Type and number of interviews	Composition
<b>Photovoice project</b>	All peer education participants who complete online Survey 1 (Activity 1); up to 500 across Cape Town and PMB
<b>40 in-depth interviews</b> (conducted over 2 timepoints)	<p><b>10 young males in Cape Town</b></p> <ul style="list-style-type: none"> <li>* 5 x 14-19 years old</li> <li>* 5 x 20-25 years old</li> </ul> <p><b>10 young females in Cape Town</b></p> <ul style="list-style-type: none"> <li>* 5 x 14-19 years old</li> <li>* 5 x 20-25 years old</li> </ul> <p><b>10 young males in PMB</b></p> <ul style="list-style-type: none"> <li>* 5 x 14-19 years old</li> <li>* 5 x 20-25 years old</li> </ul> <p><b>10 young females in PMB</b></p> <ul style="list-style-type: none"> <li>* 5 x 14-19 years old</li> <li>* 5 x 20-25 years old</li> </ul>
Total IDI participants	40
<b>2 focus group discussions</b>	<p><b>1 FDG in Cape Town</b></p> <ul style="list-style-type: none"> <li>*10 Peer educators</li> </ul> <p><b>1 FDG in PMB</b></p> <ul style="list-style-type: none"> <li>*10 Peer educators</li> </ul>
Total FGD Participants	20

*Data collection procedures for the qualitative activities, including Consent processes*

### ***Activity 2. Photovoice***

All young people who complete the first online survey will be invited to join the Photovoice project, hosted on a dedicated WhatsApp account. The welcome message from the research team will show the research team's WhatsApp number, and the username "Peer Education Research Team." The message will indicate that the phone number is from South Africa and that it is not in their contacts. Participants will have the option to block or add the number. They do not need to add the number to their contacts to continue receiving messages. If they choose to block the number, they will no longer receive messages from the team.

Over six weeks, participants will receive weekly messages via direct message from the research team, each containing a topic and guiding question, related to the Peer Education content (see [Appendix 5](#) for weekly prompts). They can respond with photos, videos, text messages, voice notes, or any other form of expression. They will be asked to provide a caption for every photo or video they submit. Each week that they submit a response, participants will be sent 10 rands (~\$1) worth of airtime which they can convert to internet data (on their preferred network), to enable their participation in the Photovoice project. Participants' responses to the weekly prompts will be visible to the research team only.

### ***Activity 3. Qualitative cohort interviews***

Using the contact information they provide in the online survey, 40 participants selected for the qualitative cohort will be contacted by the research team and invited to participate in in-depth interviews (IDI) over two time points: before/soon after the first Peer Education session, and then again 4-6 weeks after the Peer Education program concludes. Participants will be asked to arrange a time to attend the interview at the Peer Education venue or their homes, whichever the participant feels is more private, safe and comfortable for them. At that time and place, they will meet with a researcher who will talk through the detailed information sheet ([Appendix 3](#)) to provide comprehensive information about the qualitative cohort study, including its purpose and procedures, and address any queries or concerns the participants may have. Participants will be asked to confirm their written consent before commencing the interview (per the consent questions in [Appendix 3](#), Activity 3). The in-depth interviews will be conducted in either isiXhosa, Zulu, Afrikaans, or English, depending on the participants' preferred language. We will use topic guides to facilitate the IDIs (see [Appendix 5](#)). Female researchers will conduct IDIs with young women, while male researchers will conduct IDIs with young men. The interviews will take approximately 1.5 hours, during which time the participant can ask to pause or stop at any point. With participants' consent, IDIs will be audio-recorded, and notes will be taken for subsequent transcription and reflection purposes. After the interview, participants will be offered the airtime credit and travel voucher, and asked to confirm contact information to arrange the follow-up in-depth interview within 4-6 weeks.

### ***Activity 4. Focus group discussions with peer educators***

Dlalananthi and Snapshot Mobile Cinema (implementers of the Peer Education program in PMB and Cape Town, respectively) will inform all MTV Shuga peer educators that the research team wishes to invite peer educators for a focus group discussion (FGD). They will share an advert via phone / print-out to all peer educators, with details to contact the research team to express interest in participating. The research team will purposively select 10 peer educators in each settings, aiming for a gender balance, and invite them to attend focus group discussions at an agreed time and location. Once the groups convene, they will be provided with the information sheet ([Appendix 3](#)), which the researchers will read aloud to the



group. They will also walk through the consent form, offering an opportunity to ask any questions (privately or in the group) before signing agreement to continue.

Ground rules will be established, and all participants will be reminded of the importance of confidentiality. FGDs will be conducted by pairs of researchers. With the consent of all participants, the FGDs will be audio-recorded, and notes will be taken for subsequent transcription and reflection. FGDs will be conducted in isiXhosa, Zulu, Afrikaans, or English, depending on the participants' preferred language. Topic guides will be used to facilitate the peer educators' FGDs (see [Appendix 5](#)).

### *Data quality assurance for qualitative activities*

#### **Training**

##### *IDI and FDG*

Researchers who are experienced in qualitative interviewing with adolescents and young adults will be recruited and trained in the specific objectives, ethics, and tools developed for this study. Pilot testing and training will enable them to practice conducting the in-depth interviews flexibly and respectfully, enabling probing and clarifying answers to open-ended questions (without deviation from the purpose of the study), and safeguarding participants' data including interview recordings and transcripts. Training will also address safeguarding and welfare procedures, including referral and reporting procedures. Regular debriefs with supervisors will support the in-depth interviewers in adhering to study protocols and safeguarding procedures, including the mandatory reporting of suspected child abuse required by law in *the Children's Act 38 of 2005* and *the Sexual Offences Amendment Act of 2007*.

##### *Photovoice*

All research team members involved in Photovoice administration will undergo comprehensive training on the photovoice methodology, visual literacy and photo elicitation, text and participatory editing, power dynamics and addressing bias, risk management, and ethical considerations. The training will also focus on creating a safe virtual space, to address the unique dynamics of remote engagement, and audio-visual data management protocols. Continuous oversight will be provided throughout the duration of the photovoice activity to address any issues or concerns that may arise. Training will also include a tutorial on using WhatsApp to administer the photovoice activity. Researchers will be taught how to confidentially store contacts, send broadcasts, and download posts to secure data servers. They will be trained in ways to interact with participants in a positive and respectful way. They will also be trained on moderation and review of submissions, mandatory reporting of child abuse under South African law, and safeguarding procedures such as recognizing signs of distress, managing disclosures of sensitive information, and responding to inappropriate content and situations that may compromise participant welfare.

#### **Data monitoring**

##### *IDI and FDGs*

Epicentre and LSHTM supervisors will quality-check IDI and FDG transcripts and translations. Supervisors will monitor the qualitative research by listening to the audio recordings and reading through transcripts to ensure adherence to standard operating procedures and the quality of interviews. Audio checks will be conducted on a same-day basis, and refresher training will be provided as needed. At the beginning of the study, the first transcripts will be rapidly coded and analysed to perform quality checks, agree on coding categories, and amend the facilitation guides when necessary.

### *Photovoice*

The hosting of the WhatsApp account will continually be monitored and mediated by the research team. Administrators will provide regular updates on the progress of the photovoice project and any issues or challenges encountered during implementation. The supervisory team will regularly monitor the Photovoice data collection process to ensure adherence to established protocols and ethical guidelines. This will involve monitoring the Photovoice activities and mediation weekly.

### *Data analyses for qualitative activities*

Analysis of the qualitative data will seek to answer the following research questions:

- How does Peer Education deepen the influence of MTV Shuga and facilitate young people to access sexual, mental and emotional health services?
- How does the peer education program create and influence social connections, self-efficacy, and health sexual relationships?
- What are the successes and challenges in implementing the peer education program, in diverse contexts with different groups of young people?

The qualitative analysis will begin with an inductive approach. We will start by individually reviewing transcripts from IDIs and FGDs to gain familiarity with the data. We will then seek to develop a coding framework by identifying patterns, themes and sub-themes in direct response to the data (rather than from any dominant theory). In a second deductive stage, themes will be refined based on guidance from the COM-B 'Wheel of Behaviour Change' model and to populate our causal pathway (in Figure 1; this will also help to triangulate the quantitative and qualitative analyses).

Subsequently, we will incorporate our causal pathway, and the role of COM-B within that pathway, to guide the analysis. We will build on qualitative work conducted in 2020-2022 by the study team (LSHTM and Epicentre) to understand how MTV Down South 2 influenced behaviour guided by the 'Wheel of Behaviour Change' framework, e.g., how MTV Shuga influences young people's Capability, Motivation and Opportunity to improve their sexual health and relationships. NVivo software will be used to assist in the analysis of qualitative data.

Analysis of the Photovoice material will aim to capture

- Experiences of participating in the peer education program, from participants' own perspective
- Personal views on topics addressed in the peer education curriculum
- Young people's experiences accessing support and services for sexual and emotional health

Our analysis will examine visual elements like composition and subject to contextualise images and videos, and analyse the participants' messages in text and voice-notes. We will generate codes from the captions provided by participants. These captions (both text and voice notes) will serve as a primary data source for understanding how participants contextualise and interpret their own visual submissions. The research team will also apply their own codes to the visual material using an iterative approach to capture visual elements, composition, and contextual themes across the submitted photos and videos. This approach aims to capture participants' voices and perspective while also identifying broader patterns and themes across all visual and textual data.

We will use thematic analysis as the analytical approach to identify key patterns and themes from these data. As with the qualitative cohort analysis, we will begin with an inductive approach, to respond closely to the data. And, in a second deductive stage, we will refine themes to identify influences of the peer education program on young people's capability, motivation, and opportunity (per the COM-B model and our causal pathway in Figure 1).

## 5. Data storage and management

We will adhere to the principles and procedures of LSHTM's [Research Data Management Policy](#), which complies with the Concordat on Open Research Data. All research data will be securely stored in a managed environment operated by LSHTM, ensuring confidentiality and compliance with the General Data Protection Regulation and UK Data Protection Act 2018. IDI and FDG data will be recorded on research laptops (password-protected), at the time of collection, and transferred to the secure server via secured mobile connections, before deletion from laptops. All Photovoice material will be securely stored within the WhatsApp Business account app on password-protected devices, with all transmitted data being encrypted to ensure confidentiality and privacy. For analysis, data will be exported from WhatsApp onto an encrypted photo library saved on a secure LSHTM server. The LSHTM server is protected with encryption, allowing access only to authorized users, and backed up regularly and protected with anti-virus software.

At the conclusion of the analysis and dissemination of evaluation results, anonymized datasets will be made publicly available for further analysis by others, including students and early career researchers at LSHTM and UKZN (for Masters and doctoral research). The data will be supported by documentation enabling access and reuse of the data collection tools, protocols, consent forms, software code and data dictionaries. The datasets will be deposited in LSHTM's managed repository (<http://datacompass.lshtm.ac.uk/>), with a retention period of at least 10 years following project completion. Per the advice of the LSHTM ethics committee, in the interests of participant privacy, user-generated material from the Photovoice activity (such as photos and other media) will not be shared after completion of the project.

## Appendix 1. Scenarios for the study power calculations, assuming study sample size of N=400 or N=300

					With study sample size of N=400					Sample size N=300	
% with outcome among those who attend ≤1 session	Precision of estimate (+/-)*	% with outcome among those who attend ≥2 sessions	Precision of estimate (+/-)*	% increase due to participation in ≥2 sessions	Study power (with 80% retained at R3)	% attending ≥2 sessions	n attending ≤1 session	n attending ≥2 sessions	Total sample size	Study power (60% retained at R3)	n attending ≥2 sessions
30%	11.8%	45%	5.4%	15%	59%	85%	60	340	400		255
30%	11.8%	50%	5.3%	20%	<b>83%</b>	85%	60	340	400	71%	255
40%	12.6%	50%	5.4%	10%	29%	85%	60	340	400		255
40%	12.6%	55%	5.4%	15%	57%	85%	60	340	400		255
40%	12.6%	60%	5.3%	20%	<b>83%</b>	85%	60	340	400	71%	255
30%	10.2%	40%	5.5%	10%	37%	80%	80	320	400		240
30%	10.2%	45%	5.6%	15%	69%	80%	80	320	400		240
30%	10.2%	50%	5.6%	20%	<b>91%</b>	80%	80	320	400	<b>81%</b>	240
40%	11.0%	50%	5.6%	10%	36%	80%	80	320	400		240
40%	11.0%	55%	5.6%	15%	67%	80%	80	320	400		240
40%	11.0%	60%	5.5%	20%	<b>90%</b>	80%	80	320	400	<b>80%</b>	240
30%	8.4%	40%	5.9%	10%	47%	70%	120	280	400		210
30%	8.4%	45%	5.9%	15%	<b>81%</b>	70%	120	280	400	69%	210
30%	8.4%	50%	6.0%	20%	<b>97%</b>	70%	120	280	400	<b>90%</b>	210
40%	8.9%	50%	6.0%	10%	45%	70%	120	280	400		210
40%	8.9%	55%	5.9%	15%	79%	70%	120	280	400		210
40%	8.9%	60%	5.9%	20%	<b>96%</b>	70%	120	280	400	<b>90%</b>	210
30%	7.2%	40%	6.4%	10%	53%	60%	160	240	400		180
30%	7.2%	45%	6.4%	15%	<b>86%</b>	60%	160	240	400	75%	180
30%	7.2%	50%	6.4%	20%	<b>98%</b>	60%	160	240	400	<b>94%</b>	180
40%	7.7%	50%	6.4%	10%	50%	60%	160	240	400		180

40%	7.7%	55%	6.2%	15%	<b>84%</b>	60%	160	240	400	73%	180
40%	7.7%	60%	5.9%	20%	<b>98%</b>	60%	160	240	400	<b>93%</b>	180

\*Based on the "base case scenario"

## Appendix 2: Data sources for assumptions underlying the study power calculations

### (1) On knowledge about where to access HIV prevention services (From our evaluation of Down South 2 in 2020) [[Birdthistle et al, BMJ Global Health 2020](#)]

- 27% of those accessing 1DS2 episode knew where one can go for PrEP vs 43% among those accessing  $\geq 2$  episodes.
- 36% of those accessing 1DS2 episode knew where one can go for HIV self-test kits vs 50% among those accessing  $\geq 2$  episodes.
- 45% of those accessing 1DS2 episode knew where one can go for PrEP or HIV self-test kits vs 61% among those accessing  $\geq 2$  episodes.

### (2) On PrEP knowledge (From our DS2 evaluation)

- 47% of participants who had accessed 1 DS2 episode were aware of PrEP, while 64% among those assessing 2+ episodes were aware of PrEP.

### Conclusions

- We assume that ~20-50% of those accessing  $\leq 1$  Peer Education session will correctly identify the PrEP questions (or at least half of the correct answers); then ~60-80% of those accessing  $\geq 2$  sessions will correctly identify the PrEP questions.
- Assume that ~30-50% of those accessing  $\leq 1$  session knows where one can go for PrEP or HIVST kits vs 60-80% among those accessing  $\geq 2$  sessions.
- Assume that ~10-40% of the participants will attend  $\leq 1$  session (the complement is ~60-90% accessing  $\geq 2$  sessions)

### Other data sources

From evaluation of the DREAMS Partnership

- Among females aged 15-22 years in Nairobi: In 2019, 3% of the DREAMS invitees in 2019 attended only one session of safe spaces [as a proxy for participation rates in session-based programs, although the reporting seems quite unreliable], while 7% attended 2 sessions. This participation was based on the last 12 months. Similar patterns observed in 2017.
- Among AGYW aged 13-22y in Gem: In 2018, 5% of the DREAMS invitees in 2018 attended only one session of MTV Shuga, while 8% attended 2 sessions. This participation was based on the last 12 months.

We have based the sample size calculations on two main outcomes to be captured in the new study:

1. Knowledge of where one can access PrEP or HIV self-testing will be based on this survey question: Do you know where you can access each of these services if you need them? (responses = yes or no for each)
  - HIV testing services
  - HIV self-screening kits
  - Sexually Transmitted Infections (STIs)
  - Condoms
  - Contraceptives (other than condoms)
  - PrEP: pre-exposure prophylaxis for HIV
  - PEP: post exposure prophylaxis for HIV
  - ART: anti-retroviral treatment for HIV
  - Violence prevention services
  - Violence victim support (rape, sexual abuse, or domestic violence)
  - Tuberculosis (TB) services
  - Substance use (alcohol or drugs) services

- Mental health services
2. Factual information about PrEP is based on these questions: Under what circumstances is PrEP recommended? When somebody who is HIV negative wishes to avoid infection AND... (Select all that are true; responses = True or False for each).
- Has a sexual partner who ever tested positive for HIV [True]
  - Does not know the HIV status of their sexual partner [True]
  - Is not using a condom [True]
  - Wants to prevent pregnancy [False]
  - Has a sexual partner who is also HIV-negative [False]
  - Wants to protect against other STI like syphilis, gonorrhoea or herpes [False]