Evaluation of a comprehensive sexuality education program in La Romana, Dominican Republic

Sheyla D. Richards[1,2], **Eva Mendelson**[3], **Gabriella Flynn**[2], **Luz Messina**[4], **Diane Bushley**[5], **Mina Halpern**[4], **Silvia Amesty**[2,6,7], **Samantha Stonbraker**[4,8]

[1]The Children's Hospital of Philadelphia, Philadelphia, PA, USA

[2]Columbia University Program for Global and Population Health, Vagelos College of Physicians and Surgeons, New York, NY, USA

[3]Peace Corps Dominican Republic, Santo Domingo, Dominican Republic

[4]Clínica de Familia, La Romana, Dominican Republic

[5]Planned Parenthood of the Great Northwest and the Hawaiian Islands, Seattle, WA, USA

[6]Columbia University Center for Family and Community Medicine, New York, NY, USA

[7]Heilbrunn Department of Population and Family Health, New York, NY, USA

[8]Columbia University School of Nursing, New York, NY, USA

Abstract

Background: The Dominican Republic (DR) has some of the highest rates of sexually transmitted infections (STI) and adolescent pregnancy in the Caribbean. Well-designed comprehensive sexuality education programs (CSEP) can reduce risky sexual behavior. This study sought to evaluate the Módulo Anexo Materno Infantil (MAMI) adolescent clinic's CSEP in changing knowledge of STI and pregnancy and attitudes towards risky sexual behavior following implementation.

Methods: A mixed methods study was conducted among students aged 11–25 years from three schools between September 2017 and February 2018. Participants in MAMI CSEP completed questionnaires, before, immediately following, and 3 months following the CSEP. Questions assessed knowledge, attitude, and sexual experience, and obtained program feedback. There was one eight-participant focus group discussion (FGD) per school. Descriptive statistics summarized sample demographics and cross-sectional responses. McNemar's test evaluated differences in the proportions of students selecting correct responses over time. Paired t-tests compared mean test scores across time.

Result: Overall response rate was 98.7% (1414/1432), with 486 pre-tests, 448 initial post-tests, and 480 3-month post-tests. Respondents identified as 53.5% (321/600) female and 46.5% (279/600) male with mean age of 14.2 years. More males (63.4%) reported sexual experience than females (35.8%) (p < 0.001). Increases in mean scores from pre-test to post-test and pre-test to 3-month post-test were statistically significant (p < 0.001). Three themes arose from the FGDs:

Sheyla D. Richards is the corresponding author. sheyla.richards@gmail.com.

(1) expanding sexual and reproductive health knowledge, (2) perception of curricular content, structure and delivery, and (3) student-health educator dynamic.

Conclusion: Improvement in test scores supports MAMI CSEP's efficacy in educating students and reinforcing positive attitudes to reduce risky sexual behavior. Utilizing an interactive health educator model provided students with clear, accurate information in a safe environment with mutual trust. Selecting health educators employed by an adolescent clinic allows them to connect students to preventive and treatment services during the CSEP.

Introduction

Adolescents are at increased risk of contracting a sexually transmitted infection (STI) including human immunodeficiency virus (HIV) and of having an undesired pregnancy [1]. Although generally preventable, HIV and pregnancy are leading causes of death among people aged 15–24 years in low-middle-income countries worldwide [2]. Adolescent pregnancy is associated with fewer educational and professional opportunities and greater socio-economic challenges [3]. Limited educational development is associated with adolescent sexual activity independent of pregnancy [4]. Although AIDS-related deaths over the past decade have declined, about 37% of new infections in 2016 were among adolescents, primarily within sub-Saharan Africa followed by the Caribbean [5].

In the Dominican Republic (DR), the HIV prevalence among people 15–49 years of age is 0.9%; among those 15–19 years of age it is 0.1% and rises to 0.5% among people 20–24 years of age [6], [7]. In the general population in the DR, greater HIV prevalence is associated with poor socio-economic achievement, early sexual debut, high rates of adolescent pregnancy, and rural residence [8]. One in five women aged 15–19 years has a child or has been pregnant; moreover, 20% abandon school once pregnant [9]. In their last sexual encounter, 40.3% of girls and 67.4% of boys in the DR used a condom [9].

Approximately 70% of adolescents aged 15–19 years in the DR attend school, making them relatively stable social fixtures with potential for sexual education and intervention [4], [9]. For over a decade, an STI/HIV prevention curricula has been mandatory in Dominican public schools; however, a 2017 national survey showed only 42.8% of people aged 15–24 years had knowledge of HIV prevention, more women than men [10]. Comprehensive sexuality education programs (CSEPs) offering medically accurate information and multiple views on sexual and reproductive health, including abstinence, are an evidence-based way to provide key information regarding sexual risks to adolescents [11]. CSEPs are associated with delayed sexual debut, reduced sexual activity, fewer sexual partners and greater condom use [12], [13]. In the DR, where 16% of women and 29% of men have had their first sexual encounter by 15 years of age, early exposure to STI/HIV and pregnancy prevention is vital [7].

Program description

In Spanish, *El Módulo Anexo Materno Infantil* (MAMI) is a collaboration between the Francisco A. Gonzalvo hospital of La Romana (LR) and Clínica de Familia La Romana, a non-governmental organization (NGO) providing health services to high-risk populations. In 2017, 1420 HIV tests were administered and 3120 family planning methods (FPMs) were dispensed at MAMI [14]. MAMI's CSEP serves youth in LR and the surrounding *bateyes*-underserved communities of sugarcane workers where potable water, food, healthcare services and education may be limited [15]. The CSEP is preferentially delivered at schools requesting partnership and/or those without prior participation. The number of schools participating per academic year depends on student body size. MAMI's CSEP has been funded by Planned Parenthood of the Great Northwest and the Hawaiian Islands (PPGNHI) since 2011.

CSEP content

The program addresses one topic per daily hour-long session over 4 days: (1) prevention of adolescent pregnancy, (2) knowledge of FPMs, (3) prevention of STIs and (4) promotion of healthy relationships. Abstinence is included as a FPM in the CSEP program. The CSEP takes place in classrooms during school hours. Each session includes interactive activities and visual aids such as diagrams and posters, intentionally not relying on activities that require writing to accommodate students with low literacy levels.

Health educators

The MAMI health education team consists of two full-time employees who completed a 12-week health education training focused on HIV/AIDS education. In the CSEP's inception, PPGNHI and MAMI health education team collaborated on curricular development and implementation. Health Educators receive and incorporate feedback and modify content from in-person observation by PPGNHI staff.

Purpose

This study evaluated the effectiveness of MAMI's CSEP in changing knowledge of STIs and pregnancy, as well as attitudes towards risky sexual behavior immediately and 3 months after implementation. Secondary measures quantified students' sexual history and collected program feedback. There are few studies on the efficacy of CSEPs in Latin American and Caribbean countries. Thus, a rigorous evaluation of this program can provide valuable information regarding the design, implementation, and impact of CSEPs in the DR.

Methods

Research design

A mixed-methods evaluation was completed using a series of quantitative questionnaires, or 'tests', and focus group discussions (FGDs) to collect student feedback on the CSEP.

Settings

During the 2017–2018 academic year, the CSEP was implemented and evaluated in three schools in LR. School A is located within a rural batey. Schools B and C are urban and are located in the municipality of LR. Schools A and C include the US equivalent of 7th-12th grades whereas school B has 7th-8th grades. Schools A and B are public schools. School C is a well-resourced educational center of an international NGO.

Study population

Inclusion criteria were: students who received the CSEP and provided verbal informed consent. Students unable to provide informed consent or who refused to participate in the CSEP were excluded.

Evaluation instruments

Tests to evaluate CSEP content were developed by PPGNHI and MAMI staff in English (Appendix A and Appendix B; where 'course' refers to grade level and options for 'sex' include male, female, or transgender female or male). They were translated to Spanish by a bilingual researcher, revised by the MAMI health education team, and reviewed by a third bilingual researcher. Multiple-choice and true-false questions were used. Each test included nine knowledge, four attitude and three sexual history question, defined as positive response to at least one of three test questions exploring use of FPMs. Knowledge and attitude questions were scored in a 1 (correct)-0 (incorrect) format. Sources of sexual and reproductive health information were only surveyed in pre-tests. Three questions in the post-tests assessed students' perception of knowledge expansion and dynamic with health educators. A pilot study with 400 students was conducted the year prior to confirm comprehension by students across multiple grade levels; these students were not included in the current analysis. Questions assessing sexual history and use of FPMs were added after the pilot study.

Data collection

Tests—Tests were completed individually and anonymously during school hours; unique student identification numbers were used to track participants across time. Students interested in participating in the evaluation reviewed an informational sheet and provided verbal informed consent. The pre-test was administered the week prior the start of the CSEP. After receiving the CSEP, the initial post-test was administered within a month and the last post-test was administered 3 months from CSEP delivery.

Focus group discussions—Audio-recorded FGDs were conducted within a month of CSEP completion. Students who participated in the CSEP volunteered for the FGDs. One FGD with eight students, male and female, was conducted at each school (24 students total). A researcher facilitated the FGDs using a nine-question guide (Appendix C).

Data analysis

Tests—Data from participants who completed one to three tests were analyzed. Statistical analyses were performed using STATA (StataCorp. 2015; StataCorp LP,

Stata Statistical Software: Release 14. College Station, TX, USA). Descriptive statistics summarized demographics. Means and standard deviations characterized continuous variables. Frequencies characterized categorical variables. Paired t-tests were used to evaluate potentially significant differences between test scores across time points. Differences in the proportion of students selecting correct responses over time were assessed using McNemar's test, which assesses marginal frequencies of two binary outcomes.

Focus group discussions—Audio-recordings were transcribed into Spanish by a professional transcriptionist. The transcripts were reviewed by two researchers who independently derived codes based on meaning using a conventional content analysis approach [16], [17], [18]. Related codes were grouped into larger categories; these categories were defined and organized in a preliminary codebook which allowed major themes to emerge [19]. Lastly, a third researcher completed an audit of themes, categories, and codes to ensure consistency and consensus.

Ethical considerations

This study was approved by the Columbia University Medical Center Institutional Review Board and by CONABIOS, the ethical review board in the DR.

Results

Tests

In total, 600 students completed at least one test. Of 1432 tests distributed over 3 months, four students opted out. Fourteen tests lacking a unique identification number were excluded, so the total response rate was 98.7%. There were 486 pre-tests, 448 initial post-tests, and 480 3-month post-tests.

Demographics

Students' mean age was 14.2 with a range of 11–25 years; four males identified as older than 19 years old (Table 1). Nearly 60% were less than 14 years of age. The majority (75%) received sexual health information from multiple sources. Twenty-four students did not report a source, boys (5.8%) greater than girls (4.2%). Of all respondents, there were approximately 115 (35.8%) girls with sexual history compared to 177 (63.4%) boys (p <0.001). There were 343 (57.3%) students less than 15 years of age who accounted for 57.4% of all students with sexual history. Although the distribution by educational level was almost equal, there were 32 (55.5%) more middle than high school (44.5%) students with sexual history. Participants' reported sexual history on pre-tests, showed statistically significant differences between school and gender (p < 0.001) with school C having the largest student body but the smallest proportion of students with sexual history.

Change in scores between pre-test and post-tests

There was a statistically significant (p < 0.05) increase in mean scores from pre-test to initial and 3-month post-tests regardless of question type or gender (Table 2). There were no statistically significant differences in students' mean scores by gender (Table 3). Mean scores varied by a maximum of 0.1 points in gender-specific analysis. Stratification by grade

level showed high school students' mean score was consistently greater than their middle school counterparts (p < 0.001). This trend remained statistically significant (p < 0.001) when stratified by question type with the exception of attitude-specific questions scoring between baseline and initial post-test (p = 0.115).

Distribution of desired responses

Question-by-question (Table 4) analysis comparing the proportion of correct responses over 3 months showed that more than half of the questions had statistically significant increases (p < 0.001) from pre-test to post-test, regardless of post-test timing. Two attitude-specific questions did not show statistically significant increases; however, the proportion of students answering correctly reached 96.2% and 89.8%, respectively. In contrast, questions assessing STI transmission and prevention were the most difficult for students to answer correctly. About 25% of students correctly responded to each question before the program. This proportion declined for one question and fluctuated for the other after the program.

For girls, the proportion who selected the correct response from pre-test to initial post-test was sustained for 7/13 questions over time. Less than a quarter of girls reported being comfortable talking about sex with a current or prospective partner; comfort level increased over time but remained lower than the proportion of boys who were comfortable talking about sex, regardless of time point.

The proportion of boys who selected the correct responses before and after the program was sustained for 8/13 questions over time. The proportion of boys (60.8%) who indicated they knew the correct steps of condom use was almost double that of girls (29.8%) on the pre-test which led to a greater degree of improvement on this question for girls as compared to boys.

Quantitative program feedback

Of all participants, 89% agreed the health educator was open and they felt comfortable interacting with them; this proportion decreased among girls (87.4%) and increased among boys (89.9%) at 3 months (Table 5). The proportion of girls who indicated increased knowledge was higher immediately after the program (98.3%) when compared to boys (97.0%); however, at 3 months, about 97% of students indicated knowledge expansion. Girls' comfort level in discussing program content with health educators was higher at the initial post-test (97.1%) than boys (96.6%), but decreased at 3 months (95.8%), whereas boys' comfort increased at 3 months (97.3%).

Qualitative: focus group discussions

Three major themes related to the CSEP's success emerged: [1] expansion of sexual and reproductive health knowledge, [2] perception of curricular content, structure and delivery and [3] student-health educator dynamic. Of note, health educator and facilitator are used interchangeably.

Expansion of sexual and reproductive health knowledge

Many students acknowledged that sexual and reproductive health education is relevant during adolescence. Most mentioned that the CSEP would help them and their peers prepare

for the future by prioritizing academic development as a tool against the responsibilities and stressors of early parenting and the risk of contracting an STI.

> "[Sexual health education] is very important because there are many sixteen and seventeen-year-old girls who get pregnant at an early age and who have not finished their studies, also [there are] men who have not worked or made their own home who get a girl pregnant and do not have a place to move to or a way to maintain [their family]". (Q6)

> "…All the information that was said there was very relevant for us and has to interest us because it is a review of all the things that could happen to us in the future if we do not protect ourselves, if we don't use family planning, or if we simply allow ourselves to be carried away by what is said in the streets-because there are a lot of thing that are said in the streets that are just myths…and we got to the reality of the matter". (Q6)

Students who were not sexually active shared they now had the knowledge to have safe sex in the future.

> ".I think it is good to always have information on hand…and if [you] only know the common [things] like what your family tells you, what you know by your own reasoning, but the [classes] help us much more, and if one day we change our mind.to activate [our] sex life, [we] have guidance for that". (Q7)

> "[The CSEP] has changed [my way of thinking] a lot because I already know certain things for the future for when I have my partner and my partner wants to do something that shouldn't be done, I can tell him 'look, we should not do it because it is not going to end well for us.' That seems very good to me.". (Q7)

Most students previously received sexual health information from sources such as family, media or "the streets". Information exchange outside of the classroom was not typically communicated in an intentional, accurate or consistent way. Students shared there were many myths from the streets about sex and felt their classmates lacked reliable information.

> "In reality my parents did not speak to me about [sex], then with the help of [our health educator] I had a more open mind with which I could ask things that I couldn't with my parents". (Q7)

> "One of the examples [of myths] raised in my group was one of the ways to prevent pregnancy: put a sour orange in the vagina after sexual intercourse, and that was one of the ways to prevent pregnancy". (Q7, P4)

For some students, the CSEP revealed the inaccuracies of their sexual health knowledge.

> "Our way of thinking also changed because there was a moment when we were talking about myths from the streets, and we presented them to [the health educators], and they told us that's a lie.it was ridiculous, that if any of us believed it, it could harm our futures". (Q7)

> "The [topics] were very relevant in my opinion because although maybe let's say we know about sexuality, how to protect ourselves, and all that, we are always

curious about learning something new, that maybe in the streets, on television, or our parents, have explained to us in their way, but through the talks [the facilitators] could respond to me and address my concerns". (Q6)

Perception of curricular content including structure and delivery

Students valued that material was delivered in a direct and clear manner that utilized examples. Facilitators introduced positive language for discussing sensitive content, avoiding the use of "vulgar street words". They also appreciated the straightforward approach to communication modeled by facilitators.

"[The educator] spoke with good words. Some people talk to you about a topic that they know well, but they say it in a vulgar way. He spoke really well, and he knew the meanings of the words and when we said a word in our vulgar street language, [he told us] that is not how you say it, you use a correct word to know its meaning, because perhaps in our normal dictionary it may have a distinct meaning and in another aspect it may have another meaning…". (Q5)

"At the beginning, like he saw we were timid, so in order for us to relax ourselves, at the beginning of every session that he gave us, we did an activity, and with that we gained trust, or confidence, in him". (Q5)

Students suggested potential changes to the structure of the CSEP. Many felt they would have benefited from having longer or more frequent sessions. Some suggested an after-school club to further explore current and potential CSEP topics. Some suggested additional topics included: mental health and emotional support, domestic or sexual violence, bullying and coping strategies for pregnant adolescent mothers as they adjust to motherhood.

"Perhaps there is not enough time, specifically, since it depends on the theme we were covering and also on the flow and the curiosity of the students because I remember one time during the session on contraceptives; it turned out to be such an interesting topic, [we asked] so many questions that we took a break and after the break was over, we stayed although the time was up and we had to go finish our classes". (Q8)

"I would have liked for the time to have been longer, because the more that we listened, the more we were interested in learning". (Q2)

Student-health educator dynamic

Students expressed embarrassment throughout the CSEP when classmates would laugh and joke about CSEP content they perceived as taboo. This resulted in students asking peers to ask questions on their behalf or opting not to voice questions in class. By gauging the classroom environment, health educators attempt to mitigate feelings of embarrassment or shyness by encouraging students to ask questions privately or anonymously on paper and then addressing the question in front of the class at the beginning of the next session.

"I wanted to ask a question about the menstrual cycle, I asked as if it was for another classmate who has their menstrual cycle and is of that age, but me myself, I didn't ask the question, and it made me feel more comfortable". (Q4)

> "… I had some insecurities about these themes and maybe at first I did not [ask questions] in front of the class, but when the class was over, I went up alone and asked the questions and later in the next class he told us the answer in front of the entire group". (Q3)

The attitudes and teaching methods of the health educators created a safe environment that allowed students to feel comfortable asking questions. Students expressed this sentiment, "confianza" as trust, which developed with time.

> "In my group in particular, there were people that told me, ask this thing, and because they were scared the others would bully them or that the facilitator would not answer their question, but later the facilitator gave us the confidence to be able to ask questions like that little by little". (Q4)

> "There were some who were afraid or ashamed, but when the [health educator] demonstrated his trust to them, they felt brave enough to be able to ask questions. because they wanted to know the answers to clarify their doubts". (Q4)

Overall, most students felt their interactions with health educators were positive. A key element to facilitators' ability to quickly establish rapport with the group was their youthful demeanor. Students expressed that having a younger facilitator was helpful in that they felt they could relate to them in a way an older adult could not. They described the facilitators as open and fun.

> "He gave the class in a fun way. He is young just like us, and we laughed a lot, and I felt he explained the topics very well, like [my classmate] said, he was great with us and also took his time to chat with us, and also he was a young person but a little bit more adult than us". (Q3)

> "… he earned our trust, explained the topics to us and spoke to us as if we were his brothers or his cousins, he explained the topics to you in a fluid way, we're going to keep talking normally, and he identified with us with his personality". (Q3)

The quotations above suggest an increased level of trust that can be achieved when a health educator is, or is viewed, as a peer.

Discussion

This study demonstrated the MAMI's CSEP improved knowledge of STIs and pregnancy and attitudes towards risky sexual behavior among program recipients. FGDs captured students' feedback on program strengths and areas of improvement. Quantitative and qualitative data depicted a sexual and reproductive health environment surrounding adolescents in the DR that is laden with misinformation and inadequate access to FPM.

Efficacy of the CSEP

Historically, CSEPs have demonstrated expansion of knowledge and positive attitude towards sexual and re-productive health without long-lasting effects on behavior change [20], [21], [22]. Our evaluation reflected this trend; correct responses to knowledge and attitude questions improved and were sustained at 3 months. Our study is similar to

other sexual education interventions implicitly founded on the assumption that increased knowledge of sexual health may lead to better behavioral outcomes [23], [24]. One of the few studies on school-based sexual education programming in Latin America and Caribbean described how the largest effects were on knowledge and self-efficacy in condom use, both considered precursors of actual condom use [25]. The qualitative data from our FGD highlights how students value the CSEP as a form of prevention and a way to prepare for current or future sexual activity. Capturing this sentiment attests to the high-impact potential of CSEPs in affecting young people.

Learning environments conducive to sexual health discussions

Our evaluation of MAMI's CSEP revealed that younger, middle school grade students are engaging in unprotected sexual activity and are influenced by misinformation about STI and pregnancy prevention and strong cultural beliefs that normalize risky sexual behavior. The holistic nature of CSEPs allows them to complement predominant cultural beliefs. Students may acquire important knowledge regarding sexual risk behavior even when abstinence is their preferred FPM as is consistent in public schools in the DR, many of which are founded on Catholic values, where Bible reading is legally mandated [26]. Access to FPMs and information about healthy relationships and sexual risk behavior is critical for prevention of unplanned pregnancy, particularly in contexts like the DR where there is no legal access to safe abortion. A decrease in misconceptions and risky sexual behavior and an increase in knowledge demonstrated by students who received peer education in contrast to those who did not, reflects the potential impact of sexual education programming on helping students make informed decisions [27]. Increasing exposure to the CSEP through longer programming, extracurricular settings, and peer education could enhance the educational benefit of such programs; the aforementioned suggestions were voiced in the FGDs.

Response to health educators

Training health educators with established interests in sexual education delivery and classroom management to practice an informal, participatory learning approach is an integral component of effective CSEPs that has been linked with greater success in increasing sexual health knowledge [28], [29]. Fostering mutual trust between students and health educators was a valuable component of the CSEP; as adolescent clinic employees health educators were uniquely positioned to connect students to the preventive and treatment services available at MAMI. MAMI is a fixture in LR that local students can easily access independently. Students in batey schools can access "pop-up" clinics during school hours which include health educators, school psychologists and a medical provider from MAMI. Our sub-analysis of pre-intervention sexual history by school showed that although School A, a batey school was less than half the size of School C, a well-resourced school in LR receiving international support, students from School A accounted for 35.1% of all students reporting sexual history compared to 41.3% from School C. "Pop-up" clinics bridge the gap between potentially underserved schools in rural settings with a relatively large proportion of students engaging in sexual activity like School A. Facilitating direct dialog between students and medical providers, regardless of setting, encourages students to take ownership of their sexual and reproductive health; thereby expanding impact and meeting students' practical needs. This framework is valuable in terms of reproducibility and

sustainability in low-resource settings because it relies on a small team - health educator, medical provider and school psychologist - to link students to health information, resources and services. A compilation of the features that do not work in adolescent sexual and reproductive health programing warned against information sharing without appropriate referral to experts and services [30]. Continuing the dialog on sexual and reproductive health outside of the classroom by including community-based programing, involving healthcare staff, offering youth-friendly services, engaging parents and distributing condoms is associated with interventions that have produced the most significant changes in behavior and/or biological outcomes [31], [32]. MAMI's CSEP symbolizes reliable, multi-pronged sexual and reproductive health education and access to associated healthcare services inside and outside the classroom.

Limitations

We used a single instrument to assess multiple aspects of the program which enabled us to collect a large volume of data in a short period of time. However, using multiple items to assess varying aspects of the CSEP may have resulted in more robust data. Not all students were comfortable with the format of the questionnaires and in some cases, multiple (sometimes contradictory) responses were selected for single-response items. Collecting data from only three schools may limit the generalizability of our results. The week-long structure of the CSEP and the 3-month follow-up window may be considered too brief an intervention to reflect sustained change; however, there is no evidence-based optimal time frame.

Conclusion

Sexual debut often occurs in adolescence, which can have life-altering consequences including unplanned adolescent pregnancy and/or STIs, both of which occur at high incidence in the DR. Without the MAMI CSEP to educate and empower students, many will have incomplete or inaccurate information, or none at all. Our study showed that students' knowledge and attitude improved from pre-test to initial post-test and was sustained 3 months later. This improvement is a result of the safe, comfortable learning environment and mutual trust created by the health educators. Students credited the CSEP with enriching their learning and having the potential to shape future decision-making regarding sexual activity. MAMI CSEP is a sustainable, low-resource, small-team endeavor whose structure enables it to partner with students in the short-term during program delivery in schools and in the long-term if they elect to participate in the community-based peer education program and/or seek care at MAMI. The major programmatic advantages are the benefits to students and the replicability and scalability of its design. The adaptation of the MAMI CSEP and similar programs globally should be seen as a potential method to curb the STI epidemic and high rates of adolescent pregnancy.

Acknowledgments

Appendix A

Pre-test

Evaluation of a Comprehensive Sexuality Education Program in La Romana, Dominican Republic

Pre-test, sexual education program

Name of school:_____Course:_____Student number:____Age:___Sex: M F TF TM

1. From whom have you received information about sexuality and reproductive health? (Select all the options that apply. You may select more than one option).

    a.   Friends

    b.   Parents

    c.   School

    d.   Church

    e.   Communication sources (television, radio)

    f.   Internet

    g.   Health professionals

    h.   MAMI

    i.   No one

    j.   Other: _____

2. Which methods of contraception (family planning) have you heard of? (Select all the options that apply. You may select more than one option).

    a.   Withdrawal or pull out (withdraw the penis before ejaculating)

    b.   Oral (pills)

    c.   Injections

    d.   IUD (intrauterine device)

    e.   Rhythm method

    f.   Condom

    g.   Implant

    h.   Abstinence

    i.   Other: _____

3. Do you feel comfortable talking about sex with your partner? If you do not have a sexual partner, would you feel comfortable talking about sex?

    a. Yes

    b. No

    c. I think so

4. Do you know the steps of correct condom use?

    a. Yes

    b. No

    c. I think so

5. Do you know where to find methods of contraception (family planning)? Please give examples on the line below.

    a. Yes, where?

       _____

    b. No

6. A healthy relationship is one where everyone involved feels happy and secure and is based on honesty and respect for everyone and their opinions.

    a. True

    b. False

7. When should you use a condom?

    a. Only in the first sexual encounter with a new partner

    b. Only with your partner

    c. In each sexual encounter

8. How are sexually transmitted infections (STIs) transmitted from person to person? (Select all the options that apply. You may select more than one option).

    a. Kissing

    b. Intimate physical contact (sexual relations without protection).

    c. Contact with infected objects

    d. Needles/injections

    e. Blood

    f. Other: _____

    g. I am not sure

9. Which of the follow methods of contraceptive (family planning) also prevents sexually transmitted infections? (Select all the options that apply. You may select more than one option).

a. Withdrawal or pull out (withdraw the penis before ejaculating)

b. Oral (pills)

c. Injections

d. IUD (intrauterine device)

e. Rhythm method

f. Condom

g. Implant

h. Abstinence

i. Other: _____

10. If you suspected you had contracted a sexually transmitted infection would you get tested?

a. Yes

b. No

c. Maybe

11. HIV/AIDS can be transmitted by people who look and feel perfectly fine.

a. True

b. False

12. Martha does not feel well. She recalls having sexual relations a month ago with a new partner for the first time. Martha suspects she has contracted a sexually transmitted infection based on the symptoms she has. What should Martha do?

a. Martha should be ashamed and do nothing

b. Martha should go to a health center, get tested, and share the test results with her partner

c. Martha should withdraw from her partner

13. A woman can get pregnant after having sexual relations for the first time without protection.

a. Yes

b. No

14. Everyone can protect themselves against HIV/AIDS.

a. True

b. False

15. Have you used or are you currently using a method of contraception (family planning) to prevent pregnancy? Select all the options that apply.

a.   Withdrawal or pull out (withdraw the penis before ejaculating)

b.   Oral (pills)

c.   Injections

d.   IUD (intrauterine device)

e.   Rhythm method

f.   Condom

g.   Implant

h.   None

i.   Does not apply (I have never had sexual relations)

16.   The last time I had sexual relations, my partner and I used a family planning method.

a.   Yes

b.   No

c.   I don't know

d.   Does not apply (I have never had sexual relations)

17.   My partner and I use condoms in our sexual relations.

a.   Never

b.   Sometimes

c.   In each sexual encounter

d.   Does not apply (I have never had sexual relations)

If you chose not to participate, please explain why:

Appendix B

Post-test, initial and 3-month

Evaluation of a Comprehensive Sexuality Education Program in La Romana, Dominican Republic

Post-test, sexual education program

Name of school: _____Course: _____Student number: ___Age: _Sex: M F TF TM

1.   Which methods of contraception (family planning) have you heard of? (Select all the options that apply. You may select more than one option).

a.   Withdrawal or pull out (withdraw the penis before ejaculating)

b.   Oral (pills)

    c.   Injections

    d.   IUD (intrauterine device)

    e.   Rhythm method

    f.   Condom

    g.   Implant

    h.   Abstinence

    i.   Other: _____

2. Do you feel comfortable talking about sex with your partner? If you do not have a sexual partner, would you feel comfortable talking about sex?

    a.   Yes

    b.   No

    c.   I think so

3. Do you know the steps of correct condom use?

    a.   Yes

    b.   No

    c.   I think so

4. Do you know where to find methods of contraception (family planning)? Please give examples on the line below.

    a.   Yes, where?

        _____

    b.   No

5. A healthy relationship is one where everyone involved feels happy and secure and is based on honesty and respect for everyone and their opinions.

    a.   True

    b.   False

6. When should you use a condom?

    a.   Only in the first sexual encounter with a new partner

    b.   Only with your partner

    c.   In each sexual encounter

7. How are sexually transmitted infections (STIs) transmitted from person to person? (Select all the options that apply. You may select more than one option).

    a.   Kissing

    b.   Intimate physical contact (sexual relations without protection)

       c.   Contact with infected objects

       d.   Needles/injections

       e.   Blood

       f.   Other: _____

8. Which of the follow methods of contraceptive (family planning) also prevents sexually transmitted infections? (Select all the options that apply. You may select more than one option).

       a.   Withdrawal or pull out (withdraw the penis before ejaculating)

       b.   Oral (pills)

       c.   Injections

       d.   IUD (intrauterine device)

       e.   Rhythm method

       f.   Condom

       g.   Implant

       h.   Abstinence

       i.   Other:_____

9. If you suspected you had contracted a sexually transmitted infection, would you get tested?

       a.   Yes

       b.   No

       c.   Maybe

10. HIV/AIDS can be transmitted by people who look and feel perfectly fine.

       a.   True

       b.   False

11. Martha does not feel well. She recalls having sexual relations a month ago with a new partner for the first time. Martha suspects she has contracted a sexually transmitted infection based on the symptoms she has. What should Martha do?

       a.   Martha should be ashamed and do nothing.

       b.   Martha should go to a health center, get tested, and share the test results with her partner.

       c.   Martha should withdraw from her partner.

12. A woman can get pregnant after having sexual relations for the first time without protection.

       a.   Yes

b. No

13. Everyone can protect themselves against HIV/AIDS

   a. True

   b. False

14. Have you used or are you currently using a method of contraception (family planning) to prevent pregnancy? Select all the options that apply.

   a. Withdrawal or pull out (withdraw the penis before ejaculating)

   b. Oral (pills)

   c. Injections

   d. IUD (intrauterine device)

   e. Rhythm method

   f. Condom

   g. Implant

   h. None

   i. Does not apply (I have never had sexual relations)

15. The last time I had sexual relations, my partner and I used a family planning method.

   a. Yes

   b. No

   c. I don't know

   d. Does not apply (I have never had sexual relations)

16. My partner and I use condoms in our sexual relations.

   a. Never

   b. Sometimes

   c. In each sexual encounter

   d. Does not apply (I have never had sexual relations)

17. The educators were open and I felt comfortable sharing with them.

   a. Yes

   b. No

18. I have learned a lot in the sexual education classes.

   a. Yes

   b. No

19. I felt comfortable talking about sex with the educators.

    a. Yes

    b. No

If you chose not to participate, please explain why:

Appendix C

Focus Group Discussion Question Guide

Evaluation of a Comprehensive Sexuality Education Program in La Romana, Dominican Republic

1. What did you like about the sessions?

2. What did you dislike about the sessions?

3. How comfortable were you participating in the activities? Why or why not?

4. How comfortable were you asking questions during the sessions? Why or why not?

5. What did you think of the health educators? What should they do or could they have done differently? If so, how so?

6. How important were the session themes? Why or why not?

7. How have the sessions changed the way you think about sexual activity?

8. What would you recommend changing about the program?

9. Which additional themes, if any, should be included in the program?

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Table 1:

Demographics of participants who completed at least one questionnaire.

Sociodemographic variables	Frequency, % Girls	Frequency, % Boys
Overall	321 (53.5)	279 (46.5)
School		
A	90 (28.0)	69 (24.7)
B	47 (14.7)	49 (17.6)
C	184 (57.3)	161 (57.7)
Age, mean years (SD; range)	14.1 (1.8; 11,19)	14.3 (2.5; 11, 25)
Age, by group		
11–14	178 (55.5)	165 (59.6)
15–19	143 (44.5)	108 (38.9)
20–24	0(0)	3(1.1)
25–34	0 (0)	1 (0.4)
School grade level		
Middle (US equivalent 7th-8th grades)	157 (48.9)	144 (51.6)
High (US equivalent 9th-12th grades)	164 (51.1)	135 (48.4)
Past sources of sexual and reproductive health information[a]		
Friends	7 (2.7)	4(1.8)
Parents	10 (3.8)	18 (8.0)
School	17(6.5)	15 (6.6)
Church	0 (0)	0 (0)
Media (TV, radio, Internet)	2 (0.8)	8 (3.5)
Health professionals or workers	16 (6.2)	3(1.3)
Multiple sources	197 (75.8)	165 (73.0)
None	11 (4.2)	13 (5.8)
Sexual history, overall (any time point)[b]		
No	206 (64.2)	102 (35.6)
Yes	115 (35.8)	177 (63.4)
Sexual history, School A (pre-test only)		
No	45 (64.3)	15 (23.8)
Yes	25 (35.7)	48 (76.2)
Sexual history, School B (pre-test only)		
No	23 (52.3)	19 (40.4)
Yes	21 (47.7)	28 (59.6)
Sexual history, School C (pre-test only)		
No	118 (80.8)	58 (50.0)
Yes	28 (19.2)	58 (50.0)

[a]This question was only included in the pre-tests where the N = 486.

[b]Variable reflects positive sexual history on pre-test, initial post-test, or 3-month post-test for all schools. SD, standard deviation.

Table 2:

Mean scores on pre-test, initial post-test, and 3-month post-test by question type and gender.[a]

Question type	Pre-test Mean (SD)	Post-test, initial Mean (SD)	p-Value	Pre-test Mean (SD)	Post-test, 3-month Mean (SD)	p-Value
Overall						
Knowledge and attitude	8.0 (2.3)	9.0 (2.0)	<0.001	8.0 (2.4)	9.0 (2.0)	<0.001
Knowledge	5.2 (1.8)	5.9 (1.6)	<0.001	5.2 (1.9)	6.0 (1.6)	<0.001
Attitude	2.8 (0.8)	3.1 (0.8)	<0.011	2.9 (0.9)	3.1 (0.8)	<0.001
Girls						
Knowledge and attitude	8.0 (2.4)	9.0 (2.0)	<0.001	8.0 (2.4)	9.0 (2.0)	<0.001
Knowledge	5.2 (1.9)	6.0 (1.6)	<0.001	5.1 (1.9)	6.0 (1.6)	<0.001
Attitude	2.8 (0.8)	3.0 (0.8)	<0.001	2.9 (0.8)	3.0 (0.7)	0.005
Boys						
Knowledge and attitude	8.1 (2.2)	9.0 (1.2)	<0.001	8.0 (2.3)	9.1 (2.0)	<0.001
Knowledge	5.3 (1.7)	5.9 (1.6)	<0.001	5.2 (1.8)	6.0 (1.6)	<0.001
Attitude	2.9 (0.8)	3.1 (0.8)	0.002	2.9 (0.9)	3.1 (9.8)	0.001

[a]The sample size (N) for each paired t-test varied depending on the number of pairs of students who completed each type of test at each time point where range n = 165–212. SD, standard deviation.

Table 3:

Mean scores on pre-test, initial post-test, and 3-month post-test overall by gender or grade.[a]

Question type	Time Pre-test Mean (SD)	p-Value	Post-test, initial	p-Value	Post-test, 3-month	p-Value
By gender						
Knowledge and attitude		0.737		0.926		0.327
Girls	8.1 (2.3)		9.0 (2.1)		9.1 (2.0)	
Boys	8.1 (2.2)		9.0 (2.0)		8.9 (2.1)	
Knowledge		0.820		0.654		0.575
Girls	5.2 (1.9)		6.0 (1.7)		5.9 (1.6)	
Boys	5.2 (1.7)		5.9 (1.6)		6.0 (1.6)	
Attitude		0.642		0.482		0.153
Girls	2.9 (0.8)		3.1 (0.7)		3.1 (0.7)	
Boys	2.9 (0.9)		3.1 (0.8)		3.2 (0.8)	
By grade						
Knowledge and attitude		<0.001		<0.001		<0.001
Middle	7.2 (2.1)		8.5 (2.0)		8.3 (2.0)	
High	9.1 (2.0)		9.6 (1.8)		9.8 (1.8)	
Knowledge		<0.001		<0.001		<0.001
Middle	4.5 (1.6)		5.5 (1.6)		5.4 (1.6)	
High	6.0 (1.6)		6.5 (1.7)		6.5 (1.4)	
Attitude		<0.001		0.115		<0.001
Middle	2.7 (0.9)		3.0 (0.8)		3.0 (0.7)	
High	3.1 (0.8)		3.2 (0.7)		3.2 (0.8)	

[a]The sample size (n) for each paired t-test varied depending on the number of pairs of students who completed each type of test at each point where range n = 205–260. SD, standard deviation.

Table 4:

Proportion of correct answers per question over time, knowledge and attitude only.

Questions	Pre-test Frequency (%)	Post-test, initial Frequency (%)	Post-test, 3-months Frequency (%)	p-Value
From whom have you received information about sexual and reproductive health?	307/486 (63.2)	358/448 (79.9)	373/480 (77.7)	<0.001[a]
Do you feel comfortable talking about sex with your partner?[b]	131/474 (27.6)	174/440 (39.5)	187/466 (40.1)	<0.001
Do you know the correct steps of condom use?	211/477(44.2)	275/446 (61.7)	271/471 (57.5)	<0.001
Do you know where to get family planning methods?	269/469 (57.4)	309/443 (69.8)	350/466 (75.1)	<0.001
A healthy relationship is one where everyone feels happy and safe; and is based on honesty and mutual respect	410/471 (87.0)	390/441 (88.4)	414/461 (89.8)	0.071; 0.218[c]
When should one use a condom?	336/470 (71.5)	355/439 (80.9)	386/461 (83.7)	<0.001
How are STI transmitted?	122/486 (25.1)	150/448 (33.5)	152/480 (31.7)	<0.001
Which family planning method(s) also prevents STI transmission?	130/486 (26.8)	100/448 (22.3)	107/480 (22.3)	0.162; 0.116
If you suspected you had an STI, would you get tested?	417/479 (87.1)	404/447 (90.4)	439/472 (93.0)	0.014; <0.001
HIV/AIDS can be transmitted by people who look and feel well	330/461 (71.5)	339/439 (77.2)	365/465 (78.5)	0.001; 0.007
What should someone do if they suspect they had an STI?[d]	449/467 (96.1)	417/438 (95.2)	434/459 (94.6)	0.670; 0.221
A girl can get pregnant the first time she has sex without a condom	426/473 (90.1)	409/438 (93.4)	440/467 (94.2)	0.093; 0.005
Everyone can protect themselves from HIV/ADIS	393/480 (81.9)	365/442 (82.6)	382/465 (82.2)	0.726; 0.819

[a]Indicates the difference in proportion of correct responses at baseline and initial post-test and baseline and 3-month post-test were both p < 0.001.

[b]Students who did not currently have partners were instructed to answer if they would feel comfortable talking about sex with a partner.

[c]The first value corresponds to the difference in proportion of correct responses from baseline to initial post-test; the second value corresponds to the difference in proportion of correct responses from baseline to 3-month post-test.

[d]A paraphrased version of the original question is included in the table. STI, sexually transmitted infection.

Table 5:

Quantitative feedback evaluating the program and student-health educator dynamic, by gender.[a]

Questions	Girls, Frequency (%)		Boys, Frequency (%)	
	Post-test, initial	Post-test, 3 months	Post-test, initial	Post-test, 3-months
The health educators are open and I felt comfortable sharing with them				
Yes	208 (88.6)	221 (87.4)	178 (88.5)	195 (89.9)
No	24 (10.2)	28 (11.0)	20 (10.0)	21 (9.7)
Maybe	3(1.2)	4(1.6)	3(1.5)	1 (0.4)
I have learned a lot in the sexual education classes				
Yes	236 (98.3)	250 (96.9)	198 (97.0)	210 (96.8)
No	3(1.3)	6 (2.3)	5 (2.5)	5 (2.3)
Maybe	1 (0.4)	2 (0.8)	1 (0.5)	2 (0.9)
I felt comfortable talking about sex with the health educators				
Yes	234 (97.1)	250 (95.8)	200 (96.6)	213 (97.3)
No	2 (0.8)	9 (3.5)	6 (2.9)	6 (2.7)
Maybe	5 (2.1)	2 (0.7)	1 (0.5)	0(0)

[a]The sample size (n) varied depending on the number of responses to each question varied by question and time point where range n = 201–261.