



## Adaptation of an effective school-based sexual health promotion program for youth in Colombia



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### ABSTRACT

**Rationale:** Given the disproportionate impact of HIV and STIs among youth in Latin America, there is a compelling need for effective sex education programs. In particular, Colombia lacks a nationally standardized youth sex education program, despite the fact that 15 to 24-year-olds accounted for the highest incidence and prevalence rates of HIV and STIs in the nation. In an attempt to fill this void, our team adapted COMPAS, a Spanish school-based sexual health promotion intervention, for Colombian adolescents. **Objective:** This study describes the adaptation process that resulted in a modified version of COMPAS for youth in Colombia. **Method:** We employed a systematic cultural adaptation process utilizing a mixed methods approach, including intervention adaptation sessions with 100 young adolescents aged 15–19. The process included six steps: 1) consulting international researchers and community stakeholders; 2) capturing the lived experiences of a diverse sample of Colombian youth; 3) identifying priorities and areas in need of improvement; 4) integrating the social cognitive theory, information-motivation-behavioral skills model, and an ecological framework for Colombian youth; 5) adapting intervention content, activities, and materials; and 6) quantitative evaluation of COMPAS by Colombian youth. **Results:** The adapted intervention incorporates elements common to effective youth sex education interventions, including: a solid theoretical foundation, sexual communication skills and social support for protection, and guidance on how to utilize available cultural- and linguistic-appropriate services. In addition, the adapted intervention incorporates cultural and linguistic appropriate content, including an emphasis on tackling *machismo* to promote risk reduction behaviors. **Conclusions:** The systematic adaptation approach to sexual health intervention for youth can be employed by researchers and community stakeholders in low-resource settings for the promotion of health wellness, linkage to care, and STI and unplanned pregnancy prevention for youth.

### 1. Introduction

The HIV/AIDS epidemic remains an important public health challenge in Latin America, where more than two million people are living with HIV and one in three of the new HIV infections are diagnosed

among 15 to 24 year-olds (UNAIDS, 2018). Colombia has the fourth highest HIV prevalence rate among Latin American countries (4.6%) (Plataforma Regional para América Latina y el Caribe, 2017). According to the Fondo Colombiano de Enfermedades de Alto Costo (2016), the rate of new cases of HIV has increased dramatically, from

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37,325 HIV cases reported in 2012 to 61,174 in 2015—an increase of 65% in just three years. This report shows that the overwhelming majority (75.5%) of people living with HIV in the country are adolescents and young adults, most of whom contracted the virus through unprotected sex.

Unplanned pregnancies are another consequence of unprotected sex in adolescents and young adults. One in five female Colombian adolescents aged 15 to 19 are or have been pregnant; and prevalence of pregnancy in this age group is higher in low socio-economic areas (Ministerio de Salud y Protección Social, 2015). Research indicates that adolescent pregnancy increases the risk of medical complications for both mother and child (e.g., anemia, premature birth, or small-for-gestational-age infants); impacts the psychosocial development of the teenage adolescent, which increases their risk for depression and substance use (Dare et al., 2016); and lowers socioeconomic status (e.g., low educational attainment, high unemployment, and poverty) (Avellaneda and Dávalos, 2017; Ministerio de Salud y Protección Social, 2015). Under these circumstances, young women have little control over the timing of pregnancy (Ensign, 2000; Killion, 1998). Some young women intentionally become pregnant to gain access to shelter/housing or to obtain unconditional love. Other young women feel they have limited life choices (Killion, 1998; Smith, 1995).

Sex education offers a promising avenue to promote informed decision-making with regard to sexual behavior. Other than sex abstinence, correct and consistent condom use is the primary method of prevention of sexually transmitted infections (STI) and unplanned pregnancies (Kirby et al., 2007). Condom use is the most common method of protection among adolescents worldwide; however, the rate of consistent condom use among adolescents is low (50% or less) and tends to decrease over time (Morales et al., 2016). A recent study conducted with 1100 Colombian adolescents aged between 14 and 19 years old concluded that condoms are used 71% of the times they have sex, but only 22% of the adolescents use them consistently (Morales et al., 2018b). Unprotected sex has implications for sexual and reproductive health, including HIV and unplanned pregnancy.

Knowledge and awareness about condom use and access to condoms are determinants of sexual behavior. Colombian adolescents possess a medium-low level of knowledge about sexual health, low normative beliefs regarding peers' condom use and a certain perceived difficulty for using condoms (Morales et al., 2018b). STIs and pregnancy have a dramatic impact on the physical and psychological health of adolescents. According to the report on the WHO strategy on STIs for Colombia (Taylor et al., 2017), government priorities must include the implementation of comprehensive safe sex health information, education, and safe sex promotion programs; condom distribution programs for protection against both STIs and unintended pregnancies; and access to sexual and reproductive health services to prevent pregnancies and reduce STIs for youth. Sex education is a critical component of any effort to decrease unplanned pregnancy, prevent STIs, and promote informed and educated sexual behavior (Avellaneda and Dávalos, 2017; Kirby et al., 2007). Despite the fact that sex education became mandatory in Colombian public schools in 2003, there has been no standardized sexual health promotion intervention at high schools to date (Chong et al., 2013). Without a standardized program, it is difficult to ensure that all high school students receive effective sex education, leaving them more vulnerable to STIs and unplanned pregnancies. This manuscript describes a theoretically-based, evidence-informed, school-based intervention to reduce the likelihood of health-harming outcomes among adolescents in Colombia.

Behavioral interventions to promote sexual health in adolescents and young adults that are based on a theoretical framework and tailored to the culture of the target group can reduce sexual risk-taking behavior and theory-based determinants of these behaviors (Kirby, 2001). One such effective intervention, based on Social Cognitive Theory (SCT) (Bandura, 1994) and the Information-Motivation-Behavioral Skills (IMB) Model (Fisher et al., 1996), is the curriculum

*Competencias para adolescentes con una sexualidad saludable* (COMPAS; Espada et al., 2018). This school-based program, which was originally developed for students in Spain, consists of five 50-min group-based intervention sessions designed to reduce STIs and unplanned pregnancies in adolescents. Contents of COMPAS include self-care (e.g., information about STIs, including HIV, healthy sex, methods of protection), problem-solving skills (e.g., decision-making regarding sex, prevention tools for safe sex practices, and problem-solving skills), partner communication skills (e.g., training on negotiation with the sexual partner and use of effective communication styles), and condom-use training.

COMPAS was effective in promoting sexual health and reducing high-risk sexual behaviors (early sexual initiation and unprotected sex) in the short-term (Espada et al., 2012, 2015; Morales et al., 2014), 12-month (Morales et al., 2016), and 24-month post-intervention follow ups (Espada et al., 2016a) among adolescents in Spain. COMPAS has demonstrated effectiveness similar to other evidence-based interventions considered by the Centers for Disease Control and Prevention in the United States (Espada et al., 2015, 2016a; Morales et al., 2016). Further, the program also promoted sexual health in high-risk populations, such as adolescents with divorced parents (Morales et al., 2017). Fidelity of implementation (Escribano et al., 2016) as well as other mediators of the efficacy of COMPAS have also successfully been explored (Escribano et al., 2015).

Colombia lacks a national standardized sex education program for adolescents and young adults, despite the fact that adolescents and young adults account for one of the highest incidence and prevalence rates of HIV and STI in Latin America (Plataforma Regional para América Latina y el Caribe, 2017). A recent meta-analysis of the efficacy of interventions to promote adolescent sexual health worldwide, including the reduction of STIs and unplanned pregnancies, reinforced the need for targeted interventions (Morales et al., 2018a). Chong et al. (2013) evaluated the efficacy of an online sexual-health education course created by the Colombian private organization, Profamilia. The investigators undertook a three-arm randomized control trial (treatment, spillover, and control) that involved 69 Colombian public schools. The five-module web-based Profamilia Educa's course focused on perceptions of sexuality, risks, reproductive health, sexual rights, and dating violence. It improved students' knowledge and attitudes in the immediate post-test and students reported reduction of STIs at six-month post-intervention. Although the study demonstrated some success, the description of the intervention is sparse (it does not seem to be based on theoretical models of health behaviors) and the fidelity of the implementation was compromised by teacher strikes, lack of workable internet connections, and the absence of computer labs in schools. Importantly, the long-term effects on behavioral variables (e.g., consistent condom use, age of first sexual intercourse, and multiple sexual partners) remain unknown. The computer requirement for implementation is a major challenge given that many schools do not have computers to implement the program. More effective interventions, grounded in evidence-based research, to promote sexual health in this population are needed. An evidence-based and in-person intervention, COMPAS, was adapted to address this gap in Colombia. This study describes the adaptation of the COMPAS program for adolescents and young adults in Colombia.

## 2. Method

### 2.1. Study design and sampling

The core elements of the original intervention were retained in the Colombian version (e.g., key activities, including skills building sessions like modeling and practicing correct condom use). The adaptation process for COMPAS follows rigorous procedures used in other HIV prevention intervention adaptation studies (Barrera et al., 2013; Martinez et al., 2017; Wingood and DiClemente, 2008). The original

research team that developed COMPAS participated in the adaptation of COMPAS for Colombia. Colombian adolescents and young adults, trained staff, and local educational stakeholders were involved in the adaptation process. Educational stakeholders included teachers, adolescents, and young adults involved in educational initiatives, directors of secondary schools, and educational staff. Because sex education is not integrated into the existing school curriculum in Colombia, stakeholders had limited information about sexual health. However, all the educational stakeholders were committed to the reduction of high-risk sexual behaviors among Colombian adolescents and young adults.

To be eligible for the COMPAS study in Colombia, the adolescent participants had to meet the following criteria: (1) be 15- to 19-years old, (2) speak Spanish as their primary language, (3) be enrolled students at education centers located in Bogotá and Barranquilla, and (4) consent to participate in the study (parental and participant of those above 18) consent and adolescent-participant assent (of those under 18) to participation in the study.

## 2.2. The COMPAS intervention

COMPAS is a school-based intervention to promote sexual health and reduce high-risk sexual behaviors. The intervention was designed for primary prevention in high schools, therefore it focuses on heterosexual risk behaviors. The adapted intervention incorporates sexual diversity by including specific information and activities addressing non-heterosexual relationships (e.g., at least one of the role-playing activities related to communication skills included a same-sex couples).

The core elements are transmission of information, social skills training, problem-solving training, and strategies to maintain safe sexual behaviors. The intervention involves group games, role-playing, participatory activities, and group discussions. The COMPAS includes five 50-min sessions: 1) *Sexuality and health*: Introduction to sexuality, STIs and its transmission routes, and training on identifying risk behavior to get an STI and/or unplanned pregnancy; 2) *Risk awareness*: Includes information about prevention methods, STIs, and demystification of erroneous beliefs about sexuality; 3) *Decisions making*: Providing guidance for planning and problem-solving to manage situations that can impact condom use; 4) *Sex communication training*: Includes training on assertiveness, and 5) *Decision Commitment*: Includes training on correct condom use, self-instructions, and covert behavior rehearsal. An expert in sexual health promotion usually implements the group intervention in co-ed groups at high schools.

## 2.3. Ethical considerations

The study was approved by the Institutional Review Board of Fundación Universitaria Konrad Lorenz (Bogotá) (Ref. 9INV7161) and Universidad de la Costa (Barranquilla) in Colombia (Ref. INV.140-01-007-12).

## 2.4. Procedures

### 2.4.1. Recruitment

The principal investigator, coinvestigators, and research assistants attended parent-teacher meetings at the beginning of the academic year to recruit participants. The investigators explained the aims of the project and requested consent for their children's participation. Written parental consent to participate was provided and parents' concerns were discussed and resolved. The research team informed adolescent participants about the study, obtained parental written consent, and participants' assent to get involved immediately before the focus group session. A research assistant confirmed eligibility according to the above-mentioned inclusion criteria and determined the participants' willingness to take part in the study. The research team met weekly to refine the recruitment protocol and solve potential problems during the recruitment process. One of the co-authors of the original version of the

program travelled to Bogotá and Barranquilla to present the intervention to authorities in the University, the Ethical Committee and parents (during parent-teacher meetings), and to provide counseling to the research team in Colombia.

### 2.4.2. Measures

**2.4.2.1. Demographic characteristics.** Included age, gender, nationality, personal status, number of children, family situation, attendance to religious events, and socioeconomic (SES) level. SES in Colombia (known as *estrato*) is officially established into six levels: one is the lowest, and six is the highest.

**2.4.2.2. Sexual behavior.** It was evaluated by asking participants to report the type of sexual practices they have engaged in, the age of their first sexual experiences (petting, vaginal sex, anal sex, oral sex, and mutual masturbation), and the use of contraception (including no contraception, condoms, oral contraception, etc.). Because participants provided their opinion about the sex education needs of adolescents and how to adapt a sexual health promotion intervention, basic information on their sexual experience was considered relevant to describe in more detail the sample of the current study.

**2.4.2.3. Process evaluation of the program.** Satisfaction and utility of all activities in the program were evaluated using a 10-point Likert scale (1 = very useless/very dissatisfied to 10 = very useful or very satisfied). The program was evaluated on content, methodology, language, and duration. Facilitators provided their demographic characteristics including age, gender, nationality, and education.

## 2.5. Adaptation process

The Colombian version of COMPAS was developed as a result of a multistage process, based on previous protocols (Barrera et al., 2013; Martinez et al., 2017; Wingood and DiClemente, 2008):

### 2.5.1. Phase 1: consulting international researchers and community stakeholders

The adaptation process was guided by the knowledge and experience of local ( $n = 8$ ) and international researchers ( $n = 5$ ). The co-authors of the original version of COMPAS in Spain ( $n = 3$ ) and recognized researchers in the field of sexual health promotion targeted to youth and cultural adaptation of interventions from the United States ( $n = 2$ ) were invited to provide feedback on the adaptation process. A total of 13 researchers, staff members, students, and community stakeholders participated in the adaptation process. Of them, 61.5% ( $n = 8$ ) were females and the mean age was 28.07 ( $SD = 7.71$ ; range: 19–41). International researchers were psychologists with experience in the cultural adaptation of sexual health promotion interventions through previous projects funded by public agencies and governments from United States and Spain.

The local research group, community stakeholders, and students (three from Bogotá and five from Barranquilla) revised the original protocol of the program and introduced modifications focused on adapting vocabulary and cultural expressions for Colombian youth. Although language adaptation (e.g., vocabulary) may appear to be only a surface change, it is considered a critically relevant part of cultural adaptations (Barrera et al., 2013). All modifications were discussed with the co-authors of the original version of COMPAS. Recruitment materials and strategies were designed based on feedback from the members involved in the adaptation process.

### 2.5.2. Phase 2: capturing the lived experiences of a diverse sample of colombian youth

Screening instruments and the scripts for focus groups were adapted from the original study of COMPAS in Spain. Scripts were drafted to identify the needs and experiences of Colombian youth related to sexual

health.

During the adaptation process, focus groups of Colombian students were conducted to identify possible needs related to the prevention of STIs and unplanned pregnancies, plus to evaluate the appropriateness of the intervention for adolescents in the country and the feasibility. Data from those who met the criteria for enrollment were included in a database (name, surname, educative center, degree, level, email, and phone number). Subsequently, participants were randomly assigned to 12 focus groups: two groups consisted of only females (one of minors aged 14 to 17 and other of females aged 18- to 19-years old), two groups consisted of only males (one of minors aged 14 to 17 and other of males aged 18- to 19-years old) and two were mixed groups (one of minors aged 14 to 17 and other of adolescents aged 18- to 19-years old) in Bogotá ( $n = 6$ ) and in Barranquilla ( $n = 6$ ). Each focus group contained between six and 10 adolescents. Results of four focus groups from Bogotá are presented because two of them were lost due to computer problems. The focus groups were chaired by members of the research team whose nationality and age were similar to those of the participants. Two facilitators were from Bogotá and two were from Barranquilla (one male and one female in each city). The mean age of facilitators was 21.25 ( $SD = 1.70$ ; range: 19–23). Female groups ( $n = 4$ ) were chaired by female facilitators, while male groups ( $n = 4$ ) were chaired by male facilitators. Since there were two mixed groups in every city ( $n = 4$ ), one was conducted by a male facilitator and the other by a female facilitator.

Each participant attended a single intervention adaptation session that lasted approximately 3 h, including a 20-min break in which food and drinks were provided. These sessions took place in a quiet room at the participating Universities. The facilitator of each group provided a detailed description of the contents [of what], plus introduced the program aims and procedures. Participants were reminded of the voluntary nature of the project and were given contact information so they could address any concerns after the session. Rules for the proper functioning of the group were established at the beginning of the session. All sessions were conducted in Spanish and were audio recorded.

The participants reviewed a draft of the Colombian version of COMPAS and were asked to complete three questionnaires: one on sociodemographic variables, another on sexual experience, and a final questionnaire on the perceived utility of and satisfaction with the activities included in the program. The intervention session was structured in two parts: (1) discussion of sex-related aspects of sexual health promotion (e.g., cultural values of Latinos, sex education in Colombia, gender expectations, and condom use barriers), and (2) revision of the program (e.g., improvements and feasibility in the Colombian context). The aim of the first part was to obtain valuable information about sexual health promotion in Colombia, the influence of Latino cultural values on safe sex, plus salient beliefs and attitudes regarding sexual behavior, particularly with regard to condom use. The aim of the second part was to revise COMPAS to ensure its feasibility and appropriateness for adolescents in Colombia. Each activity in COMPAS was discussed in groups and investigators requested participants' suggestions for improvement. We used pseudonyms instead of participants' real names to preserve their anonymity.

### 2.5.3. Phase 3: identifying priorities and areas in need of improvement

A variant of nominal group technique (Boddy, 2012) was applied during focus groups to identify areas in need of improvement to culturally adapt COMPAS for Colombian youth. This technique has been used to adapt sexual health promotion interventions for high-risk populations (Martinez et al., 2017).

### 2.5.4. Phase 4: integrating the social cognitive theory, information-motivation-behavioral skills model, and an ecological framework for Colombian youth

The original COMPAS program for adolescents in Spain and the adapted version for adolescents in Colombia were guided by the SCT

(Bandura, 1994), and the IMB model (Fisher et al., 1996). These socio-cognitive models have been effective in predicting condom use in Spanish-speaking populations (Espada et al., 2016b).

The COMPAS program includes activities that are designed to increase *information and knowledge*, necessary precursors that underlie sexual risk behaviors, although not sufficient to predict healthy behaviors (e.g., “Sexual Health Quiz” activity pretends to increase participants' knowledge by solving questions in groups); *motivation to engage in safe behaviors*, based on responses and consequences associated with a specific behavior (e.g., debates on consequences of engaging in sexual risk behaviors motivate better decision-making if participants decide to have sex); *outcome expectancies*, in terms of perceived benefits and costs (e.g., “Vulnerability to STIs and pregnancies” activity discusses benefits and costs of getting an STIs and an unplanned pregnancy); *self-efficacy*, which consists of the belief in one's capabilities to organize and execute chosen behaviors (e.g., “Self-instructions” activity consists on training the participants to use personal dialog to guide them to engage in safe sex behaviors); *social support*, which involves reciprocal interpersonal influences that may increase, maintain, or decrease specific behaviors (e.g., role-playing activities to train the participants how to respond when the sexual partner proposes them to engage in a sexual risky behavior); *behavioral skills* associated with healthy sexual behavior, including condom use (e.g., negotiation on sexual issues and training on how to use correct condom use); and *social and self-regulatory skills*, understood as the ability to identify factors associated with risk and protectors, including the reinforcement of health-related behaviors (e.g., real cases of adolescents are discussed to evaluate the level of sexual risk in which they engaged).

From the ecological framework (Bronfenbrenner, 1979), individual behavior must be understood by considering ontogenic, micro-system, exo-system, and macro-system. Ontogenic factors involve an individual's history and characteristics (e.g., HIV knowledge or condom use self-efficacy). Micro-system factors are concerned with the immediate intimate relationship context in which sexual behaviors take place (e.g., couple sexual communication skills). Exo-system factors refer to external aspects that affect the relationship (e.g., perceived social norms related to sex). Macro-systems factors include broad cultural values and belief systems that impact the individual (e.g., religion and familism). From a Network-Individual-Resource (NIR) theoretical perspective, the micro and macro levels are linked, and it is relevant to consider the reciprocal exchanges and relationships between individuals and their important networks, which underlie and sustain HIV-risk behaviors (Johnson et al., 2010). COMPAS sessions, theoretical constructs and techniques are presented as Supplementary file.

### 2.5.5. Phase 5: adapting intervention content, activities, and materials

A systematic cultural adaptation of an existing program that includes multiple activities implemented along several sessions can be challenging, in particular the translation of particular sexual health terminology and responsiveness to the ethnic/racial diversity of the Colombian youth. Since literal translations may not be possible, more elaborate translations may be needed to preserve the original meaning and conform to the new target population (Barrera et al., 2013).

Inappropriate translations may negatively impact the results (Viruell-Fuentes et al., 2011). Another challenge in this step could be accommodating intra-ethnic-group variations in individual difference variables (Barrera et al., 2013). Participants provided their opinions and suggestions in order to improve the program and make it more attractive or more appropriate for Colombian adolescents and young adults.

### 2.5.6. Phase 6: evaluating perceived satisfaction and utility of the Colombian version of COMPAS

During the focus groups session (second part), the participants answered questionnaires to assess the acceptability of COMPAS for its application to the Colombian culture. We quantitatively evaluated



participants' perceived satisfaction with and utility of each activity in the program using anonymous self-reports. When necessary, the activity was simulated with the participants to provide a better understanding of the activity they were scoring.

## 2.6. Statistical analysis

Descriptive analysis of the sample was conducted using SPSS v25. Because participants from Bogotá and Barranquilla may differ socio-demographically and in sexual experiences, differences between both cities were analyzed. Cohen effect size (1988) and Odds Ratio (OR) were calculated when statistical differences between participants from Bogotá and Barranquilla were found.

## 3. Results

### 3.1. Characteristics of youth participants

In total, 100 Colombian adolescents aged 15 to 19—recruited from urban settings—were involved in the adaptation process of COMPAS to Colombia. Mean age was 17.54 ( $SD = 1.33$ ) and 57% were female. Most (66%) lived in Barranquilla and the rest in Bogotá. All were single and reported not having children. There was variation among participants from both cities with regard to age, socioeconomic level, attendance to religious events, age of first petting, and the proportion of participants who had anal sex. Participants from Bogotá were slightly older ( $p = .04$ ;  $d = 0.45$ ), were more likely to belong to a higher socioeconomic level ( $p = .03$ ;  $d = 0.69$ ), reported lower attendance at religious events ( $p < .001$ ;  $d = 0.82$ ), were more likely to report engaging in petting ( $p < .001$ ;  $OR = 2.48$ ; 95% CI [1.05, 5.85]). However, participants from Bogotá were less likely to report experiencing anal sex ( $p < .001$ ;  $OR = 0.06$ ; 95% CI [0.02, 0.18]) than those from Barranquilla. Characteristics of the sample and differences according to the area: center (Bogotá) and a coastal area (Barranquilla) of the country are presented as Supplementary file.

### 3.2. Latino cultural values related to sexual behavior

Latino cultural values (*machismo* and *value of virginity*) and issues related to gender roles were identified. The majority of youth stated that *machismo* plays a role in their sexual behaviors and sexual health. *Machismo* involves many stereotypes and beliefs (e.g., a man is strong and makes decisions for others). Masculinity is reinforced by having heterosexual sex. For example, Carlos Andrés mentioned,

*Why do they do it? (To brag) Because when they say: "I was with this girl and that other one" they raise their ego and believe that they become more macho (manly) (Carlos Andrés, Barranquilla).*

Another topic that emerged was virginity, which refers to the importance of females maintaining virginity until marriage:

*I think it's better to say no (to sex), because I do not know ... If a woman has sex in the first night that she met a guy, he will say: "This woman is easy". And ... he suddenly loses interest on her (Lidia, Barranquilla).*

### 3.3. Barriers to condom use

A topic that emerged when participants were informed about barriers to condom use was the impact of condoms on sexual pleasure. Mario highlighted the impact on sexual pleasure:

*I have never had sex with a condom, but I have been told that it does not feel the same when you use a condom. It feels ... it decreases pleasure (Mario, Barranquilla).*

Olivia expanded:

*This hasn't happened to me but I know that happened to many girlfriends. Her boyfriend says to her that: I don't like using a condom, it doesn't fit me, it is uncomfortable, it doesn't feel good (Olivia, Bogotá)*

The lack of condom use was related to dyadic relationship dynamics (e.g., trust, power imbalance, machismo, cultural barriers to condom use) as well as habits resulting from individual beliefs, valuing and the overlapped resulting practices:

(About using condoms) *It depends, if my girlfriend and I have had sex without a condom for 3 months or 4 months and at some point, she tells me to put a condom on ... that sounds strange, why are you going to ask me to put a condom on now? It seems strange to me (Nestor, Barranquilla).*

Most participants highlighted the need for sexual health promotion interventions at Colombian schools to avoid unplanned pregnancies and STIs in youth. For instance, Susan indicated:

(About school-based sexual health interventions) *It sounds ideal. Legally all public schools were recently authorized to give talks about sexuality, unfortunately this is not happening (Susan, Bogotá).*

### 3.4. Priorities and areas in need of improvement of the COMPAS program

Participants suggested four changes to improve the Colombian version of COMPAS: (1) parents' participation, (2) female condom use, (3) information about resources on reproductive health (including STI testing and treatment), and (4) sexual health intervention implementation by peer facilitators. Participants proposed the use of videos and images about STIs to identify symptoms and the use of videos of Colombian adolescents describing experiences included in the curriculum (instead of reading it off a card) to make the program more attractive to the target population. The research team was receptive to these proposals. Unfortunately, this component was not incorporated into the program for two primary reasons: (1) the participating secondary schools did not have the technological resources to project images or videos, and (2) funding for this project was limited and insufficient. However, we believe it is a worthwhile addition that should be considered in future interventions and programs.

#### 3.4.1. Priority 1: parents' participation

Most participants believed that parents' participation would be a key element for sexual health promotion in adolescents. Improving communication about sex between parents and their children was suggested to complement the intervention. For instance, Marisa mentioned:

*I think that parents should be involved in talking with their children and teaching them to communicate better about it (sex), because it is harder to make them understand. You have to talk openly about the risks (unprotected sex), the consequences and what can be done or not (Marisa, Barranquilla).*

#### 3.4.2. Priority 2: female condom use

Regarding female condoms, different perspectives were observed. Some participants (especially men from the coast area) were unaware of this method of protection against STIs and unplanned pregnancies. Among adolescents who know of the method and those who learned of the method through the program, they supported the inclusion of information on how to use and where to obtain female condoms.

For example: Marta proposed:

*Interventions should not only teach the male one (condom), but also the female one because it is also important (Marta, Bogotá).*

In contrast, Joseph confessed that he did not know about this method:

*Well, I had heard about female condoms, but I thought that was an urban myth, I did not know they existed (...)* (Joseph, Barranquilla).

### 3.4.3. Priority 3: information about resources on reproductive health (including STI testing and treatment)

Guidance on the utilization of available, culturally and linguistically appropriate services for reproductive health was deemed especially valuable by the participants in order to improve their sexual health. For instance, Pablo's reflected on his inability to exert control over one's own motivation, behavior, and social environment. He mentioned:

*I think that the problem is that we don't know what to do in case of getting an infection (STI). People know the consequences, but not what to do if they get one. "I have HIV, what should I do now? Should I keep getting drunk every day, keep having sex with everyone or start exercising, eating healthy, what kinds of things should I do to control my disease?"* (Pablo, Bogotá).

### 3.4.4. Priority 4: sexual health interventions implemented by peer facilitators

Adolescents recommended that sexual health promotion programs be implemented by peers of similar age, origins, and/or interests and experiences. An example:

*Facilitators should be peers because they can interact between themselves. They (participants) have the same experiences that they (facilitators) have already had. Like this, we don't limit ourselves to say things that have happened to us, as it would happen (if the program was implemented by) with old people* (Eduardo, Barranquilla).

## 3.5. Colombian version of the COMPAS program

As a result of this feedback, new additions were incorporated into the final version of COMPAS for Colombian adolescents and young adults: parents' participation, instructions on female condom use, information about local resources for STIs testing, what to do in the event of a positive test, and the use of Colombian youth as facilitators during the implementation process. All modifications were guided by the solid theoretical frameworks described above.

### 3.5.1. Parents' participation

Adolescents suggested that parents must be involved in the program to improve communication about sex at home. For instance, Eva said:

*Do you know what I think the program is missing? How to discuss (sex) with parents, because all this comes from home and if you do not have the freedom to talk to your parents at home ... Let's say: mom or dad could you help me to plan this or that? Well, that's when you fail because many times you do not have money anymore when you're at school and do not have the money to buy an injection or buy the pill (both are contraceptives)* (Eva, Bogotá).

The Spanish revised version of COMPAS (Espada et al., 2018) includes a session for parents at the beginning. Based on the adolescents' suggestion, an optional formative session (part of the Colombian version of COMPAS) for parents was offered to the participating schools to facilitate communication at home. This session introduces the program to parents, clarifies the COMPAS (is this right) approach to sex education, informs them about the contents and methodology of the program, and provides suggestions to improve communication about sex at home. According to the theoretical frameworks that guided this adaptation (Barrera et al., 2013), this addresses relevant micro-system, exo-system and macro-system factors related to the individual behavior (e.g., adolescent condom use) such couple sexual communication skills, couple sexual decision making, cultural values, parent-adolescent communication and belief system.

### 3.5.2. Female condom use

Female condom use was satisfactorily incorporated in the activity "Using the condom" during Session 5. Information on this method of protection and how to use it was provided. More specific information on female condom use was provided in the Sexual Health Quiz in Session 2 (e.g., a new question was: "Is the female condom as effective as the male to prevent unplanned pregnancies and sexually transmitted infections?"). The facilitator brought female condoms to show students and demonstrate proper use. Knowledge of female condom use — along with motivation to use it to prevent STIs and unplanned pregnancies and behavioral skills on how to use this method of protection— are determinants of the female condom use behavior, according to the postulates of the IMB model (Barrera et al., 2013).

### 3.5.3. Information about resources on reproductive health (including STI testing and treatment)

Health service providers from local AIDS agencies from Bogotá and Barranquilla provided information on the structural functioning and services available for adolescents. The activity "Commitment to my sexual health" (Session 5), incorporated information on sexual health resources available for adolescents. Participants were informed about location of and contact information for health centers for HIV and STI testing (e.g., Profamilia or Liga colombiana de Lucha contra el SIDA). General guidelines on how to proceed in the event of a positive STI test result were also provided. Facilitators who taught the program in the Colombian secondary schools were selected to reflect the characteristics of the participants as closely as possible, including age, origins, interests, and experiences.

The use of reproductive health services is related to at least three interlinked but different domains: self-efficacy to use these services, autonomy in decision-making, and reaction. Based on the SCT (Bandura, 1994), the behavior is related to the knowledge and ability of the individual to act on something; autonomy is produced from the collective influence of motivation, desire and confidence to take action, and reaction results from the other two dimensions.

### 3.5.4. Condom use barriers

Colombian adolescent and young adult condom use barriers were addressed in the activity "Advantages and disadvantages of condoms" (Session 3) of COMPAS. Through this activity, barriers to condom use were discussed and responses to a partner's refusal to use condoms were planned. For example, participants were encouraged to plan a response to the question "Do you mean that I should put on a condom? You told me you were taking the pill ... Do not you trust me or what?"

Culturally-appropriate stories of adolescents were included to train adolescents to identify risky behavior or deal with possible barriers in Session 1 (e.g., the main character decides not using condoms because he trusts on her girlfriend; the habit of not using condoms). Participants were trained in healthy sexual behavior skills (e.g., correct condom use training and negotiation with the sexual partner) using typical situations for Colombian adolescents (e.g., a couple alone at home after a party; a proposal to have sex under the influence of the alcohol). Additionally, sexual health information related to lesbian, gay, bisexual and transgender (LGBT) youth in Colombia and explicit abilities and coping skills for LGBT youth were addressed. We also included gender neutral terminology throughout the four sessions. Facilitators were also instructed to include same-sex dynamics in particular activities. These modifications addressed relevant ontogenic (e.g., knowledge, self-efficacy, personal attitudes and beliefs), micro-system factors (e.g., couple sexual communication skills or couple sexual decision making); exo-system (e.g., relationship with the sexual partner) and macro-system factors related (e.g., familism, cultural values and belief system) to promoting condom use in adolescents, as postulates the ecological framework.

### 3.5.5. Values, vocabulary and expressions culturally appropriated

As suggested, specific vocabulary and expressions more appropriate to the Colombian context were used. Some examples are: “Escenificaciones” was replaced by “dramatizaciones”, “estrecha” was replaced by “santurrón”. Specific examples of changes in expressions on sexuality are: “tener una erección” was replaced by “pararse”, and “correrse” was replaced by “venirse”. One of the most relevant modifications was the use of formal address: “usted” (you “formal”) in the Colombian version, compared to the original version that uses “tú” (you “informal”). The reciprocal use of “usted” in Colombia indicates distance and respect between the interlocutors (Alonso-Cortés, 1999).

Other suggestions related to specific vocabulary and expressions were also incorporated. Latino cultural values (*machismo*, *value of virginity*, etc.) and issues related to gender roles, identified during the discussion of the program, were included in games and practical cases modified to train participants to identify sexual risk and gain relevant communication skills (e.g., condom use negotiation, sex refusal skills, how to identify an unhealthy relationship). In the activity “Healthy - Unhealthy sexuality” (Session 1) new sentences were incorporated to be discussed. For example, “I am going to have sex because my friends say I’m not man because I have not had sex” and “I am not going to have sex because people will get a bad opinion of me for not waiting until marriage”.

### 3.6. Feasibility of the colombian version of COMPAS: perceived satisfaction and utility

Quantitative analyses showed that perceived utility ( $M = 9.28$ ;  $SD = 1.06$ ; range: 0–10) was slightly higher than satisfaction with the program ( $M = 9.05$ ;  $SD = 1.42$ ; range: 0–10) (Table 1), but both were very high. Sessions were aimed at increasing knowledge of STIs transmission, understanding sexual health and unhealthy sexual behaviors, resolving scenarios of sexual risk (Session 1), modifying false beliefs through a collaborative game (Session 2), learning a problem-solving technique to solve sexual risk situations and assessing short- and long-term consequences to make responsible decisions about sex (Session 3), training participants to negotiate safe sex with sexual partners and to resist pressure to engage in risky behaviors (Session 4), increasing awareness of vulnerability to sexual infections and pregnancies, using condoms, committing to sexual health (Session 5). These goals were perceived as highly appropriate and useful for adolescents and young adults in Colombia. The program’s contents, methodology, language, and duration were positively evaluated with scores very close to 10 (high appropriateness) (Table 1). All participants appreciated the value/utility of the program and indicated that the implementation of the Colombian version of COMPAS was feasible in the Colombian context.

Regarding COMPAS’ contents, Juanita commented:

*What I like (about COMPAS) is that it doesn't only focus on HIV, but also other sexually transmitted infections, such as chlamydia and gonorrhoea. That's interesting because I was only told at school about AIDS and that's all (Juanita, Bogotá).*

Regarding the utility of this intervention, Pedro mentioned:

*COMPAS is very good for the youth nowadays. It is necessary to know about all these issues. Many people do not know about this or they just do not control it. That's why there are many young girls who are pregnant or youth with sexually transmitted diseases. Then, the program looks good so they get to know more about this (sexual health) (Pedro, Barranquilla).*

Joseph extended this:

*This is a very interesting project because it can save, save lives, save lives because there are people, who do not know what they are doing when they are (having sex) with a person, they do it for pleasure but they do*

**Table 1**

Satisfaction and perceived utility of the program and each activity.

Session	Perceived satisfaction	Perceived utility
	<i>M (SD)</i>	<i>M (SD)</i>
<b>Sexuality and Health</b>		
Welcome and presentation style	8.51 (1.54)	8.89 (1.25)
Healthy - Unhealthy sexuality	8.93 (1.39)	9.09 (1.41)
How STIs are transmitted	8.94 (1.18)	9.27 (0.98)
More risk/less risk	9.19 (1.04)	9.28 (0.91)
Total	9.03 (1.48)	9.35 (0.94)
<b>Understanding Sexual Risks</b>		
Trivia on sexual health	9.15 (1.64)	9.48 (0.91)
Total	9.16 (1.71)	9.55 (0.82)
<b>Making Decisions</b>		
Advantages and disadvantages of condoms	9.06 (1.14)	9.13 (1.11)
Solving cases	8.71 (1.43)	9.01 (1.21)
Total	8.92 (1.19)	9.08 (1.17)
<b>Improving your Communication about Sex</b>		
Scenarios	9.06 (1.52)	9.14 (1.30)
Total	8.94 (1.76)	9.15 (1.48)
<b>Reinforcing your Decisions</b>		
Using the condom	9.20 (1.31)	1. (1.02)
Self-instructions to be more confident	8.72 (1.31)	8.97 (1.23)
Vulnerability to sexual infections and pregnancies	9.03 (1.27)	9.19 (1.23)
Commitment to my sexual health	9.21 (1.00)	9.38 (0.95)
Final evaluation	8.90 (1.50)	9.20 (0.99)
Total	9.18 (0.96)	9.31 (0.93)
<b>Total program</b>		
Contents	9.29 (1.07)	
Methodology	9.18 (1.25)	
Language	9.03 (1.04)	
Duration	8.43 (1.53)	

Note: Scores range from 0 (low satisfaction and low perceived utility) to 10 (high satisfaction and high utility).

*not have knowledge about what is going on and the consequences (Joseph, Barranquilla).*

## 4. Discussion

To the best of our knowledge, this study is one of the first to document the sexual health needs of Colombian adolescents and young adults and to describe the adaptation process of an evidence- and school-based intervention for use by teachers and practitioners to promote sexual health among Colombian adolescents and young adults. The adaptation and implementation of proven sexual-risk reduction interventions are considered key components in the fight against the HIV/AIDS epidemic (Robinson et al., 2012).

According to the process evaluation (perceived satisfaction and utility) in the current study and the efficacy of this intervention in a Spanish-speaking context, the Colombian version of COMPAS may be a promising program with the potential to fill a gap in prevention of sexual risk behaviors and early detection of STIs in the country. However, an outcome evaluation is required to analyze its effects on the main variables in the short- and long-term. A large-scale dissemination of the program should consider the political, educational, and socio-cultural context in Colombia. For example, sexual health education is still limited in Colombia and other Latin American countries (DeMaria et al., 2009). A strong policy in support of comprehensive sexuality education (CSE) and a socio-cultural environment that facilitates

implementation is necessary for the successful dissemination of sexual education in secondary schools (DeMaria et al., 2009; Panchaud et al., 2018). Important to note is that only three countries in the region (Argentina, Brazil, and Costa Rica) have a broad policy for the development and implementation of such programs (DeMaria et al., 2009). The influence of the Catholic Church and conservative groups in Peru, Guatemala, and Colombia have opposed the implementation of CSE in schools (Chandra-Mouli et al., 2018; Panchaud et al., 2018).

Other factors to consider when disseminating CSE at secondary schools include the capacity of teachers to implement the curriculum and integration of a CSE into the school curriculum. Although COMPAS is usually applied by psychologists specialized in sexuality, it may be more cost-effective to train teachers to facilitate intervention content. In addition, the geopolitics of countries in the region should also be considered prior to implementation and uptake of CSE programs like COMPAS. Some countries in the region have been more inclusive of CSE. For example, the Ministry of Education of Mexico improved sexual education by promoting evidence-based CSE, including biological, psychological, socio-cultural, economic, and political aspects of sexuality related to dignity and human rights (Chandra-Mouli et al., 2018).

In the current study, adolescents participating in the cultural adaptation were committed to contributing to this school-based intervention to promote healthy sexuality. For example, COMPAS for Colombian youth includes elements that shared by effective sexual risk reduction interventions, including: a) tailoring it to the culture and specific characteristics of the targeted population; b) lasting multiple sessions; c) basing the curriculum on solid theoretical frameworks; c) reducing sexual risk through increasing knowledge, promoting safe sex attitudes, condom use intention, sexual communication skills; and d) providing guidance on how to utilize available, culturally and linguistically appropriate sexual health services (Fonner et al., 2014; Villarruel et al., 2005). Process outcomes indicate that the COMPAS program is feasible and acceptable for Colombian youth. The adaptation process was carried out in the central and coast areas of the country. Although the current version of the program comprises specific characteristics of Colombian adolescents, the intervention could be considered for use in other countries in the region. In order to ensure the fidelity of implementation; we recommend that the intervention be adapted to other areas of the region in which participants are not similar to those in the central and coast areas of Colombia.

Colombian youth's cultural values, needs, and experiences were assessed during the adaptation sessions and were added to the main elements of the original version. Participants highlighted unique factors that may affect health outcomes in this population and consequently influenced the program's efficacy. Beliefs and attitudes about Latino values were similar to findings from previous work with Puerto-Rican adolescents living in the United States (Villarruel et al., 2005). Cultural aspects related to the importance of *virginity* and the influence of *machismo* on sexual behavior, the effects of trusting in the sexual partner, the difficulty of changing the habit of having sex without condom, and the relevance of involving parents in sexual health promotion were identified in the participant's comments. In light of the feedback provided from Colombian youth, the revised version included parent participation, peer facilitators, female condom instruction, and guidance on available, culturally and linguistically appropriate services for STI testing and what to do in the event of positive test results. The inclusion of images of STIs through new technologies and videos to introduce practical cases for training in communication skills and sexual risk assessment were not included. Lack of resources and internet connection problems at Colombian high schools, informed by stakeholders, students and the only previous study that evaluated a school-based sexual health intervention in Colombia (Chong et al., 2013) justified excluding this change from the current study. The scarce resources available to schools and researchers to implement health promotion interventions can be decisive in their efficacy.

#### 4.1. Limitations

The present findings should be considered in light of some limitations. In this article, we describe the adaptation of the COMPAS intervention. The fact that educational stakeholders were committed to the reduction of high-risk sexual behaviors in adolescents may have influenced the team's discussions on beliefs, behaviors, and specific intervention content. The most important limitation of the evaluation is that the assessment was only focused on self-perceived satisfaction and utility. The perceived satisfaction and utility are proxy indicators for output, an efficacy trial of the adapted intervention is warranted in future studies. Based on previous studies on COMPAS and results of the treatment adaptation process, the effects of this version of the intervention seem promising, though results from our cluster-randomized controlled trial are still pending. This study was conducted in urban areas; future studies should consider including samples from rural settings.

#### 5. Conclusions

This study offers an approach to adapt an effective school-based sexual health promotion program to a different culture based on extensive previous work and efforts in engaging Colombian youth and community members. This project is the first that describes the cultural adaptation of an evidence and school-based intervention from Spain for young Latinos and provides preliminary data on feasibility and acceptability of the COMPAS program in Colombia. Although the countries of Colombia and Spain share a common language, results from this study confirm that adolescents' cultural values, needs, and interests can vary between countries. As it was described in previous studies (Martinez et al., 2017; Villarruel et al., 2005), we made an effort to address Latino cultural values (e.g., *machismo* and *value of virginity*) since they may have a relevant impact on the appropriateness and efficacy of the intervention. Participants highlighted the need for health promotion interventions. This adaptation was conducted with a collaborative approach that involved research teams from Colombia, Spain, and United States. This article describes a systematic cultural adaptation process that may serve as a helpful guide for researchers and community stakeholders in other low-resource settings for the promotion of health wellness, linkage to care, and prevention for youth. There is a need scale up CSE programs in Colombia. These programs should go beyond HIV and STI risk and include CSE.

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#### Appendix A. Supplementary data

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#### References

- Alonso-Cortés, Á., 1999. Las construcciones exclamativas, la interjección y las expresiones vocativas [The exclamatory constructions, interjection and vocative expressions]. In: Bosque-Muñoz, I., Demonte-Barreto, V. (Eds.), *Gramática descriptiva de la lengua*



- española [Descriptive Grammar of the Spanish language]. Espasa, Madrid, pp. 3993–4050.
- Avellaneda, C.N., Dávalos, E., 2017. Identifying the macro-level drivers of adolescent fertility rate in Latin America: The role of school-based sexuality education. *Am. J. Sex. Educ.* 12, 358–382. <https://doi.org/10.1080/15546128.2017.1372830>.
- Bandura, A., 1994. Social cognitive theory and exercise of control over HIV infection. In: DiClemente, R.J., Peterson, J.L. (Eds.), *Preventing AIDS: Theories and methods of behavioral interventions*. Plenum, New York, pp. 25–59.
- Barrera, M., Castro, F.G., Strycker, L.A., Toobert, D.J., 2013. Cultural adaptations of behavioral health interventions: A progress report. *J. Consult. Clin. Psychol.* 81, 196–205. <https://doi.org/10.1037/a0027085>.
- Boddy, C., 2012. The nominal group technique: An aid to brainstorming ideas in research. *Qualitative Market Res* 15, 6–18.
- Bronfenbrenner, U., 1979. *The ecology of human development*. University Press, Cambridge.
- Chandra-Mouli, V., Gomez Garbero, L., Plesons, M., Lang, I., Corona Vargas, E., 2018. Evolution and resistance to sexuality education in Mexico. *Glob Health Sci Pract* 6, 137–149. <https://doi.org/10.9745/GHSP-D-17-00284>.
- Chong, A., Gonzalez-Navarro, M., Karlan, D., Valdivia, M., 2013. Effectiveness and Spillovers of Online Sex Education: Evidence from a Randomized Evaluation in Colombian Public Schools. <https://pdfs.semanticscholar.org/20bf/631fa7f858b7ce71e8f4fae731c02f7b8165.pdf>, Accessed date: 1 April 2018.
- Cohen, J., 1988. *Statistical power analysis for the behavioral sciences*. Routledge, New York.
- Dare, A.A., Omolade, D.G., Samuel, A.E., Folashade, W., Adaku, O.G., 2016. Psychosocial effects of pregnancy on teenage mothers in Angwan Rukuba community, Jos, Plateau State, Nigeria. *Afr. J. Midwifery Women's Health* 10, 72–77.
- DeMaria, L.M., Galarraga, O., Campero, L., Walker, D.M., 2009. Educación sobre sexualidad y prevención del VIH: un diagnóstico para América Latina y el Caribe. [Education on sexuality and HIV prevention: A diagnosis for Latin America and the Caribbean]. *Rev. Panam. Salud Pública* 26, 485–493.
- Ensign, J., 2000. Reproductive health of homeless adolescent women in Seattle, Washington, USA. *Women Health* 31, 133–151. [https://doi.org/10.1300/J013v31n02\\_07](https://doi.org/10.1300/J013v31n02_07).
- Escribano, S., Espada, J.P., Morales, A., Orgilés, M., 2015. Mediation analysis of an effective sexual health promotion intervention for Spanish adolescents. *AIDS Behav.* 19, 1850–1859. <https://doi.org/10.1007/s10461-015-1163-2>.
- Escribano, S., Espada, J.P., Orgilés, M., Morales, A., 2016. Implementation fidelity for promoting the effectiveness of an adolescent sexual health program. *Eval. Program Plann.* 59, 81–87. <https://doi.org/10.1016/j.evalprogplan.2016.08.008>.
- Espada, J.P., Morales, A., Orgilés, M., Jemmott, J.B., Jemmott, L.S., 2015. Short-term evaluation of a skills-development sexual education program for Spanish adolescents compared with a well-established program. *J. Adolesc. Health* 56, 30–37. <https://doi.org/10.1016/j.jadohealth.2014.08.018>.
- Espada, J.P., Orgilés, M., Morales, A., Ballester, R., Huedo-Medina, T.B., 2012. Effectiveness of a school HIV/AIDS prevention program for Spanish adolescents. *AIDS Educ. Prev.* 24, 500–513. <https://doi.org/10.1521/aeap.2012.24.6.500>.
- Espada, J.P., Escribano, S., Morales, A., Orgilés, M., 2016a. Two-year follow-up of a sexual health promotion program for Spanish adolescents. *Eval. Health Prof.* 40, 483–504. <https://doi.org/10.1177/0163278716652217>.
- Espada, J.P., Morales, A., Guillén-Riquelme, A., Ballester, R., Orgilés, M., 2016b. Predicting condom use in adolescents: A test of three socio-cognitive models using a structural equation modeling approach. *BMC Public Health* 35. <https://doi.org/10.1186/s12889-016-2702-0>.
- Espada, J.P., Morales, A., Orgilés, M., Méndez, F.X., 2018. Programa COMPAS. Competencias para adolescentes con una sexualidad saludable [COMPAS Program. Competences for teenagers with a healthy sexuality]. Pirámide, Madrid.
- Fisher, J.D., Fisher, W.A., Misovich, S.J., Kimble, D.L., Malloy, T.E., 1996. Changing AIDS risk behavior: Effects of an intervention emphasizing AIDS risk reduction information, motivation, and behavioral skills in a college student population. *Health Psychol.* 15, 114. <https://doi.org/10.1037/0278-6133.15.2.114>.
- Fondo Colombiano de Enfermedades de Alto Costo, 2016. Situación del VIH en Colombia 2015 [HIV situation in Colombia, 2015]. <https://cuentadealtocosto.org/site/images/Publicaciones/Situacion%CC%81n%20del%20VIH%20en%20Colombia%202015.pdf>, Accessed date: 1 April 2018.
- Fonner, V.A., Armstrong, K.S., Kennedy, C.E., O'Reilly, K.R., Sweat, M.D., 2014. School based sex education and HIV prevention in low-and middle-income countries: A systematic review and meta-analysis. *PLoS One* 9 (3), e89692. <https://doi.org/10.1371/journal.pone.0089692>.
- Johnson, B.T., Redding, C.A., DiClemente, R.J., Mustanski, B.S., Dodge, B., Sheeran, P., et al., 2010. A network-individual-resource model for HIV prevention. *AIDS Behav.* 14, 204–221. <https://doi.org/10.1007/s10461-010-9803-z>.
- Killion, C.M., 1998. Poverty and procreation among women: An anthropologic study with implications for health care providers. *J. Nurse Midwifery* 43, 273–279. [https://doi.org/10.1016/S0091-2182\(98\)00013-5](https://doi.org/10.1016/S0091-2182(98)00013-5).
- Kirby, D., 2001. Emerging answers: Research findings on programs to reduce teen pregnancy. <https://eric.ed.gov/?id=ED456171>, Accessed date: 30 April 2018.
- Kirby, D.B., Laris, B.A., Rollieri, L.A., 2007. Sex and HIV education programs: Their impact on sexual behaviors of young people throughout the world. *J. Adolesc. Health* 40, 206–217. <https://doi.org/10.1016/j.jadohealth.2006.11.143>.
- Martinez, O., Wu, E., Frasca, T., Shultz, A.Z., Fernandez, M.I., López Rios, J., et al., 2017. Adaptation of a couple-based HIV/STI prevention intervention for Latino men who have sex with men in New York city. *Am. J. Men's Health* 11, 181–195. <https://doi.org/10.1177/1557988315579195>.
- Ministerio de Salud y Protección Social, 2015. Encuesta nacional de demografía y salud, ENDS. <https://dhsprogram.com/pubs/pdf/FR334/FR334.pdf>, Accessed date: 30 April 2018.
- Morales, A., Carratalá, E., Orgilés, M., Espada, J.P., 2017. Un estudio preliminar de la eficacia de un programa de promoción de la salud sexual en adolescentes con padres divorciados [A preliminary study of the efficacy of a program to promote sexual health in adolescents with divorced parents]. *Salud y Drogas/Health and Addictions*. 17, 37–44.
- Morales, A., Espada, J.P., Orgilés, M., Escribano, S., Johnson, B.T., Lightfoot, M., 2018a. Interventions to reduce risk for sexually transmitted infections in adolescents: A meta-analysis of trials, 2008–2016. *PLoS One* 13, e0199421. <https://doi.org/10.1371/journal.pone.0199421>.
- Morales, A., Espada, J.P., Orgilés, M., Secades-Villa, R., Remor, E., 2014. The short-term impact of peers as co-facilitators of an HIV prevention programme for adolescents: A cluster randomised controlled trial. *Eur. J. Contracept. Reprod. Health Care* 19, 379–391. <https://doi.org/10.3109/13625187.2014.919445>.
- Morales, A., Espada, J.P., Orgilés, M., 2016. A 1-year follow-up evaluation of a sexual-health education program for Spanish adolescents compared with a well-established program. *Eur. J. Public Health* 26, 35–41. <https://doi.org/10.1093/eurpub/ckv074>.
- Morales, A., Vallejo-Medina, P., Abello-Luque, D., Saavedra-Roa, A., García-Roncillo, P., Gomez-Lugo, M., García-Montano, E., Marchal-Bertrand, L., Niebles-Charris, J., Pérez-Pedraza, D., Espada, J.P., 2018b. Sexual risk among Colombian adolescents: knowledge, attitudes, normative beliefs, perceived control, intention, and sexual behavior. *BMC Public Health* 18, 1377. <https://doi.org/10.1186/s12889-018-6311-y>.
- Panchaud, C., Keogh, S.C., Stillman, M., Awusabo-Asare, K., Motta, A., Sidze, E., et al., 2018. Towards comprehensive sexuality education: A comparative analysis of the policy environment surrounding school-based sexuality education in Ghana, Peru, Kenya and Guatemala. *Sex Education*, pp. 1–20. <https://hivhealthclearinghouse.unesco.org/library/documents/towards-comprehensive-sexuality-education-comparative-analysis-policy-environment>, Accessed date: 25 November 2018.
- Plataforma Regional para América Latina y el Caribe, 2017. Cuáles son los países de América Latina con más casos nuevos de VIH/sida. [What are the countries in Latin America with the most new HIV/AIDS cases?]. <https://plataformalac.org/2016/08/cuales-son-los-paises-de-america-latina-con-mas-casos-nuevos-de-vihsida/>, Accessed date: 24 April 2018.
- Robinson, B.E., Galbraith, J.S., Lund, S.M., Hamilton, A.R., Shankle, M.D., 2012. The process of adaptation of a community-level, evidence-based intervention for HIV-positive African American men who have sex with men in two cities. *AIDS Educ. Prev.* 24, 206–227. <https://doi.org/10.1521/aeap.2012.24.3.206>.
- Smith, L., 1995. Teenage mother's narratives of self: An examination of risking the future. *ANS Adv Nurs Sci* 17, 22–36.
- Taylor, M., Alonso-Giménez, M., Gómez, B., Korenromp, E., Broutet, N., 2017. World health organization global health sector strategy on sexually transmitted infections: An evidence-to-action summary for Colombia. *Rev Colomb Obstet Ginecol* 68. <https://doi.org/10.18597/rcog.3071>.
- UNAIDS, 2018. The global HIV/AIDS epidemic. <http://files.kff.org/attachment/Fact-Sheet-The-Global-HIV-AIDS-Epidemic>, Accessed date: 30 April 2018.
- Villarruel, A.M., Jemmott, L.S., Jemmott, J.B., 2005. Designing a culturally based intervention to reduce HIV sexual risk for Latino adolescents. *J. Assoc. Nurses AIDS Care* 16, 23–31. <https://doi.org/10.1016/j.jana.2005.01.001>.
- Viruell-Fuentes, E.A., Morenoff, J.D., Williams, D.R., House, J.S., 2011. Language of interview, self-rated health, and the other Latino health puzzle. *Am. J. Public Health* 101, 1306–1313. <https://doi.org/10.2105/AJPH.2009.175455>.
- Wingood, G.M., DiClemente, R.J., 2008. The ADAPT-ITT model: A novel method of adapting evidence-based HIV interventions. *J. Acquir. Immune Defic. Syndr.* 47, S40–S46. <https://doi.org/10.1097/QAI.0b013e3181605df1>.