

EVALUACIÓN DE UN PROGRAMA DE INTERVENCIÓN PARA PROMOVER LA SALUD SEXUAL EN ADOLESCENTES MEXICANOS EN CONFLICTO CON LA LEY

Ricardo Sánchez Medina*, David Javier Enríquez Negrete y Silvia Susana Robles Montijo
Facultad de Estudios Superiores Iztacala, Universidad Nacional Autónoma de México

Recibido, septiembre 3/2015
Concepto evaluación, mayo 17/2016
Aceptado, junio 8/2016

Referencia: Sánchez Medina, R., Enríquez Negrete, D.J. & Robles Montijo, S. S. (2016). Evaluación de un programa de intervención para promover la salud sexual en adolescentes mexicanos en conflicto con la ley. *Acta Colombiana de Psicología*, 19(2), 269-280. DOI: 10.14718/ACP.2016.19.2.11

Resumen

El propósito de la presente investigación fue evaluar la efectividad de un programa de intervención para promover la salud sexual de adolescentes que se encuentran en conflicto con la ley. Se trabajó con 118 adolescentes pertenecientes a una comunidad de diagnóstico. Se utilizó un diseño cuasiexperimental con un grupo de intervención y uno control, conformado por tres fases: preevaluación, intervención y postevaluación. La intervención consistió en cinco sesiones de dos horas cada una, y estuvo conformada por los elementos que responden al modelo ecológico en sus tres niveles: microsistema (conocimientos, creencias, actitudes, intención y autoeficacia para usar condón, autoestima, comunicación con pareja, estilos de negociación para usar condón, entre otras); mesosistema (apoyo, supervisión y comunicación con padre y madre, entre otras), y macrosistema (estereotipos de género). Se realizó un análisis de medidas repetidas. Los resultados mostraron cambios entre el grupo control y el experimental, a favor de este último en todas las variables del modelo, excepto en comunicación con la pareja y autoestima. Los hallazgos se discuten en términos de la importancia de diseñar programas con base en el modelo ecológico dirigidos a población que se encuentran en un ambiente privado de la libertad.

Palabras clave: modelo ecológico, adolescentes, uso de condón, intervención, VIH/SIDA.

EVALUATION OF AN INTERVENTION PROGRAM TO PROMOTE SEXUAL HEALTH AMONG MEXICAN ADOLESCENTS IN CONFLICT WITH THE LAW

Abstract

The purpose of this research was to evaluate the effectiveness of an intervention program to promote sexual health of adolescents in conflict with the law. The study was carried out with 118 adolescents belonging to a diagnosis community. A quasi-experimental design was used with an intervention group and one control group, consisting of three phases: pre-evaluation, intervention and post-evaluation. The intervention, which consisted of five sessions of two hours each one, comprised the elements that respond to the ecological model in its three levels: micro-system (knowledge, believes, attitudes, intentions and self-efficacy to use condoms, self-esteem, communication with partner, negotiating styles, etc.); meso-system (support, supervision and communication with parent, etc.) and macro-system (gender stereotypes). An analysis of repeated measures was performed. Results showed changes between control and experimental groups, in favor of the latter in all the variables of the model, except for partner communication and self-esteem. The findings are discussed in terms of the importance of designing programs based on the ecological model aimed at people who are deprived of freedom.

Key words: ecological model, adolescents, condom use, intervention, HIV/AIDS.

* Av. De los Barrios N° 1, Los Reyes Iztacala, Tlalnepantla, Edo. de México, México. Torre Académica, segundo piso, cubículo 14. Tel. +52 (55) 56231333 ext. 39855. E-mail: ricardo.sanchez@ired.unam.mx

AVALIAÇÃO DE UM PROGRAMA DE INTERVENÇÃO PARA PROMOVER A SAÚDE SEXUAL DE ADOLESCENTES MEXICANOS EM CONFLITO COM A LEI

Resumo

O propósito desta pesquisa foi avaliar a efetividade de um programa de intervenção para promover a saúde sexual de adolescentes que se encontram em conflito com a lei. Trabalhou-se com 118 adolescentes pertencentes a uma comunidade de diagnóstico. Foi utilizado um desenho quase-experimental com um grupo de intervenção e um de controle, conformado por três fases: pré-avaliação, intervenção e pós-avaliação. A intervenção consistiu em cinco sessões de duas horas cada uma e foi formada pelos elementos que respondem ao modelo ecológico em seus três níveis: microsistema (conhecimentos, crenças, atitudes, intenção e autoeficácia para usar preservativo, autoestima, comunicação com o parceiro, estilos de negociação para usar preservativo, entre outros); mesossistema (apoio, supervisão e comunicação com os pais, entre outros) e macrosistema (estereótipos de gênero). Foi realizada uma análise de medidas repetidas. Os resultados mostraram mudanças entre o grupo controle e o experimental a favor deste último em todas as variáveis do modelo, exceto em comunicação com o parceiro e autoestima. Os achados são discutidos quanto à importância de desenhar programas com base no modelo ecológico dirigidos à população que se encontra num ambiente privado de liberdade.

Palavras-chave: modelo ecológico, adolescentes, uso de preservativo, intervenção, HIV/Aids.

INTRODUCTION

International Institutions such as The Joint United Nations Program on HIV/AIDS (UNAIDS, 2016) have designed several programs to diminish the high incidence of people infected with the HIV virus. For the moment, around 36.9 million people have reported living with this virus. One of the most widely known prevention forms is proper condom use. Yet, while there is enough information about how and why it should be employed, people fail to use it during intercourse, a situation that increases the risk of contracting AIDS.

UNAIDS (2014) claims that social environment is related to certain kinds of behavior that foster the development of sexual health problems. Such a setting is, for instance, the prison environment. The Ministry for Social Protection in Colombia (2011) mentions that prisons in Latin America are locations highly vulnerable to an HIV infection, since the concentration of the virus in such sites can be more than twenty times higher than in the rest of the population. Additionally, convicts are more likely to use sharp weapons to hurt someone, discriminate and mistreat others, and exert sexual abuse, or other forms of physical or psychological violence. Teenagers, in these types of environment, typically present a greater frequency of exposure to risk factors such as: drug abuse, increase in criminal conduct, dissolution of family ties, and higher social dissatisfaction (Andrade, Barbosa & Lozada, 2012; Sanabria & Uribe, 2010).

According to UNAIDS (2009), the prevention treatment and attention programs directed toward HIV are not developed enough to handle the issue of HIV in prisons. In these places, the specific needs of every gender are not attended. The fact that the sexual behavior of convicts can affect

others (their families, sexual partners and the communities where they live) is not taken into consideration. For such a reason, it has been suggested that interventions have to be centered in giving information about the true ways in which HIV is transmitted and the ways to prevent it by clarifying the myths of HIV transmission, promoting condom use among participants, and reducing the damage between users of injection drugs (Senteio, Wright, Jackson, Welk & Zhang, 2010; Thurman, Kidman, Carton & Chiroro, 2016).

Even though there are suggested guidelines on what variables to intervene upon, working in the prevention of HIV/AIDS is a very complex job because of the great number of factors involved (DiClemente, Salazar & Crosby, 2007). For example, some programs consider it necessary to provide information and modify certain psychosocial aspects such as beliefs, intentions and attitudes among others (Operario, Smith, Arnold & Kegeles, 2010). Nevertheless, these actions are not sufficient by themselves, since even if changes are seen in these variables, they are not necessarily linked to sexual behavior, as it happens with condom use. In this sense, promoting behavioral skills to develop a safe sexual behavior is crucial (Zimmerman et al., 2008). It is also necessary to consider that people live in a specific social context; in this sense it is not only required of them to acquire a certain background, but also to be conscious of their immediate context to analyze what kind of support it is possible to receive from their social milieu, so they can be able to foresee what might happen as consequence for their actions.

On that basis, the ecological model of Bronfenbrenner (1987) is a proposal that serves to analyze the subject in relation to the different contexts he is immersed in. From this model, in the microsystem or micro-level, variables

like knowledge, attitudes, intentions and self-effectiveness are contemplated among others. The next level is the mesosystem, which comprises support and supervision by the family, as well as the peer group subjective standard. The macro-level (macrosystem) is configured by the socio-economic, ideological, and cultural factors where the person is brought up, such as gender stereotypes (DiClemente, Salazar & Crosby, 2007).

The research that stems from the ecological model is generally of a theoretical nature and discusses the importance of intervening to produce changes in all the variables of the model (Trickett, 2009). Among the few empirical studies carried out under this model, only two pairs of levels are used therein: either micro-system and meso-system, or micro-system and macro-system. For instance, in Pinto and McKay's research (2006), only the abilities of teenagers and their relation to parent supervision and communication are taken into account, but the three levels altogether are not dealt with. On the other hand, even if elements of consideration are given in the intervention programs, they are not put into practice. In this sense, a need to generate intervention programs is produced, considering each variable in every different system to evaluate their effectiveness. Taking into account the ecological model, the purpose of this study is to evaluate the effects of an intervention program on different factors defined in the micro, meso and macro systems for a sample of teenagers in conflict with the law.

The research was done in one of the six Communities of Special Attention for Adolescents that depend on the General Department for Treatment of Adolescents (DGTPA in Spanish) of the Undersecretary of Penitentiary System of Mexico City's government (DGTPA, 2013).

METHOD

Design

A pretest-posttest design with a control group and an experimental group was arranged (Kerlinger & Lee, 2002). The study was performed in three phases: pre-evaluation, intervention and post-evaluation. Both groups were evaluated before and after the intervention. Only the experimental group took the intervention program, while the control group received the training of adequate condom use and information on the prevention of HIV/AIDS once the evaluations were finished.

Participants

The study was carried out with 118 men belonging to a diagnostic community in Mexico City. Such a community was comprised by eight dormitories, which in average had

about 25 to 35 adolescents per dorm. The survey used a cluster sampling procedure (Kerlinger & Lee, 2002) where four dorms were randomly selected; two were assigned randomly to the control group (n=50) and two to the experimental group (n=68). With the purpose of finding out whether the two groups were heterogeneous in terms of their socio-demographic traits, an analysis of differences within groups was performed and no significant differences were found. On average, the adolescents were around 16 years old. Most of them had studied elementary and secondary school, lived with their parents, and earned less than 4,000 Mexican pesos a month. The crime that led most of them to prison was theft.

Variables

Dependent variables: According to Bronfenbrenner's ecological model (1987) and the proposal applied to HIV/AIDS by DiClemente, Salazar and Crosby (2007) microsystem variables were: a) knowledge about HIV/AIDS-STI-condom use, b) beliefs and attitudes toward condom use, c) intention and self-efficacy to use condoms during sex, d) self-efficacy to use condoms when being at high risk situations, e) self-esteem, f) communication about sexual issues with their partner, g) communication styles to negotiate condom use, h) self-efficacy to initiate a conversation about sexual issues with father, mother and partner and to avoid risky behaviors, i) ability to use a condom in simulated situations, and j) ability to negotiate condom use. Meso-system variables were: paternal and maternal support, paternal and maternal supervision, sexual communication with parents, and subjective norms of the peer group. Macro-variables were gender stereotypes.

Independent variable: The implementation of an intervention program was conformed by the following elements that respond to the ecological model: *Microsystem:* a) Information, analysis and discussion on prevention, transmission and symptoms of HIV/AIDS, STDs and prevention of unintended pregnancies, b) Advantages and disadvantages of condom use during sexual intercourse, c) Effective communication and its importance in the relationship, d) Role of self-esteem in a healthy relationship, e) Analysis and group discussion concerning risky sexual behaviors and situations where they can be presented, emphasizing the role drug or alcohol use play in the development of preventive sexual conducts. *Meso-system:* a) Analysis and group discussion on parental supervision and family support concerning their offspring's sexual behavior, b) Advantages and disadvantages of peer pressure on sexual behavior. *Macrosystem:* a) Analysis and discussion of the differences among men and women in the sexual field,

b) Analysis and discussion of family beliefs on sexuality and on myths about homosexuality.

Instruments

Scale of Sexual Health by Robles and Díaz-Loving (2011) which is composed of various assessment tools to assess variables that belong to the microsystem, for the variables of meso and macro used additional instruments that have sought good psychometric properties.

Sociodemographic data

Six multiple-choice questions were designed to obtain information from the participants regarding: age (years old), marital status (married, single, cohabitation), level of studies (none, elementary school, middle school, high school, university, graduate study, technical career, etc.), who they lived with at the moment they were arrested (with their mother, father, both parents, or someone else), family income (less than \$2,000, from \$2,001 to \$3,999; from \$4,000 to \$5,999, from \$6,000 to \$9,999; more than \$10,000, or *I don't know*), and information on juridical data referring to the crime they were accused for (theft, extortion, injuries, homicide, illegal deprivation of liberty, organized crime).

Test of information on HIV/AIDS-STDs-condom use.

Twelve items related to knowledge about HIV/AIDS, prevention, transmission, symptoms, and STD features were designed, as well as 6 multiple choice questions related to knowledge on adequate condom use. (Robles & Díaz-Loving, 2011). The questions had a response format of true, false, and I don't know. The test had a difficulty index of 0.52, which it was obtained from dividing the number of participants who responded incorrectly, among the total of participants who responded to the reagent.

Scale of beliefs toward condom use. 12 multiple-choice items evaluated beliefs regarding condom use with a regular sexual partner (Robles & Díaz-Loving, 2011), from 1 in a Likert scale (strong disagreement), to 5 (full agreement). Four questions were oriented to negative beliefs, and 8 questions to self-assessed beliefs. Internal consistency resulted in $\alpha=0.84$.

Scale of attitudes toward condom use. 5 multiple-choice items with a concrete answer were defined on a semantic differential scale ranging from 1 to 7 ($\alpha=.87$), from Robles and Díaz-Loving (2011).

Intention to use a condom during sexual intercourse.

A multiple-choice question evaluated the likelihood of condom use in their next sexual encounter with a stable

partner on a scale of 7 points (1=not at all likely to 7=very likely).

Self-efficacy to use a condom during sexual intercourse.

A multiple-choice option on a scale from 1 to 7 evaluated "how sure are you of being able to use a condom every time you have vaginal sex with your stable partner?", where 1 meant very sure of not being able to use it, and 7 very sure of being able to use it.

Self-efficacy scale when using a condom in risky situations.

A multiple-choice option that evaluated how sure the couple was in using a condom whenever having vaginal sex in seven risky situations (Robles & Díaz-Loving, 2011) with answer options on a scale from 1 to 7, where 1 is very sure of not being able to use it, and 7 is very sure of not being able to use it. The internal consistency was of $\alpha=0.78$.

Self-esteem scale.

10 multiple-choice questions were used to evaluate the degree of self-esteem (Díaz, 2010), which had an answer format very similar to the answers on the Likert scale with values from 1 (strong agreement) to 4 (strong disagreement). The scale's internal consistency was $\alpha=0.72$.

Scale evaluating communication with the couple regarding sexual topics.

10 multiple-choice questions measured the frequency of communication with their partner regarding sexual topics (Robles & Díaz-Loving, 2011). The answer options had values ranging from 1 (never) to 5 (always). The scale's internal consistency was $\alpha=0.94$.

Inventory of negotiation styles regarding condom use.

15 multiple-choice questions measured the styles of collaboration and equity (Robles & Díaz-Loving, 2011) that participants use when negotiating condom usage with their partners. The answer options had the format of the Likert scale, with values expressing 1 (strong disagreement) to 5 (full agreement). Internal consistency was of $\alpha=0.85$.

Self-efficacy to start a conversation on sexual topics with father, mother, and sexual partner.

Three multiple-choice questions were designed to evaluate the ability of teenagers to start a conversation with their father, mother, and sexual partner. Each question had the answer format of the Likert scale, ranging from values of 1 (quite sure of not being able to do it) to 7 (very sure of being able to do it).

Scale of self-efficacy to avoid risky behavior. The scale by Gaxiola, González and Contreras (2011) was taken up again, and the question regarding to *what the friends of the teenagers did* was adapted to ask: “How sure were they of being able to behave in the opposite way to their friends when these were either stealing or damaging public spots?. The answer format had a seven point scale, with values from 1 (I am absolutely sure that I can't) to 7 (I am absolutely sure that I can).

Ability demonstrated by adolescents to use a condom in simulated situations.

This variable refers to the way in which a condom is placed and withdrawn in a simulation penis. Through direct observation, every participant registered the 8 necessary steps to place and withdraw the condom in a simulation penis, following the procedure used by Robles, Rodríguez, Frías and Moreno (2014).

Direct observation of the ability to negotiate condom use.

The ability was evaluated based on the proposal of Tulloch, McCaul, Miltenberger and Smyth (2004). A previously trained evaluator rated the strategies (arguments) of each participant to negotiate the condom use with their partners, assigning a maximum of four points in the following scale: 1= appropriate/ineffective, 2= mentions the use of the condom but does not provide any arguments for its use, 3= gives arguments to use the condom but does not answer back to the arguments that the partner provides for not using the condom, and gives arguments of why it should be used. For the evaluation, a role-play game was carried out where the adolescent had to negotiate condom use with a confederate.

Scale of paternal and maternal support.

8 multiple-choice questions evaluated the perception of the children of the support they received from their father and mother in a three-month period (Sánchez, Enríquez & Reyes-Lagunes, 2011). The questions had a Likert answer format, with values ranging from 1 (nothing) to 5 (a lot). Internal consistency for paternal support was $\alpha = 0.98$, and $\alpha = 0.97$ for maternal support.

Scale of paternal and maternal supervision.

10 multiple-choice questions evaluated the perception of the participants based on the supervision received by their father and mother in a three month period (Sánchez, Enríquez & Reyes Lagunes, 2011). The questions had a Likert answer format with values ranging from 1 (nothing) to 5 (a lot). Internal consistency for parental supervision was of $\alpha = 0.92$, and of $\alpha = 0.95$ for maternal supervision.

Scale of sexual communication between parents and sons.

10 multiple-choice questions measured the frequency of communication between teenagers and their father ($\alpha = 0.96$), and mother ($\alpha = 0.98$) regarding sexual subjects (Robles & Díaz-Loving, 2011). The answer options had values from 1 (never) to 5 (always).

Subjective norm in the peer group.

A multiple-choice question measured what the teenagers thought of what their friends say about using a condom with a regular partner. The answer options had values ranging from 1 (my friends think I shouldn't use it) to 7 (my friends think I should use it).

Scale of gender stereotypes.

13 multiple-choice questions measured the stereotyped vision that adolescents have about men and women in the interpersonal field and in the social context (Rocha & Díaz Loving, 2005). The answer options were defined on a scale of five points that evaluated the degree of consent expressed in each affirmation. A consistency of $\alpha = 0.89$ was obtained.

Procedure

Parents were asked to sign an informed consent prior to any evaluation being done. Those who accepted the participation of their sons gave their informed consent, which stressed the importance on the confidentiality of the information and on the fact that the institution would have no access to individual information. The instrumentation of the intervention program took place in a public room located in the area of the family visits. In this space, chairs were placed forming a circle and there were three tables for teamwork. A week before starting the program, the former set of instruments was applied. During the application, each participant was evaluated separately through the ability he displayed for placing the condom adequately on a simulation penis and through the ability he demonstrated to negotiate condom use with their partner in a role-play situation. Afterwards, the experimental group received the intervention program that consisted of five two hour week sessions (one per week). The program consisted of the following activities: Session 1. An activity based on how HIV/AIDS is transmitted and an activity on the advantages and disadvantages of condom use in sexual intercourse. Session 2. Discussion on diverse problematic situations where implications of each situation were debated such as condom use; an activity of myths about homosexuality was carried out, and about what it means to be a man or a woman in the sexual field. Session 3. Discussion on the importance of the family in sexual behavior. The ability

to communicate about sexual topics with the parents was coached with the four techniques of behavioral change that constitute Structured Learning (modeling, role play, feedback and transference training). Session 4. Performance of an activity named “*Commercial*” in order to promote condom use and training the abilities of correct condom use with a simulation penis. Session 5. Training of abilities for negotiating condom use based on the learning techniques of structured learning.

Data analysis

The statistical package SPSS v.20 was employed for data analysis. Analysis of group differences was used to identify the homogeneity among them, using Chi-square for nominal variables and a *student “t”* test for in interval variables. To evaluate the effects of intervention in both groups, an analysis of repeated measures was employed. The main effects of the group were considered along with the effects of the type of treatment and the interaction between differentiated variables for each group.

RESULTS

The following results were divided by systems as a function of the proposal of the ecological model (Bronfen-

brenner, 1987). In each of them, differences are analyzed between groups in terms of the effects of the intervention.

Variables of the microsystem.

The results of the evaluation of knowledge about HIV/AIDS-STDs-condom use before and after the intervention are shown in table 1, where a comparison between the experimental group and the control group is shown in the knowledge test on HIV/AIDS-STDs-condom use.

Table 2 shows the comparison between the experimental group and the control group, and their effect upon the psychosocial variables related to condom use. The average output can also be seen here, as well as the standard deviation which is put in brackets. Significant differences are shown between the score achieved in the pre-evaluation and post-evaluation studies for each group: the experimental group shows a lower score of negative beliefs and a higher score in attitudes, intention and self-efficacy. On the other hand, the control group showed no significant differences. In regard to the safety and protection beliefs for condom use, the experimental group had a slightly higher score than the control group. Nevertheless, when analyzing the effect of the kind of treatment, no significant differences were shown in the measurement before and after the study; also, no interactions between these variables were measured.

Table 1.

Comparison between the experimental and control groups on the knowledge test about HIV/AIDS-STDs-condom use.

Variable	Control		Experimental		Group	Repeated measures ANOVA	
	Pre	Post	Pre	Post		Treatment	Interaction
Information on HIV/AIDS:							
Symptoms	570.33%	520.87%	640.71%	970.24%	F=280.8, p<0.001	F=70.79, p<0.01	F=120.43, p<0.01
Transmission	390.33%	350.63%	420.65%	940.44%	F=520.6, p<0.001	F=380.8, p<0.001	F=450.9, p<0.001
Prevention	440.67%	390.08%	500.00%	970.22%	F=550.6, p<0.001	F=190.6, p<0.001	F=290.0, p<0.001
STD	480.67%	350.63%	510.96%	970.22%	F=470.4, p<0.001	F=190.0, p<0.001	F=390.6, p<0.001
Total	470.50%	400.80%	520.33%	960.06%	F=880.1, p<0.001	F=300.5, p<0.001	F=460.7, p<0.001
Condom use	380.63%	350.63%	370.75%	930.98%	F=660.1, p<0.001	F=390.7, p<0.001	F=510.2, p<0.001

Table 2.

Comparison between the experimental and the control groups on the psychosocial variables regarding condom use with a stable partner.

Variable	Control		Experimental		Repeated measures ANOVA		
	Pre	Post	Pre	Post	Group	Treatment	Interaction
Self-assessed beliefs	3.66 (1.49)	3.34 (1.58)	4.18 (1.06)	4.75 (.77)	F=18.8, <i>p</i> <.001	F=3.91, <i>p</i> <.052	F=1.51, <i>p</i> =.223
Negative beliefs	3.70 (1.26)	3.34 (1.37)	3.22 (1.11)	2.81 (.62)	F=5.85, <i>p</i> <.05	F=9.99, <i>p</i> <.01	F=29.7, <i>p</i> <.001
Attitudes	3.34 (1.95)	3.52 (2.26)	3.58 (2.05)	6.64 (1.19)	F=24.7, <i>p</i> <.001	F=26.7, <i>p</i> <.001	F=20.3, <i>p</i> <.001
Intention to use a condom	3.76 (2.63)	3.55 (2.50)	4.29 (2.59)	6.36 (1.71)	F=16.8, <i>p</i> <.001	F=2.54, <i>p</i> <.116	F=6.32, <i>p</i> <.05
Self-efficacy to use a condom	3.52 (2.58)	3.24 (2.53)	4.32 (2.66)	6.78 (1.01)	F=23.1, <i>p</i> <.001	F=9.56, <i>p</i> <.005	F=16.0, <i>p</i> <.001
Self-efficacy to use a condom in risky situations	3.18 (2.11)	2.97 (2.17)	3.35 (2.19)	6.50 (1.54)	F=24.6, <i>p</i> <.001	F=27.3, <i>p</i> <.001	F=29.9, <i>p</i> <.001

Another variable that was calculated was self-esteem, which actually showed no significant differences ($F=.316, p=0.576$) with the group's main effects. There were no effects caused by the type of treatment either ($F=2.98, p=0.089$), nor any effects caused by the interaction ($F=.271, p=0.605$). In general, the adolescents reported having a moderate self-esteem both before and after the intervention, which indicates that the carried out intervention had no effects upon that variable.

When evaluating how capable teenagers felt when opening a conversation on sexual topics with their parents and partner (see table 3), it was found out that on average,

the experimental group had a greater score on self-efficacy when opening a conversation with their parents and their partner in comparison with the control group, which maintained its self-efficacy level from the pre-evaluation to the post-evaluation.

The results relating to the frequency of communication with the partner regarding sexual topics and the negotiation style regarding condom use can be observed in table 4. On average, the experimental group had a greater score than the control group. A change in the overall score from the pre-evaluation to the post-evaluation was found in the interaction of these differentiated variables.

Table 3.

Comparison between the experimental and control groups concerning self-efficacy to open a conversation.

Variable	Control		Experimental		Repeated measures ANOVA		
	Pre	Post	Pre	Post	Group	Treatment	Interaction
With father	3.7 (2.12)	3.31 (2.18)	3.47 (2.10)	6.47 (1.42)	F=19.8, <i>p</i> <.001	F=18.7, <i>p</i> <.001	F=25.3, <i>p</i> <.001
With mother	4.56 (1.77)	4.38 (1.87)	4 (2.03)	6.61 (1.12)	F=6.83, <i>p</i> <.05	F=20.5, <i>p</i> <.001	F=25.8, <i>p</i> <.001
With partner	4.36 (2.04)	3.97 (1.89)	4.06 (2.07)	6.64 (1.04)	F=12.9, <i>p</i> <.001	F=19.0, <i>p</i> <.001	F=25.6, <i>p</i> <.001

Table 4.

Comparison between the experimental and control groups in terms of communication and negotiation styles with the partner.

Variable	Control		Experimental		Repeated measures ANOVA		
	Pre	Post	Pre	Post	Group	Treatment	Interaction
Communication regarding sexual topics	20.22 (10.27)	20.07 (10.25)	20.76 (10.46)	20.53 (0.84)	F=390.0, p<0.001	F=260.2, p<0.001	F=280.2, p<0.001
Negotiation styles: Collaboration and equity	30.65 (10.36)	30.55 (10.27)	30.44 (10.16)	40.81 (0.74)	F=60.71, p<0.05	F=130.8, p<0.001	F=130.8, p<0.001

When looking through the main effects the group experienced with respect to the ability they demonstrated for using a condom in an adequate way, significant differences were found in the percentage of right answers in the ability of placing a condom between the control group and the experimental one ($F=247, p<0.001$). On average, the experimental group (98.61%) had a greater percentage than the control group (18.01%). When analyzing the effects of the type of treatment, changes in the percentage of right answers between the differentiated pre-evaluation and the post-evaluation were registered for each group ($F=247, p<0.001$). In the interaction of these variables, a change in the percentage of right answers in the pre-evaluation and the post-evaluation for each group ($F=390, p<0.001$) was found. By contrast, an increment from 20% to an average of about a 100% of right answers was observed in the experimental group.

The ability to negotiate condom use was also studied by a repeated measure analysis. When studying the group's main results, significant differences in the score between the control group and the experimental group were obtained ($F=42.9, p<0.001$). On average, the experimental group demonstrated a greater ability to negotiate condom use than the control group. When analyzing the results of the type of treatment, changes in the score were observed in the measurements taken in the pre-evaluation and the post-evaluation ($F=88.5, p<0.001$). In the interaction, changes in the score between groups were found ($F=88.5, p<0.001$): while the control group developed no ability, in the experimental group, changes were displayed in the ability they gained from the pre-evaluation to the post-evaluation. More than 69% of cases in the experimental group had the ability to negotiate condom use, while more than 60% of the control group was not able to do so.

Mesosystem variables

Table 5 presents the comparison of arithmetic means between the experimental and the control group in the variables of the mesosystem. According to the variables referred to the mother and father, on average, the experimental group perceived more support and supervision of the father and a greater frequency of communication than in the control group.

In the case of the variables related to friends, the main results of the sample group showed that on average, the experimental group attained greater scores than the control group in the subjective standard. This pattern was also present in self-efficacy, contributing to avoid risky behaviors in their friends.

Variables of the macrosystem

Significant differences in the control group and in the experimental group were found when evaluating the stereotypes in the interpersonal field and in the social field. On average, the experimental group attained a lower score than the control group in relation to stereotypes in the interpersonal and social field (see table 6).

DISCUSSION

The main findings of this study demonstrate that the intervention program designed with basis on Bronfenbrenner's ecological model (1987) had a positive impact on the experimental group in every variable evaluated except in self-esteem and communication with a partner.

With respect to the micro level, it is possible to mention that the adolescents had very little knowledge in general, a reason for which it is important for them to be provided with information in order to aid them to identify the risk of contracting HIV, for when people are informed, they can assume a different attitude (Amirkhanian et al., 2003).

Regarding the psychosocial variables, it was found that before the intervention, there were significant differences between the control and experimental groups in the evaluation of beliefs about condom use. Nevertheless, it is important to mention that interpretation is different, even if there are significant differences in the post-evaluation, since the experimental group reduced the negative beliefs and increased the protection beliefs. This is relevant, for in as much as the teenagers realize that the condom can protect them, they can associate it with preventive sexual behavior, as many investigations demonstrate (Gallegos et al., 2008).

Table 5.

Comparison between the variables of the meso-system in the experimental and control groups.

Variable	Control		Experimental		Repeated measures ANOVA		
	Pre	Post	Pre	Post	Group	Treatment	Interaction
Father							
Support	20.60 (10.56)	20.86 (10.68)	30.14 (10.78)	40.69 (0.82)	F=180.0, p<0.001	F=250.4, p<0.001	F=60.70, p<0.05
Supervision	20.69 (10.58)	20.66 (10.71)	30.05 (10.76)	40.67 (0.82)	F=160.9, p<0.001	F=230.9, p<0.001	F=110.5, p<0.001
Communication regarding sexual topics	10.88 (10.23)	20.48 (10.32)	20.29 (10.41)	40.53 (0.84)	F=210.8, p<0.001	F=860.3, p<0.001	F=310.2, p<0.001
Mother							
Support	30.58 (10.59)	20.69 (10.75)	30.58 (10.73)	40.72 (0.81)	F=130.6, p<0.001	F=0.606, p=0.439	F=150.0, p<0.001
Supervision	30.44 (10.66)	20.69 (10.81)	30.55 (10.74)	40.69 (0.85)	F=140.0, p<0.001	F=0.949, p=0.334	F=110.8, p<0.001
Communication regarding sexual topics	20.02 (10.25)	20.31 (10.36)	20.11 (10.27)	40.47 (10.00)	F=220.5, p<0.001	F=580.3, p<0.001	F=310.3, p<0.001
Friends							
Subjective norm:							
Condom use with regular partner	40.34 (20.78)	40.07 (20.68)	40.90 (20.62)	60.44 (10.64)	F=70.04, p<0.05	F=50.65, p<0.05	F=70.80, p<0.05
Self-efficacy to avoid risky behavior	20.84 (10.60)	40.07 (10.16)	20.79 (10.29)	60.61 (0.87)	F=360.8, p<0.001	F=107, p<0.001	F=310.6, p<0.001

Table 6.

Comparison between the variables of the macrosystem in the experimental and control groups.

Variable	Control		Experimental		Repeated measures ANOVA		
	Pre	Post	Pre	Post	Group	Treatment	Interaction
Interpersonal context	20.60 (10.40)	30.28 (10.16)	20.69 (10.44)	10.28 (0.74)	F=110.7, p<0.001	F=30.93, p<0.05	F=370.2, p<0.001
Social context	30.06 (10.39)	30.14 (10.24)	30.25 (10.22)	10.22 (0.68)	F=130.0, p<0.001	F=250.3, p<0.001	F=420.0, p<0.001

The intervention program also reinforced the rise in favorable attitudes toward condom use. This was seen in the intention of adolescents to use it, which brought as a result, feeling more efficacious when using a condom. This finding may owe its existence, on the one hand, to the strategy called *commercial*, which in other studies has been shown to contribute to the development of a better attitude of adolescents toward condom use (Callejas et al., 2005); and on the other hand, to the training of abilities to enhance the effectiveness of condom use (Amirkhanian et al., 2003).

On the other hand, with respect to the results of the intervention on self-esteem, no changes were registered in the arithmetic means obtained on pre-evaluation and post-evaluation. In both cases, the adolescents reported having a good self-esteem, probably due to the fact that

on the program this variable was barely emphasized. It was only mentioned in a single session, which means that it will be necessary to work on this issue during several sessions and use other strategies centered on empowering and decision taking in order to improve adolescent's self-esteem (Harper et al., 2009).

Regarding communication with the partner and the parents, self-efficacy to speak with the parents about a sexual subject was evaluated in the intervention; hence, after evaluating the perception of the adolescents, this variable was placed at the micro-level. The results showed that when the adolescents finished the practice, they showed more ability to do it. In the same way, they reported having a negotiation style of collaboration and equity on the subject of condom use, from which it may be inferred that in the

future they could be successful in using a condom during their sexual intercourse (Robles et al., 2011). Even though the adolescents reported having a collaboration-equity style when the pre-evaluation was performed, they were not capable of using such a style to negotiate condom use. This fact highlights the importance of evaluating not only what the teenagers think they do, but also of evaluating their abilities by direct observation.

In regards to the ability to negotiate condom use, it was found that the adolescents of the experimental group improved their ability and were able to negotiate condom use by giving arguments and debating what their partner argued against using it. In the research performed by Anderson et al. (2006), and by Czuchry et al. (2009), it was discovered that improving behavioral abilities in relation to condom use, negotiation increased condom use in the participants. It is important to mention that, as was said before, it was not possible to evaluate sexual behavior after the intervention. In a similar way, it is important to notice that when adolescents negotiate condom use and get what they desire, they afterwards feel more capable of being able to negotiate it in the future. For this to happen, it is necessary for them to have information about the advantages of condom use during sexual intercourse so that they may have the necessary arguments to be able to negotiate it, as was considered by the intervention program.

As to the ability to use the condom adequately, the results of this study show significant differences in the control group and the experimental one. Those who were trained had a higher percentage of correct answers. Such a training program has been effective even in other populations (Robles et al., 2006). The development of this ability is fundamental, since it has been found that when the people feel self-efficient to use the condom, it does not necessarily imply that they can actually use it in the right way. Yet, it is not known if those who report using the condom actually do it or not during the whole sexual act from beginning to end, risking their health in this way, since the mere exchange of genital fluids is enough to transmit HIV. It has also been shown that when adolescents develop the ability through a simulated penis, this practice promotes less incidence of failure during the sexual act, and thus reduces the risk of infections due to sexual transmission (Robles et al., 2014).

Regarding the variables present in the meso-system, it was found that the experimental group increased the perception of support and supervision they had received from their parents, and also the communication frequency regarding sexual topics was higher. These results must be taken with reserve, since there was no opportunity to make an evaluation of the parents, and it is not known whether the changes were due to the intervention or to social desirability,

that is to say, to the response expected from them. Even though it could be deduced that these favorable changes are associated with preventive behavior (Andrade et al., 2006), it has been suggested that parents be incorporated within the intervention programs, in order to evaluate these aspects in a more effective way (Wang et al., Thurman, Kidman, Carton & Chiroro, 2016).

The influence of friends on sexual behavior, the subjective standard regarding condom use was intervened. In other words, the researchers tried to make the adolescents see that for their friends condom use was important, even in the peer group in the community diagnosis; since when the adolescents perceive that using a condom is important for their friends, they have a greater chance of using it (Anderson et al., 2006) and their intention to use a condom is greater in the next sexual relation. (Gallegos et al, 2008).

At the macro-level, an intervention was carried out upon gender stereotypes. The adolescents in the experimental group reduced their stereotyped beliefs of men and women, for the percentage of adolescents that believed that *men are superior to women* was lower. In the intervention programs, it is necessary to have an impact upon gender roles and the power relations that are established in the couple to promote condom use (Czuchry et al., 2009). According to Centeno (2008), strategies that have the goal of reducing the social stigma and the discrimination infected people suffer should be created, since there is a close relation of the aforesaid with sexual behavior. This last point was not considered within the intervention program, so it is recommended for further inclusion in future interventions.

As can be observed, significant differences were found in favor of the experimental group in comparison to the control group. It is noteworthy to mention that these changes should be considered altogether, for the model proposes different levels to explain sexual behavior (DiClemente, Salazar & Crosby, 2007). For example, the increase in the level of information of adolescents, combined with the development of negotiation and adequate condom use skills, could be responsible for the change in the ability they experienced for negotiating condom use with the partner, since it gave the adolescents further elements to negotiate condom use. In the same way, training for the development of these skills might reassure teenagers so that they can feel more capable to use the condom.

Another relevant detail is that, even if there was no direct intervention upon the parents, there was a suggestion made to them in the form of homework that consisted of speaking to their children about a sexual topic so that they could be more involved with their offspring's sexual health. In a similar fashion, weakening gender stereotypes contributes to a change in beliefs about what a man or a woman should

do in the sexual domain, so they can in this way increase their preventive behaviors instead of blaming each other whenever they have sexual intercourse.

Taking into account the limitations of the present research, we realized that it was not possible to evaluate the effects of the intervention on sexual behavior. Hence, a follow-up of adolescents who have left their communities is suggested to evaluate how their sexual behavior was impacted by the study. Again, it was hard to obtain the evaluations of each adolescent because of their fluctuations in and out of the community. Thus, it is important to carry out brief interventions in order to prevent experimental mortality. Finally, even though the work was done only with adolescents, it is also necessary to do the intervention with parents, due to the importance they have in the development of their offspring.

In conclusion, it is necessary to do brief interventions, on the one hand, to evaluate the intervention effects in every user and, similarly, train staff so that they can work constantly on the prevention of HIV with this kind of population (O'Laughlin, 2015). In the same way, the context associated to sexual behavior of young people in conflict with the law should be considered in order to have effective interventions and long-term effects. Moreover, this intervention program should be replicated both to evaluate its effectiveness and to assess the adolescents once they leave the community, and analyze their sexual conduct from that moment on. Finally, this research shows empirical evidence of the efficiency of intervention programs to promote sexual health designed from the ecological model.

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