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Health Educ Behav 2003; 30: 601
DOI: 10.1177/1090198103255368

The online version of this article can be found at:
http://heb.sagepub.com/cgi/content/abstract/30/5/601
Evaluation of an HIV and STD Prevention Program for Adolescents in Juvenile Rehabilitation Centers

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The aim of this study was to evaluate a sexual and STD/AIDS prevention program tailored for adolescents with social adaptation difficulties in juvenile rehabilitation facilities. The impact of the intervention on the psychosocial determinants of condom use were assessed, using a pre-test post-test quasi-experimental design. A total of 296 adolescents participated in the program (experimental group) while 240 adolescents did not receive the intervention (control group). The program led to positive outcomes among participants with respect to several of the main psychosocial determinants of condom use for sexual intercourse with a new partner. The results suggest that interventions that draw upon a combination of theoretical knowledge and consideration of the specific characteristics of the milieu could be efficient in promoting safer sexual practices among adolescents in juvenile rehabilitation centers.

Keywords: Prevention; STD/AIDS; program evaluation; adolescents; juvenile rehabilitation center

Adolescents in juvenile rehabilitation centers appear to be more vulnerable to STD and HIV transmission than other teenagers. According to different surveys among adolescents who have social adaptation difficulties, between 12% and 30% of them already contracted an STD in the past. This is consistent with several studies about adolescents’ sexual behavior that report higher levels of unsafe sexual activities among young people experiencing social adaptation difficulties than among the general population. For instance, studies have shown that a greater number of incarcerated youths are sexually experienced and have had their first sexual experience younger than other adolescents. The frequency of sexual activities is also higher among incarcerated adolescents, and they are more likely to have multiple sexual partners. However, only a small proportion (about 20%) of adolescents in juvenile rehabilitation facilities declare using condoms regularly. Compared to a school-based sample of adolescents, incarcerated youths were also more reluctant to negotiate condom use with their sexual partners, even if they showed less embarrassment in getting condoms.
Alcohol and illicit drug consumption are also frequent behaviors among adolescents with social adaptation difficulties. Moreover, some of these adolescents have already used drugs by injection and, among them, 50% have shared their injection materials. Also, many adolescents in juvenile rehabilitation facilities have had sexual partners who were injecting drug users (IDUs), sex workers, or HIV positive. In addition, some of these adolescents have experienced prostitution and sexual activities in contexts of violence and abuse.

The situation depicted above calls for STD and HIV prevention interventions that are appropriate to the context of adolescents with social adaptation difficulties. Sexual and STD/AIDS prevention programs provided in juvenile rehabilitation facilities represent a good opportunity to reach each youth. Otherwise, these adolescents are difficult to reach because they often become school dropouts and street youths.

Nonetheless, despite several experts’ recommendations on the necessity to build interventions for adolescents with social adaptation difficulties, prevention programs specifically aimed at this population are scarce. In the scientific literature, few prevention programs developed especially for these adolescents have been reported. For example, Clark and coworkers have evaluated a curriculum aimed at improving self-esteem, communication and condom negotiation, knowledge, attitude, and behavior among incarcerated adolescents. The pretest and posttest design evaluation format indicated significant changes in self-esteem, peer-mentor communication, knowledge, perceived susceptibility, and intentions to decrease risk behaviors. Slonim-Nevo and associates examined the long-term benefits of a cognitive/behavioral intervention among adolescents from residential centers. Results showed that one intervention, discussion groups, produced a long-term increase in knowledge about AIDS and higher intentions to cope with AIDS-risk situations. However, it did not produce a long-term reduction in the level of engagement in high-risk behaviors. Finally, recently, St-Lawrence et al evaluated a behavioral STD/HIV risk reduction (i.e., skill training) and violence (i.e., anger management) prevention intervention among 428 juvenile offenders randomly assigned to either skill training or anger management. Compared to anger management, the skill-training program was found to be more efficient in modifying knowledge, self-efficacy regarding condom use, attitude, and use of condoms.

Obviously, more evaluative studies are needed to better understand what the responses of adolescents with social adaptation difficulties are toward HIV/AIDS interventions. In particular, as indicated earlier by Rotheram-Borus and associates, there is a lack of information on the differential response of adolescents of varying gender and age categories. Also, additional information on the nature of the content of the prevention program is needed.

**INTERVENTION PROGRAM**

Schaalma et al have described a three-step approach for the development of HIV-prevention programs aimed at adolescents. In the first step, a need assessment is made to identify the determinants of the behavior under study in the targeted population. Second, intervention contents, methods, and materials are based on formal theoretical frameworks and research eliciting intervention strategies and needs that are specific to the groups. Last, collaboration between educators, staff, and other key people is essential to
ensure the efficacy of the program. These programs are considered successful strategies because they are based on a theoretical explanation of the links between behavioral determinants that also indicate how interventions should be done for a particular group.22,23 In short, such programs allow targeting of specific behaviors in specific situations.

The intervention reported here represents an application of this approach. The prevention program under the scope of this study was developed following the results of a previous study24 based on the Theory of Reasoned Action,25 the Theory of Planned Behavior,26 the Theory of Interpersonal Behavior,27 and the Social Cognitive Theory.28 The need assessment study was carried out among 152 male and female adolescents in juvenile rehabilitation facilities.24 The results have shown that using condoms with a new sexual partner was the specific behavior on which the intervention should focus. According to this study, the main factors to consider for promoting condom use for sexual intercourse with a new partner were intention, self-efficacy, and personal normative belief. Moreover, based on these findings and empirical knowledge in literature, the intervention was developed in close collaboration with educators experienced with adolescents with social adaptation difficulties in juvenile rehabilitation facilities. The needs and requirements of the centers with respect to duration, number of sessions, and content of the program also had to be taken into consideration. Thus, in addition to the variables identified above, the following ones were considered in the development of the program: attitude, behavioral beliefs, perceived behavioral control, and knowledge.

The main objective of the program was to favor the adoption of safe sexual practices among adolescents with social adaptation difficulties in order to reduce their personal risk for HIV or other STDs. The program contained 10 sessions of which 9 lasted 75 minutes and 1 lasted 90 minutes. Each session dealt with one or more of the following issues: the meaning of sexual intercourse, unsafe and safer sexual activities, pros and cons of condom use, values and sexuality, negotiation of safer sex, communication skills, self-affirmation, and arguing to overcome obstacles to safer sex behavior. These participants were treated by using different learning activities such as group discussions, brainstorming, role-playing, problem solving, demonstrations, condom manipulation, improvisation, and audiovisual documents.

The intervention program was integrated into the regular activities of the rehabilitation centers. The sessions were offered once a week for 10 consecutive weeks. Considering the fact that adolescents can be placed in juvenile rehabilitation centers at any time in the year, those who were admitted to the center after the beginning of the program could enter it at anytime. However, only adolescents who participated in at least four sessions of the program were included in the evaluation study.

In each rehabilitation center, program monitors were selected among educators already working with the adolescents in the groups that formed the experimental groups. Program monitors received a 3-day training aimed at explaining the intervention and enhancing their intervention skills on sexuality and STDs. The training session was structured as follows: Each monitor was asked to present one of the sessions of the program using the education material; the other monitors were acting as the learners. The presentation was then discussed, and appropriate feedback was provided. Thus, each of the 10 sessions was experienced and discussed by the group of monitors. It was felt that this was providing a more in-depth comprehension of the program than a formal presentation. According to local group dynamic, the intervention was either offered by one monitor or comonitored.
OBJECTIVES

The specific objectives of the study were to (1) evaluate the effectiveness of the intervention to modify the following variables known to explain intention to use condom with a new partner: intention, self-efficacy, and personal normative belief; (2) verify the effectiveness of the intervention to modify others factors such as attitude, behavioral beliefs, perceived behavioral control, and STD/AIDS knowledge; and (3) verify if the intervention had differential effectiveness for adolescents of different gender and age categories.

METHOD

Population

Juvenile rehabilitation centers for adolescents with social adaptation difficulties from six regions in Eastern Quebec (Canada) were involved in the intervention program. These centers are generally considered as residential facilities, but it is frequent that a number of youths have limited free periods in evening and weekends. Also, in some regions, centers have different sites or facilities offering different services of rehabilitation. Thus, a total of 14 juvenile rehabilitation facilities, accommodating 12- to 18-year-old male and female adolescents were included in the study. The youths are also housed in groups and remain in this group for their whole stay period; they do not have contacts or activities with other groups.

All of the adolescents who were living in these juvenile rehabilitation facilities were invited to take part in this evaluative research. In general, placement in juvenile rehabilitation centers follows a decision by a judge of the juvenile court, but some adolescents stayed in the centers voluntarily. The reason for court placement was not given because of ethical reasons. The length of stay in these centers varies from 1 day to 1 year, with a possibility of prolongation. The average length of stay in juvenile rehabilitation facilities in Quebec is 7 consecutive months, but the most common length of stay is 30 days.

Study Design

A quasi-experimental design was used for this evaluation study. In each juvenile rehabilitation facility, some groups of adolescents participated in the intervention program, whereas other groups of adolescents from the same center and sharing similar characteristics did not receive the intervention. The number of adolescents per group varied between 2 and 12, depending on the reason for court placement. The experiment was conducted into two phases in order to obtain an appropriate sample size. During the first phase, approximately half of the groups in each rehabilitation center were selected as experimental groups that participated in the program. The other groups did not participate in the program and formed the control groups. The selection of experimental and control groups was made by the director of each rehabilitation center, taking into account not only the needs of the research but also the groups’ characteristics and dynamic.

The same approach was repeated during the second phase (1 year later) of the study, but the groups were then inverted. Thus, groups that formed control groups during the first phase received the program, whereas experimental groups of the first phase became
control groups for the second phase. Considering the period elapsed between the two phases (i.e., 1 year), the groups were now formed by different individuals. Furthermore, contamination bias was minimized by the fact that adolescents belonging to different groups did not mix with each other during daily activities. Considering both phases, a total of 51 experimental groups received an intervention, whereas 71 control groups did not receive the program. The difference between the number of experimental and control groups is due to administrative reorganization that occurred during the experimentation, that is, between Phase 1 and Phase 2. Indeed, a few juvenile rehabilitation centers were merged under the same administrative authorities, thus modifying the nature of some of the groups.

The evaluation used a pretest and posttest design to verify the effectiveness of the intervention. The pretest (Time 1) was administered prior to the onset of the intervention program to verify equivalence between control and experimental groups. A total of 983 adolescents completed the baseline questionnaire. Because of missing data for theoretical variables, 58 questionnaires were rejected, leaving a baseline sample of 925 adolescents (511 in the experimental groups and 414 in the control groups). Compared to the baseline sample, a higher proportion of the 58 respondents eliminated were less educated, male, and had reported not using a condom because of alcohol and drug consumption.

At Time 2 (on average 10 days postintervention), a total of 647 adolescents completed the posttest questionnaire. This short follow-up period was adopted to ensure that the posttest was performed before placement cessation, because the main reason for loss at follow-up was the placement cessation before the youth had participated in at least four sessions of the program (n = 186); this number of sessions had been selected before the implementation of the intervention as the criterion for inclusion in the evaluation study because the most common length of stay is 30 days. Some incomplete questionnaires also had to be discarded (n = 66), leaving a final sample of 536 adolescents (296 in the experimental groups and 240 in the control groups). Thus, it was verified if the 536 adolescents included in the analysis differed from those excluded. Few differences were found and these are reported in the Results section.

**Data Collection Procedure**

An ethics certificate from the university was obtained. According to the legal advice obtained from the ethics committee and the regional board of rehabilitation centers, the centers had the “loco parentis authority” to provide access to youth. Adolescents were thus informed about the purpose of the study and were told that participation was voluntary. No incentive, monetary or otherwise, was given for participating. Informed consent was obtained for every participant. The experimental design required us to match the questionnaires completed at Time 1 and at Time 2. Therefore, a coding system was used to assure confidentiality and anonymity during matching. A personal identification number was assigned to each participant at Time 1, and only this number appeared on the questionnaires. Pretest and posttest questionnaires were administered in groups under the supervision of a “neutral” person, generally the center’s nurse. This person could provide individual assistance if necessary. It took approximately 30 minutes to complete. At posttest, in many cases, the questionnaire was administered on an individual basis because some youths were leaving the center before the end of the whole 10-session intervention.
Variables Measured

The program’s effectiveness on psychosocial variables was assessed by means of a self-administered questionnaire. This instrument was adapted from the questionnaire used for the need assessment study.24

The expressions sexual intercourse and new partner were defined at the top of each page of the questionnaire. Sexual intercourse means that there is penetration of the penis into the vagina (vaginal penetration) or the anus (anal penetration). A new partner was defined as a person with whom one has been having sexual intercourse for less than 2 months (new girlfriend or boyfriend), a past partner with whom one has renewed having sexual intercourse, and/or someone with whom one has had sexual intercourse for the first time.

Three questions were used to assess intention. As an example: “I have the intention to use a condom each time if I had sexual intercourse with a new partner during the next 3 months” (very unlikely/very likely). Each of these questions was measured on a 5-point scale. The mean was taken as the score for intention (α = .88).

Two different measures were used to assess attitude toward the behavior. First, a global (direct) measure was obtained by means of the semantic differential scale technique. The respondents were asked to indicate on a 5-point bipolar scale their opinion about each of the six pairs of adjectives concerning condom use for every sexual intercourse with a new partner during the next 3 months. These pairs of adjectives were useless/useful, unpleasant/pleasant, shameful/honorable, unhealthy/healthy, disagreeable/agreeable, and careless/sensible. The mean score was taken as the global measure of attitude (α = .83). A belief-based (indirect) attitude measure was also obtained by summing respondents’ answers to seven items measuring behavioral beliefs. The respondents had to estimate on 5-point scales to what extent (very unlikely/very likely) they believed that using condoms each time they might have sexual intercourse with a new partner during the next 3 months would lead to the presented positive and negative outcomes. Then, they had to evaluate each of the seven outcomes on a 5-point scale (undesirable/desirable). The mean of belief by outcome scores was taken as the measure of belief-based attitude (α = .59).

Perceived behavioral control was also measured directly and indirectly. The global (direct) measure was obtained by means of three items. As an example: “For me, using a condom each time that I might have sexual intercourse with a new partner during the next 3 months would be” (very difficult/very easy). The mean score was taken as the global measure of perceived behavioral control (α = .76). For the belief-based (indirect) measure of perceived behavioral control (named self-efficacy in this text), respondents were asked to rate on 5-point scale the likelihood (likely/unlikely) that each of 10 potential barriers would hamper them to use a condom if they were to engage in sexual intercourse with a new partner in the next 3 months. Again, the mean score was taken as the measure of the self-efficacy measure (α = .90).

Personal normative belief was assessed as the mean score for the following three questions:

If I had sexual intercourse with a new partner during the next 3 months, (1) it is within my principles to use a condom each time, (2) I would feel guilty about not using a condom each time, and (3) I think it would be morally unacceptable not to use a condom each time.
For each of these questions, participants had to indicate their opinion on a 5-point scale varying from strongly disagree to strongly agree ($\alpha = .80$).

Knowledge about transmission modes and prevention of HIV and other STDs was measured by 15 “true, false, or I don’t know” questions. A summary measure was constructed by adding these 15 questions (1 point per correct answer). Thus, the knowledge score could vary between 0 and 15.

The main control variables retained in the questionnaire were gender and age. Furthermore, the other variables considered in the analysis were educational level, ran away for more than 2 weeks, alcohol use, drug use (injected drug, shared injection material), personal history of STDs, having been pregnant or impregnated a girlfriend, had sexual intercourse, number of lifetime sexual partners, injection drug user sexual partner, and had sexual intercourse in the past 3 months. Finally, habit of using condom was assessed by asking the respondents to evaluate what frequency they had used it in the last 3 months when having intercourse with a new partner. The following choices were offered: never (0% of the time), about 1 out of 4 (25% of the time), about 1 out of 2 (50% of the time), about 3 out of 4 (75% of the time), always (100% of the time).

Analyses

First, comparison of descriptive statistics of the sample at pretest (Time 1) was performed. Second, the effectiveness of the intervention was assessed. In this regard, the groups were taken as the unit of analysis in order to control the clustering effect and the crossover evaluation design. However, no clustering effects or crossover effects were detected, and the analyses based on groups or individuals yielded similar significant results. Consequently, the results based on individuals are reported in this article.

The effectiveness of the program to modify the theoretical variables was verified by means of analyses of variance with repeated measurements. The differential response of adolescents differing in gender and age categories was also verified by means of analysis of variance with repeated measurements. The program effect size was computed. Effect sizes with respect to individual and group were computed as the difference between experimental and control respondents’ (or groups’) change of scores divided by the pooled standard deviation ($SD$) for these respondents (or groups).

RESULTS

The characteristics of the participants per experimental condition are presented in Table 1. The mean age (ranging from 12 to 18 years) of the participants was 15.1 ± 1.51 years (see Table 1). The experimental and control groups did not differ on these variables with the exception of gender; a higher proportion of female adolescents was observed in the experimental group. Adolescents’ sexual behaviors and condom use with a new partner at pretest are reported in Table 2. No significant differences were detected between the experimental and control groups regarding the behavioral variables.

At baseline (pretest), the intention to use a condom for sexual intercourse with a new sexual partner was slightly positive in both experimental and control groups, as presented in Table 3. Respondents seemed to believe in their capacity to overcome the barriers (self-efficacy) to condom use. Means were near a neutral position regarding responsibility felt toward condom use. Also, attitude toward using a condom with a new sexual partner,
Table 1: Characteristics of Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experimental (n = 296)</th>
<th>Control (n = 240)</th>
<th>Total (N = 536)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Age (years)</td>
<td>15.1 ± 1.47</td>
<td>15.0 ± 1.56</td>
<td>15.1 ± 1.51</td>
</tr>
<tr>
<td>Gender*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>158</td>
<td>53.4</td>
<td>150</td>
</tr>
<tr>
<td>Female</td>
<td>138</td>
<td>46.6</td>
<td>90</td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary</td>
<td>23</td>
<td>8.1</td>
<td>25</td>
</tr>
<tr>
<td>High school</td>
<td>251</td>
<td>88.1</td>
<td>192</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>3.8</td>
<td>12</td>
</tr>
<tr>
<td>Ran away before for more than 2 weeks</td>
<td>217</td>
<td>73.3</td>
<td>184</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>267</td>
<td>90.2</td>
<td>215</td>
</tr>
<tr>
<td>Illicit drug use</td>
<td>276</td>
<td>93.2</td>
<td>217</td>
</tr>
<tr>
<td>Injected drugs at least once</td>
<td>61</td>
<td>21.1</td>
<td>53</td>
</tr>
<tr>
<td>Shared material</td>
<td>29</td>
<td>47.5</td>
<td>24</td>
</tr>
<tr>
<td>STD in the past</td>
<td>24</td>
<td>8.1</td>
<td>16</td>
</tr>
<tr>
<td>Pregnancy in the past</td>
<td>38</td>
<td>12.8</td>
<td>32</td>
</tr>
</tbody>
</table>

NOTE: The chi-square test is used to compare proportions.

*a. Missing data = 22.
b. Has been pregnant or impregnated a girlfriend.
*p < .05.

Table 2. Adolescents’ Sexual Behaviors and Condom Use at Pretest

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experimental (n = 296)</th>
<th>Control (n = 240)</th>
<th>Total (N = 536)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Had sexual intercourse before</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime sexual partner*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>One</td>
<td>37</td>
<td>14.4</td>
<td>22</td>
</tr>
<tr>
<td>More than one</td>
<td>220</td>
<td>85.6</td>
<td>165</td>
</tr>
<tr>
<td>IDU sexual partner</td>
<td>94</td>
<td>36.6</td>
<td>76</td>
</tr>
<tr>
<td>Sexually active in the past 3 months</td>
<td>169</td>
<td>65.8</td>
<td>125</td>
</tr>
<tr>
<td>Condom use with a new partner*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>50</td>
<td>31.9</td>
<td>42</td>
</tr>
<tr>
<td>25%</td>
<td>28</td>
<td>17.8</td>
<td>18</td>
</tr>
<tr>
<td>50%</td>
<td>17</td>
<td>10.8</td>
<td>7</td>
</tr>
<tr>
<td>75%</td>
<td>17</td>
<td>10.8</td>
<td>16</td>
</tr>
<tr>
<td>Always</td>
<td>45</td>
<td>28.7</td>
<td>39</td>
</tr>
</tbody>
</table>

NOTE: The chi-square test was used to compare groups for proportions. IDU = injection drug user.

b. Includes respondents who have had sexual intercourse with a new partner within the 3 months preceding the survey.
behavioral beliefs, and perceived behavioral control on this behavior were both slightly positive. Finally, at baseline, knowledge concerning STD and AIDS was relatively high in both groups.

With respect to each of the psychosocial variables, adolescents of different gender and age categories did not differ at baseline. The only significant difference was noted regarding knowledge; adolescents aged 15 years and less were less knowledgeable than adolescents aged 16 years and more ($p < .0001$).

Adolescents excluded from the analysis because they did not participate in at least four sessions or had left the juvenile rehabilitation center before they could be contacted for the post-test measure differed on few variables from those included in the analysis. In particular, a larger proportion of male adolescents than female adolescents were lost at follow-up (68.6% versus 57.6%, $p < .01$), they were slightly older (15.5 years versus 15.1 years, $p < .01$), and a smaller proportion had once ran away from home for more than 2 weeks (69.3% versus 75.5%, $p < .05$). Also, a larger proportion had drunk alcohol before (94.6% versus 90.3%, $p < .05$), and a smaller proportion had shared injection materials (36.6% versus 4.78%, $p < .05$). Finally, a larger proportion had been pregnant or had impregnated a girlfriend (23.1% versus 15.7%, $p < .05$). Despite these latter differences, however, they did not differ on any of the psychosocial variables.

Table 3 summarizes the results of the analyses of variance with repeated measurements on the set of theoretical variables. Before running these analyses, it was verified if either age or gender were significantly associated with the independent variable (group). Because gender was found significant (see Table 1), it was verified if it correlated with each of the dependent variables. No significant correlations were found. Consequently, neither age nor gender were retained as covariates.

In comparison to pretest values, intention to use a condom with a new sexual partner was significantly higher at posttest among adolescents in the experimental groups than in the control groups ($p < .0005$). The program was also effective in modifying positively self-efficacy ($p < .0001$), personal normative belief toward using a condom for sexual intercourse with a new partner ($p < .0036$), attitude toward using a condom for sexual intercourse with a new partner ($p < .0001$), behavioral beliefs ($p < .0001$), perceived

<table>
<thead>
<tr>
<th>Variable</th>
<th>Experimental ($n = 296$)</th>
<th>Control ($n = 240$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest $M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Intention</td>
<td>0.75</td>
<td>1.07</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>0.58</td>
<td>0.97</td>
</tr>
<tr>
<td>Personal normative belief</td>
<td>0.41</td>
<td>1.11</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.69</td>
<td>0.80</td>
</tr>
<tr>
<td>Behavioral beliefs</td>
<td>0.71</td>
<td>0.59</td>
</tr>
<tr>
<td>Perceived behavioral control</td>
<td>0.78</td>
<td>0.95</td>
</tr>
<tr>
<td>Knowledge</td>
<td>11.27</td>
<td>2.59</td>
</tr>
</tbody>
</table>

a. Possible scores vary from –2 to +2 with the exception of knowledge (0 to 15).

b. There was no significant difference at pretest between the experimental and control groups.

c. $p$ value for the interaction term between time (pretest and posttest) and groups (experimental and control).
behavioral control ($p < .0003$), and knowledge about STD/AIDS and prevention modes ($p < .0219$).

The effect size (ES) values computed both with respect to the participant and group on the set of the psychosocial variables are illustrated in Figure 1. With respect to group, the ES varied from moderate (.32) to high (.65). With respect to the participant, the ES for the dependent psychosocial variables varied from low (.17) to moderate (.43) values.

Finally, the differential impact on adolescents of different gender and age categories was investigated. With respect to each of the psychosocial variables assessed in this study, adolescents of different gender and age categories did not differ in their response to the intervention.

**DISCUSSION**

The intent of this study was to evaluate a sexual and STD/AIDS prevention program tailored especially for adolescents with social adaptation difficulties in juvenile rehabilitation facilities. The program was based on the findings of a study of the psychosocial determinants of safer sexual practices among this population, and it has been developed in collaboration with educators working in juvenile rehabilitation facilities.

The picture of adolescents reached in this study shows once again that this population continues to add important risk factors for transmitting STDs and HIV and that it is pertinent to intervene in their situation so that they adopt safer sexual behavior. As several authors have reported about similar populations, the young respondents in this study began sexual activity at a very early age. Several of them have had more than one partner and do not use condoms systematically. Even though the frequency of self-reported STDs is not as high as the rate reported in scientific literature, this fact is not necessarily reassuring. Given that certain STDs do not always exhibit symptoms, some of these adolescents could be carriers of these illnesses and transmit them without knowing it. Also, the long-term negative effects of an untreated STD, particularly on the sexual and reproductive health of these adolescents, should be considered.

Overall, this sexual and STD/AIDS prevention program for adolescents with social adaptation difficulties in juvenile rehabilitation facilities has shown positive results. The
intervention was successful in modifying the psychosocial determinants of condom use. The ES values also indicated that the program can be considered as efficient for modifying the psychosocial variables underlying behavior.

Specifically, the program first increased the intention of the adolescents to use condoms with a new partner. This result is particularly interesting, given that intention is an undisputed determinant toward adopting a behavior. The positive effects of the program on self-efficacy and personal normative beliefs are also important because these variables had been identified as determinants of the adolescents’ intention to use condoms. The adolescents who participated in the program were therefore able to develop the abilities to surmount certain obstacles toward condom use in specific contexts such as when condoms are handy, after having consumed too much alcohol or drugs, if condoms are not 100% safe, if highly sexually aroused during the sexual intercourse, if the female adolescent takes an oral contraceptive, if one fears a negative reaction or violence from the partner, if he or she feels shy, if condoms cost too much, and if the partner refused using it. Besides the positive effects on self-efficacy, the program also helped the adolescents develop a sense of responsibility toward condom use. Undergoing the program brought some adolescents to believe that not using condoms is a morally unacceptable behavior, which in turn can be associated with a feeling of personal responsibility.

In addition to positive effect on the variables identified as determinants of the adolescents’ intention to use condoms with a new partner and predictors of its use, the program helped the adolescents develop a more positive attitude toward condom use, recognize the advantages and disadvantages of its use, and improved their general knowledge of STDs and HIV transmission.

As to the effects of the program, no differences in the participants’ gender or age could be observed. This result is not surprising because the approach used for the development of the program took into account the particularities that could be related to these variables. However, new research is needed to explore these aspects further.

Adolescents had to participate in at least four sessions of the program to be included in the study; the size of the groups varied between 2 and 12 adolescents. This study suggests that this number may be sufficient to lead to positive changes in psychosocial determinants of safer sexual practices among adolescents. This also suggests that small group dynamics may facilitate learning among adolescents who enter the program while in progress. This outcome may also be related to the fact that monitors were selected among educators already working with adolescents in the juvenile rehabilitation facilities and were trained specifically for this program. This could have contributed to the positive outcome observed.

Finally, it is important to emphasize that injection drug consumption reported by almost one-quarter of the respondents (half of them injected themselves using soiled material) is also a very important health risk factor for maladjusted adolescents, particularly for the transmission of HIV and hepatitis B and C. In this respect, it would no doubt be pertinent to add elements to a preventive program for this population in order to prevent injection as a means for consumption.

**Limits**

There are, however, some limitations to this study that need to be addressed. The first limitation concerns the representativeness of study participants. Indeed, one adolescent out of three (34%) did not complete the program or did not participate in the required minimum of four sessions. The main reasons for respondents lost at follow-up in the final
sample were cessation of the placement in a juvenile rehabilitation center; transfer to another type of resource, running away; and, to a lesser extent, participants’ refusal to complete the posttest questionnaire. Nevertheless, some of the characteristics of adolescents who did not complete the study may have affected the representativeness of the final sample. For instance, a higher proportion of male adolescents than female adolescents were lost at follow-up. Those excluded were also older. Adolescents who did not complete the final questionnaire were also more likely to have been pregnant or impregnated a girlfriend. Thus, the overall evaluation might have been less positive if all participants had participated in the program. This, however, would be very difficult to assess, given the significant rotation of adolescents in juvenile rehabilitation facilities.

Another limitation inherent to the study design is the fact that participants were not randomly assigned to the experimental or control condition, due to organizational constraints and legal restrictions. Thus, a quasi-experimental design was used, which possesses a high internal validity and allows counterbalancing for the nonrandom allocation of respondents. Nonetheless, this study followed rigorous conditions in order to assure result reliability. In this regard, people selected for data collection did not have authority on adolescents’ placement in rehabilitation centers, and adolescents could be confident that information they were giving would stay confidential.

Practical Implications

The positive results observed could be attributed, in large part, to the nature of this program, which combined many characteristics deemed relevant to ensure the effectiveness of interventions. Indeed, the development of the sexual and STD/AIDS prevention program was based on knowledge derived from theoretical frameworks as suggested by several authors and awareness of the specific characteristics of the milieu. Thus, the program provided explicit information about unsafe and safer sexual practices and reinforcing adolescents’ integration of safer sex values and norms. Moreover, this program focused on communication and negotiation skills development through various activities such as role-playing and improvisation as recommended by Coleman and Ford, Kirby et al., and Sanderson and Jemmott.

This study demonstrated the pertinence of a STD/AIDS prevention program in juvenile rehabilitation facilities. Although youth security and crime prevention are the prime objectives of juvenile rehabilitation facilities, educational programs aimed at developing adolescents’ sexual responsibility are also meaningful in these settings because they are often the last occasion to intervene in a formal manner with these adolescents. In summary, this sexual and STD/AIDS prevention program should be maintained and could be extended to other juvenile rehabilitation facilities or adapted to other milieus. A specific training should, however, be offered to educators who are in charge of these programs.

Suggestions for effective interventions can draw on the results of this evaluation. The program was given to small groups of adolescents by trained monitors who were already working as educators in juvenile rehabilitation facilities. The education methods were mainly interactive, as opposed to passive exposure to information found in most prevention programs. This evaluative study has also emphasized the efficiency of activities such as role-playing, improvisation, brainstorming, games, and simulations to modify adolescents’ psychosocial determinants of safer sexual behaviors.

Finally, these findings provide further support for the continuation of planning and implementation efforts for such programs, as suggested by Schaalma et al. and Kok et al. Thus, elaboration and implementation of STD and AIDS prevention programs...
should follow a systematic approach that combines knowledge of the specific psychological characteristics of the targeted population and consideration of the environment in which this population is set.

References


