



Evaluation of the effectiveness of a school-based cannabis prevention program

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This paper is dedicated to Manuel Nebot.

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ABSTRACT

Background: The effectiveness of a cannabis prevention program in high school students was assessed. **Methods:** A quasi-experimental study was designed to evaluate the effectiveness of an intervention implemented in an intervention group (IG) with 39 schools compared with a control group (CG) of 47 schools not exposed to the intervention. Of 224 secondary schools in Barcelona, 86 were assessed in the 2005–2006 school year through a personal questionnaire administered at baseline and 15 months after the intervention. Participants consisted of 4848 ninth graders (14–15 year-olds), 2803 assigned to the IG and 2043 to the CG, according to the type and size of the school and the socioeconomic status of the school's neighborhood. The intervention consisted of a school-based cannabis prevention program (xkpts.com), with four sessions and 16 activities, implemented over 6–10 h, with materials for parents and web-based student involvement. Last-month cannabis use was assessed at baseline and at 15 months' follow-up. Process evaluation indicators were assessed.

Results: At 15 months follow-up, 8.2% of boys and 8.3% of girls in the IG became last-month cannabis users versus 11.8% of boys and 11.6% of girls in the CG. These differences were statistically significant ($p = 0.003$), representing a 29% reduction in last-month cannabis users in the IG compared with the CG. The incidence of last-month cannabis use was lowest in classrooms that adhered to the program protocol. **Conclusions:** The xkpts.com program was effective in preventing progression to last-month cannabis use. Effectiveness was higher in classrooms that adhered closely to the protocol.

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1. Introduction

Cannabis is the most widely consumed illegal drug in Europe (Swedish Council for Information on Alcohol and other Drugs (CAN), 2009). Early onset of consumption during adolescence has been related to the presence of several learning problems, low self-esteem and depression (Coffey et al., 2000; Von Sydow et al., 2002; Macleod et al., 2004; Fontes et al., 2011) and increases the risk of cannabis addiction (De Graaf et al., 2010). In addition, a bi-directional causal association between cannabis use and

vulnerability to psychosis has been demonstrated (Kuepper et al., 2011; Griffith-Lendering et al., 2012). Prevention programs to reduce the number of young persons progressing from ever use to regular cannabis use are clearly needed.

Drug dependency preventive interventions, including those related to cannabis use, are highly disseminated in Europe, but most are not supported by scientific evidence of effectiveness (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 2009). The development of prevention strategies based on evidence is essential to improve their community effectiveness and to avoid the choice of ineffective and sometimes harmful interventions (Faggiano, 2010a).

School-based prevention of cannabis use may be effective in high schools when preventive programs include elements from different theoretical models as opposed to programs based solely on the social influence model (Porath-Waller et al., 2010). In this study the intervention program was designed following the principles of

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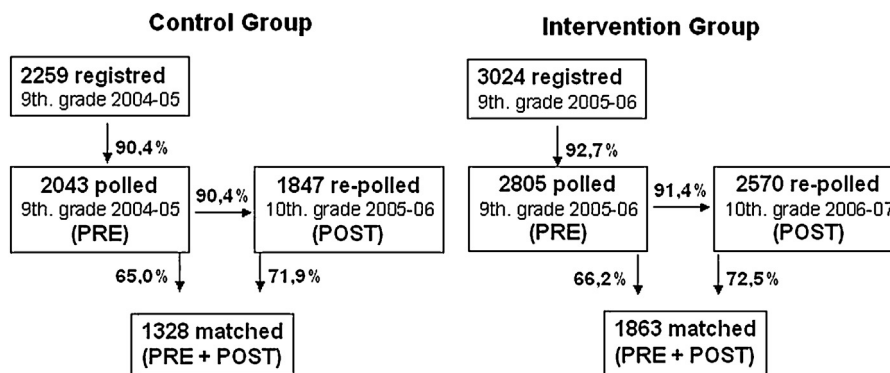


Fig. 1. Flow-chart of the matching process in the follow-up.

other recognized interventions that adopt the “life skills training” model (Botvin et al., 1990; Sussman et al., 2002; Ellickson et al., 2003).

Adding family-focused interventions to community-based or school-based interventions increases their effectiveness (Kumpfer et al., 2002). Consequently, this study included a family component to allow interaction between parents and their children. The components of effective parent and family programs include addressing strategies to improve family relations, communication and parental monitoring (Kumpfer and Alvarado, 2003).

In Barcelona, experimental cannabis use doubled in 5 years, progressing from 17.4% among 14–15-year-olds in 2000 (Nebot et al., 2006; Guxens et al., 2007) to 35.1% among students of the same age in 2005 (Morales et al., 2008; Pérez et al., 2009). Consequently, a cannabis prevention program was designed and implemented in the 2005–06 school year. The main objective of this study was to evaluate the effectiveness of this preventive intervention in a sample of 14–15-year-old students.

2. Methods

2.1. Design and sample selection

A quasi-experimental study was designed to evaluate the effectiveness of an intervention implemented in the intervention group (IG) compared with a control group (CG) not exposed to the intervention. As inclusion criteria, participating schools had to have confirmed their acceptance and have previously applied the drug dependency preventive program “Decideix” (Calafat et al., 1995) in the third year of high school (14–15-year-old age group, ninth grade), thus ensuring that all participating schools had a similar preventive level at baseline. Of 224 high schools in Barcelona, 93 met these requirements. The assignment of schools to two groups took into account the type of school (public versus subsidized/private), the school’s size (number of students in the third year of high school) and the socioeconomic status of the school’s neighborhood. According to this stratified sampling, the 93 schools were randomly assigned to one of the two groups: 41 to the IG and 52 to the CG. Seven schools, two in the IG and five in the CG, refused to participate in the project, because they objected to the conditions related to the evaluation (test and re-test 1 year later). Thus, 39 schools (117 classrooms with 3024 students) were included in the IG and the remaining 47 (97 classrooms with 2259 students) in the CG. The students were aged 14–15 years old.

Some students were absent in the post-test or left the school between the two surveys; thus, these questionnaires could not be matched between pre-test and post-test. As a result, the post-test questionnaire was matched with the pre-test in 1863 of 2805 students (66.2%) in the IG and in 1328 of 2043 (65.0%) in the CG. Overall, attrition at the end of follow-up was 33.8% in the IG and 35.0% in the CG (Fig. 1) and was similar between the two groups.

2.2. Procedure

Data were obtained through a self-reported written questionnaire, which reliability and validity had previously been explored (Moncada and Pérez, 2002) and adapted to the study of cannabis use (Nebot et al., 2006). The questionnaire was administered during 1 h of class time by personnel from the Public Health Agency of Barcelona without the participation of teachers. In the CG, baseline data were obtained between January and March, 2005, while the follow-up questionnaire was administered between April and May, 2006. In the IG, to avoid contamination

between groups, the baseline questionnaire was administered between January and March, 2006, and the follow-up questionnaire between April and May, 2007, 15 months after the intervention ended (Fig. 2). The intervention had been implemented in April and May, 2006.

A confidential, alpha-numeric code based on students’ date of birth and the initials of their parents’ names allowed baseline questionnaires to be linked to follow-up questionnaires.

Finally, a self-reported questionnaire, addressed to teachers participating in the intervention, was used for process evaluation. The completeness (number of activities implemented in the classroom) and fidelity to the program (implementation of activities proposed in the protocol) were collected.

2.3. Variables

2.3.1. Dependent variable (outcome criterion). The dependent variable, the cumulative incidence rate (CIR) was defined as the change in reported cannabis use between baseline and the follow-up at 15 months. This variable was constructed to identify “non users” (those who had never tried cannabis), or “lifetime users” (those who had used cannabis at least once but not in the last month) at baseline that progressed to “use in the last 30 days” (last-month users or regular users) in the follow-up questionnaire.

2.3.2. Explanatory individual variables (predictors). Individual information on socio-demographic variables, family situation, self-perceived academic performance, and weekly personal allowance were collected. Information on the family situation consisted of living in two-parent households or other situations. Students indicated their perceived relative position regarding academic performance (high, medium or low). Their weekly allowance was categorized as 0 €, less than 10 €, 10–30 € and more than 30 €. The students were also asked about substance use such as tobacco and alcohol. Occasional smokers were those who reported smoking cigarettes at least once a month but not every week. Regular smokers were those who reported smoking at least once a week. Risky alcohol consumption was defined as having been drunk at least once. Questions on leisure time concerned going out to bars or discotheques. “skipping class” (never, once or more times) was studied as one of several antisocial behaviors (Nebot et al., 2006).

Among the psychosocial variables, “self-efficacy” was defined as the ability to refuse an offer to consume cannabis products. Students were also asked about ease of access to cannabis and about risk perception of its use. The role of expectancies about the effects of cannabis use was measured through six items obtained by factorial

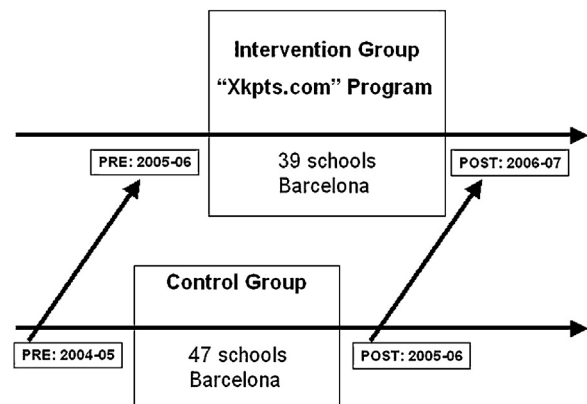


Fig. 2. Design of the cannabis prevention program evaluation study.

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