



Original article

Prevention of Illicit Drug Use Through a School-Based Program: Results of a Longitudinal, Cluster-Randomized Controlled Trial


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ABSTRACT

Purpose: To evaluate the long-term effects of an illicit drug use prevention program for adolescents that integrates life skills into the theory of planned behavior.

Methods: We conducted a cluster-randomized trial in which 24 participating schools were randomized to either an intervention group (12 schools, $n = 1,176$ students) or a control group (12 schools, $n = 915$ students). Participants were grade 7 students. The intervention comprised a main intervention of 10 sessions and two booster interventions. Booster 1 (four sessions) and booster 2 (two sessions) were performed at 6 months and 12 months, respectively, after completion of the main intervention. Assessments were made at baseline, after the main intervention, and after each booster session using specific questionnaires for measuring participants' attitudes, subjective norms, perceived behavioral control, and life skills.

Results: Retention rates were 71.9% (845/1,176) in the intervention group and 90.7% (830/915) in the control group after the 12-month follow-up. A significantly lower proportion of intervention group participants reported illicit drug use after the first and second booster sessions compared with control group participants (.1% vs. 1.7% and .2% vs. 1.7%, respectively; both $p < .05$). Attitudes, subjective norms, perceived behavioral control, life skills, and behavioral intention scores of the intervention group were significantly higher than those of control group after the first and second booster sessions (all $p < .001$), suggesting that intervention group students tended to avoid drug use.

Conclusions: A drug use prevention program integrating life skills into the theory of planned behavior may be effective for reducing illicit drug use and improving planned behavior-related constructs in adolescents.

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IMPLICATIONS AND CONTRIBUTION

An intervention that incorporated the theory of planned behavior and life skills helped to promote participants' attitudes, subjective norms, perceived behavioral control, and behavioral intention toward drug use prevention, as well as facilitating the reduction of illicit drug use.

Illicit drug use can have a number of negative consequences, including physical and mental disorders, unemployment, accidents, suicide, violence, and a significant financial burden [1]. Adolescence

is a critical period for the onset of illicit drug use [2,3]. Compared with adult-onset drug users, adolescent-onset drug users experience a greater likelihood of dependence and more serious clinical syndromes [4,5]. Therefore, it is not surprising that intervention programs aiming to prevent the use of illicit drugs among adolescents are considered to be of paramount importance [6].

On the basis of the data from a national campus survey conducted in Taiwan in 2008–2012, the rates of illicit drug use

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among junior high school students aged 13–15 years were relatively low, ranging from .48% to 1.04% [7]. However, the prevalence of male illicit drug users aged 16–18 years (1.5%) was double that of illicit drug users aged 13–15 years (average, .7%) [8]. Consequently, the issue of illicit drug use among high school students in Taiwan cannot be ignored, and we reasoned that an intervention directed toward discouraging drug use among students in the early-onset group (13–15 years) would help to reduce drug use among the older students (16–18 years) in whom the onset is more typical. Unlike drug use policies in the United States, which adopt a public health perspective toward users [9,10], illicit drug use in Taiwan is considered, especially by parents and school teachers, to be very serious misconduct representative of criminal behavior, and it is not at all tolerated. The *Juvenile Delinquency Act* in Taiwan, which is a public policy document, cites illegal drug use as an example of criminal behavior. Students using illicit drugs are subjected to the related *Protective Measures and Treatment* program (derived from “Section 2: Execution of Protective Measures” of the *Juvenile Delinquency Act* in Taiwan), which emphasizes law enforcement intervention. Accordingly, young drug users will usually be withdrawn from school, which creates a series of social problems subsequently, and are associated with a high risk of continued illicit drug use.

Many school-based intervention/education programs are able to help prevent occasional and more serious drug use among low- to high-risk adolescents in diverse school environments [11,12]. We recently reported the development of a novel, theoretically based drug use prevention program for use in schools in Taiwan [13]. The program was designed by integrating life skills training into the theory of planned behavior (TPB). On the basis of that theory, practical life skills include problem solving, coping with stressful situations, and development of social and communication skills, which have broader applications than just preventing drug use [14]. Results of another drug use intervention program showed that after students increased their knowledge about life skills (e.g., communication, problem solving), their attitudes toward substance abuse (e.g., tobacco, alcohol, and nicotine use) became more negative [15]. Life skills training actually taught students the skills needed to resist social pressures to use illicit drugs and helped students develop personal self-management and social skills [16]. In Taiwan, it is especially important to include life skills in drug use prevention programs because most teachers in Taiwan are still using the teacher-centered traditional didactic teaching pedagogy. Except for teaching the skill of avoidance, general life skills to prevent drug use are missing in school-based education in Taiwan.

We theorized that integrating life skills into a TPB-based drug use prevention program would compensate for the limitations of TPB and improve program efficacy. Therefore, this study integrated TPB and life skills into the design of an adolescent drug use prevention program, relying on the TPB to provide structural psychosocial measures for predicting behavioral intention and behavior, and applying life skills as a strategy for competency enhancement and behavior modification. The present longitudinal, cluster-randomized controlled trial aimed mainly to examine the effectiveness of our intervention program for preventing illicit drug use and to validate our previous findings [13]. We also examined participants’ attitudes, subjective norms, perceived behavioral control, life skills, and intentions regarding illicit drugs.

Methods

Study design and participants

We conducted a cluster-randomized trial in which participating schools were randomized to either an intervention group or a control group. The inclusion criteria for school selection were as follows: (1) school authorities agreed to fully participate in the main session and two booster sessions of the drug use prevention program; (2) the school had licensed health education teachers who were willing to participate in the program; and (3) the same health education teacher was able to perform both the main session and two booster sessions consistently throughout the program. A total of 268 junior high schools in Northern Taiwan were invited to participate, of which 24 met the inclusion criteria ($24/268 = 8.96\%$), agreed to participate, and were included in the study. The schools were then randomly assigned to either the intervention (12 schools) or control group (12 schools). All classes of grade 7 students in the respective schools were invited to take part in the study. A total of 94 grade 7 classes with a total of 2,091 students were finally enrolled to participate in the study, including 55 classes in the intervention group ($n = 1,176$) and 39 classes in control group ($n = 915$). Figure 1 summarizes the flow of participating schools and students in the study. A total of 10 schools (845 students) in the intervention group and 11 schools (830 students) in the control group completed the study. The participant retention rates were 71.9% (845/1,176) in the intervention group and 90.7% (830/915) in the control group.

Ethical considerations

The study protocol was approved by the institutional review board of National Yang-Ming University. Informed consent was obtained from all participating students and their parents/guardians. The students each completed the questionnaire anonymously; and research staff were blinded to the students’ group status.

Drug use prevention program

The contents and learning activities of the drug use prevention program were described in detail in our previous report [13]. The TPB/life skills school-based intervention program was designed by our research team by following the seven evidence-based quality criteria for developing an intervention program for drug use prevention [16]. The recommended evidence-based quality criteria for drug use prevention programs are as follows: (1) an interactive delivery method; (2) utilization of social influence; (3) a focus on social norms; (4) commitment not to use illicit drugs; (5) community interventions; (6) use of peer leadership; and (7) inclusion of life skills in the programs. The program contents of life skills training were developed on the basis of the definitions of life skills training proposed by the World Health Organization (WHO) Department of Mental Health (http://www.who.int/mental_health/media/en/30.pdf), which consists of five domains such as: self-awareness and empathy, creative and critical thinking, coping with stress and emotions, decision-making and problem solving, and communication and interpersonal relationships. We carefully followed these criteria in developing the present program, and the drug use prevention education was carefully integrated into the routine health education curriculum. In addition, two additional booster sessions were added after the main program was completed. Please refer to the “[Intervention and procedures](#)” section for details.

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