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International Approaches to Tobacco Use Cessation Programming and Policy in Adolescents and Young Adults: the Case of Spain

María T. González[1] · Alexandra Morales[1] · Mireia Orgilés[1] · José P. Espada[1]

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Abstract

Purpose of Review Spain has one of the highest smoking rates among adolescents and young adults worldwide. Smoking prevention and cessation programs have been developed for this population; however, the status of evidence-based programs in Spain remains unknown. Previous reviews evaluated the efficacy of smoking prevention and cessation programs, but an update of the results is needed for these and new interventions implemented in Spain. The objective of this paper was to examine the current status of evidence-based smoking prevention and cessation programs for Spanish adolescents and young adults.

Recent Findings The current prevalence of tobacco use among Spanish adolescents is described at the state level. We reviewed the results of drug-prevention programs (including tobacco) and provide an in-depth analysis of evidence-based school programs, focused on prevention and cessation of tobacco use in Spain

Summary The strengths and shortcomings of the programs are identified, and recommendations for future studies and applications are proposed.

Keywords Tobacco · Prevention · Intervention · Cessation · Evidence-based programs

Introduction

Smoking poses a wide-ranging and avoidable public health threat. According to the World Health Organization (WHO), tobacco consumption is the leading preventable cause of early death [1•]. Spain continues to be one of the countries with the highest smoking prevalence among young people [2•]. Patterns of tobacco consumption in Spain have been fluctuating, according to several temporal contexts and mechanisms that have been put in place to deal with the problem. According to the Spanish Observatory on Drugs [3•], from 1995 to 2004, an uninterrupted increase of tobacco consumption among schoolchildren was observed. Tobacco consumption rates then decreased until 2006 and stabilized after 2008.

Tobacco Use in Adolescents in Spain

The latest national survey on substance use among secondary school students in Spain [3•] reveals that 31.4% of students aged 14–18 years have smoked tobacco (with 25.9% having smoked in the previous month). The average age of first cigarettes use is 13.6 years, with a higher prevalence among girls (37.5%) compared with boys (33.1%). The prevalence of Spanish adolescents smoking daily is 12% for boys and 13.1% for girls. Despite prevention efforts, the prevalence of tobacco smoking is still high in Spain [2•]. Some studies have linked higher tobacco usage among youth from families of lower socioeconomic levels or from low-income families [4]. Aburto et al. [5] found a higher prevalence of smoking among Spanish adolescents who belonged to single-parent families than among adolescents with divorced parents or those who lived with both parents.

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✉ María T. González
mgonzalvez@umh.es

Alexandra Morales
alexandra.morales.87@gmail.com

Mireia Orgilés
morgiles@umh.es

José P. Espada
jpespada@umh.es

[1] Department of Health Psychology, Miguel Hernández University, Avda. de la Universidad, s/n, 03202 Elche, Alicante, Spain

Adolescent Smoking-Cessation Programs

The efficacy of smoking-cessation programs for Spanish adults is supported by reviews, meta-analyses, guidelines, and relevant empirical studies [6–8]. However, relatively few studies of teen smoking-cessation programs have been conducted worldwide—compared with adult programs—and only 25% of these studies have been conducted outside the USA [9]. Furthermore, a study involving a cost-effective analysis of a school-based teen smoking-cessation program (delivered within the USA) suggested that the program was more cost-effective than adult smoking-cessation interventions [10]. The tobacco epidemic is currently widespread among adolescents, and there is no basis for only paying attention to adult smoking.

Adolescent Smoking-Prevention Programs

International researchers have conducted several meta-analyses on the efficacy of school-based substance-abuse prevention programs. Espada et al. [11] examined 21 independent studies (12 research papers) conducted in Spain from 1985 to 2002. The results indicated that school-based substance-abuse prevention interventions were effective, although the effect sizes were small. Alcohol-prevention interventions were more effective than others that focused on tobacco and other substances. More recently, Espada et al. [12•] extended the previous meta-analysis [11] and reviewed 21 new studies from 2002 to 2013. Consistent with the previous meta-analysis [11], the efficacy of preventative programs was low, although the effect sizes increased over time. The authors concluded that more rigorous evaluations of school-based substance abuse prevention programs are needed to identify evidence-based programs and improve on previous work [12•].

Nevertheless, although some studies reviewed the prevalence of smoking cessation in retrospective reports, to optimize program's practical resources, it is necessary to find evidence of the most effective prevention and cessation programs currently. In Spain, there is no published evidence regarding the long-term efficacy of prevention and cessation programs among adolescent smokers. Thus, the objective of this study was to examine the status of evidence-based smoking prevention and cessation programs for adolescents and young adults in Spain.

Substance Use Prevention and Cessation Programs

The search was conducted throughout the month of September 2017, using major databases (PsychInfo, Medline, Scopus, Tripdatabase, Social Science, Citation Index, Cochrane, and the databases of the Superior Council of Scientific Investigations (*Consejo Superior de Investigaciones Científica, (CSIC)*): Science and Technology Investigation (*Investigación en Ciencias y Tecnología (ICYT)*), Social Sciences Investigation (Investigación en Ciencias Sociales (ISOC)), and Biomedicine Investigation (*Investigación en Biomedicina (IME)*), and gray literature (Google Scholar and Teseo). The search terms were *young, teen, youth, intervention, prevention, study, program, school, Spain, tobacco*, and *substance*. These terms were searched in full documents. Only Spanish- or English-language studies were included, with the criterion for inclusion being that the program had been implemented with Spanish adolescents, and that had among its objectives the prevention or cessation of tobacco use. The literature search identified 48 substance use prevention and cessation programs, of which 8 (five prevention programs, and three cessation programs) were finally included, according with the criterion for inclusion.

Most smoking-prevention programs in Spain (at national level) are implemented for high schools, and all them are in Castilian. Approved in 1990, the Education Law included health education in the academic curriculum; however, there is a high variability between schools. Most of the prevention programs initially implemented in schools focus on general substance use. Table 1 shows the main characteristics of these substance-use prevention programs. Only those programs with published results available were included. These interventions are described below.

The *Barbacana* (Barbican) program [13] addresses general substance-use prevention for secondary school students. It consists of eight sessions, which allow reporting on drugs (side effects and consequences of consumption) and training in some life skills that mediate substance use (alcohol, tobacco, and cannabis). The efficacy of *Barbacana* has been proven for substance-use prevention [14]; although there are no specific effects published, it has been adapted to other central European countries.

The *Saluda* (Greet) program [15] is a substance-abuse prevention program. This program consists of ten sessions and focuses on skills training related to drug consumption. *Saluda* has proven to be more effective than a placebo and a wait-list control group [16, 17]. Statistically significant differences in the mean score of participants who had the intention to consume drugs after the intervention implementation was found, with low effects sizes ($d = -.23$). Although there were no significant changes in the follow-up evaluation, the intention to use drugs decreased. This program has been adapted and implemented across Latin American countries.

The program *Construyendo Salud* (Building Health) [18]—adapted and translated from the original North American Life Skills Training [19]—has proven to be an effective tool for preventing the initiation of substance use and antisocial behaviors [20, 21]. The evaluation of results reveals a 16.7% reduction in initiating tobacco consumption. The goal is to prevent the onset of substance use (preferably alcohol and

Table 1 Substance use (including tobacco) prevention programs in Spain

Program	Author	Year	Program components	Length of follow-up
Barbacana	García-Rodríguez and López	1998	Information, modeling, problem solving	12 months
Saluda	Espada and Méndez	2003	Social learning	12 months
Construyendo Salud	Luengo, Gómez-Fragüela, Garra, Romero, and Otero-López	1998	Competence enhancement	48 months
¡Órdago!	EDEX	1996	Life skills training	–
Tú decides	Amengual and Calafat	1997	Information, decision making	36 months

Only those programs for which results evaluation is available have been included

tobacco), as well as involvement in other types of problematic behaviors (antisocial behavior) in early adolescence.

The *¡Órdago!* program [22] has been translated and adapted from the Canadian program *Promotion de l'autonomie et de la volenté de faire obstacle aux toxicomanies* (Promoting self-reliance and stubbornness to prevent addictions) [23]. It is based on the theoretical model of developing life skills [24]. The program consists of 32 sessions aimed at preventing the consumption of alcohol, tobacco, and cannabis. The program shows positive results in terms of tobacco consumption. Students who have participated in the program show lower tobacco consumption than those who have not (quantitative data are not published).

The program *Tú Decides* (It's up to you) [25] consists of four sessions, and it is aimed at preventing the consumption of alcohol and other substances, and associated problems, in scholars aged 12–16. At 1- and 3-year follow-up assessments, the experimental group (who received the intervention) maintained the number of smokers observed at the 4-month post-intervention. However, the control group increased substance uses at all outcomes [26].

Evidence-Based Tobacco Cessation Programs

In Spain, very few substance prevention and cessation programs focus exclusively on tobacco use. The characteristics of evidence-based tobacco prevention programs in schools can be found in Table 2. These programs are described below.

Adame [27] carried out a program based on the life skills approach. It is aimed at reducing the incidence of tobacco consumption. Results showed that the program failed to reduce tobacco consumption among adolescents.

Within the context of a European project, another Spanish smoking program was designed for adolescents in Barcelona who are regular smokers [28]. The intervention consists of 16 sessions and includes reinforcement of a smoke-free school policy, smoking cessation for teachers, brochures for parents, and other community-based activities involving youth clubs and tobacco sales. Positive effects were found at short term [29], and at 24 and 30 months post-intervention, and for social self-efficacy at 30 months post-intervention [30].

García et al. [31] evaluated a tobacco-cessation program composed of eight sessions that is implemented by faculty of an educational center. The program had positive effects in the short term; however, effects of the program decreased after 8 months. In Spain, 33% of the non-smokers in the control group had started smoking, compared with 29.1% of the experimental group, implying a 12% lower rate of onset.

The *Aire Fresco* (Fresh air) program [32] aims to promote smoke-free environments in education. The program was designed to reduce visible tobacco use in secondary schools. Results showed a greater regulation of tobacco use and lower

Table 2 Evidence-based smoking cessation programs in schools in Spain

Program	Author	Year	Program components	Length of follow-up
Smoking prevention program	Adame	2005	Information, social skills training, problem solving	–
European Smoking Prevention Framework Approach (ESFA)	Ariza, Nebot, Tomás, Giménez, Valmayor, Tarilonte, and de Vries	2008	Information, modeling, social skills training	30 months
Program of health promotion for smoking prevention	García, Fernández, Sánchez, Carrilo, Alcaraz, and Abad	2005	Information, modeling, social skills training	8 months
Aire Fresco	García-Vázquez, Arbesú, Rodríguez, Álvarez, Fernández, and Mosquera	2008	Information	–
Smoking prevention program	Gómez, Barrueco, Aparicio, Maderuelo, and Torrecilla	2011	Information	–
Project EX	Espada, Gonzálvez, Orgilés, Guillén-Riquelme, Soto, and Sussman	2015	Information, social skills training, motivation to quit, coping with withdrawal	12 months

consumption intensity in the centers belonging to the intervention group. Therefore, the program contributed to reducing visible tobacco use and decreasing the number of heavy smokers among teachers and students. The control group presented 1.9% more daily consumers and 12.7% more experimenters than the intervention group.

Because smoking-prevention programs carried out at schools had never offered the expected results, Gómez, Barrueco, Aparicio, Maderuelo, and Torrecilla [33] analyzed the efficacy of an intensive smoking-prevention program developed by the educational community itself. This 3-year program consisted of prevention and treatment activities. After the intervention, the only significant differences were found in the perceived behavior of siblings, peers, and teachers but not in tobacco consumption.

The studies on the *Project EX* program [34] were the first controlled school-based clinical trials of teen tobacco-use cessation conducted in Spain. The program was implemented and evaluated in several countries [35]. In Spain, Project EX reduced nicotine dependence and increased the intention to quit smoking at immediate post-test. At the 6-month follow-up, 14.28% of smokers quit in the program group, whereas no smokers quit in the control group. Furthermore, the program had a significant influence on future smoking expectation and the overall level of 30-day smoking [36•]. At the 1-year follow-up evaluation, the intervention had a significant influence on future smoking expectation, smoking intention, motivation to quit, and the overall level of 30-day smoking, with 7.81% of smokers quitting in the program group, whereas no smokers quit in the control group [37•].

Strengths and Weaknesses of Evidence-Based Tobacco Prevention and Cessation Programs in Spain

It could be acknowledged that the published programs implemented in Spain have some strength. They are described in detail regarding the number of sessions and components, which implies that they can be easily replicated. Furthermore, the programs show short-term effectiveness in reducing tobacco consumption. These results are validated through the design of the programs, which include a comparison control group and validated self-reports for the evaluation.

However, the implemented programs also have certain weaknesses. The efficacy of tobacco-prevention programs conducted in Spain is rarely evaluated, as can be ascertained from this review. Of all the programs, only six focused exclusively on tobacco consumption. Of them, Project EX [34] was the only program assessed in a controlled school-based clinical trial for adolescent tobacco-use cessation. Therefore, one of the weaknesses identified is the absence of evidence-based smoking-cessation programs in Spain. This absence can be explained by some school-level barriers. For example, challenges of including smoking-prevention activities in the school timetable, low motivation among schoolchildren to learn health-related material, low interest among schools in tobacco-related programs, and unrealistic expectations associated with a preference of implementing one-session interventions [38].

In addition to there being few evaluation studies, another lesson learned was the high heterogeneity and variability of the results across programs and studies [12•]. More rigorous evaluations of smoking prevention and cessation programs are needed to identify evidence-based interventions in this field. Effects of the programs are usually evaluated in the short term only; follow-up assessments are rarely included in the studies. Although positive results can be found in the short term, variations in substance use are usually detected in the follow-up assessments, generally at 1 year later [39].

Apart from the programs' efficacy overall, it is also relevant to identify modulating variables that may influence the efficacy of smoking prevention and cessation programs. Identifying the variables that have the greatest influence on program efficacy is also needed [40]. In this regard, potential mediators of Project EX's efficacy were analyzed. McCuller, Sussman, Wapner, Dent, and Weiss [41] analyzed the role played by motivation to quit smoking, concluding that motivation to quit is a plausible mediator of cessation program effects. Shortly after, Gonzálvez, Espada, Orgilés, Morales, and Sussman [42•] found that nicotine dependence was a mediator of the long-term efficacy of Project EX in reducing tobacco consumption in adolescents. Despite these findings, there is a lack of understanding as to why smoking prevention and cessation programs succeed or fail.

Conclusions and Future Recommendations

Most smoking prevention and cessation programs in Spain were conducted in school settings. Considering the practical limitations mentioned for such interventions, it may be interesting to expand the contexts of these programs' application.

Second, many international programs offer incentives that support the students' motivation to quit smoking, and these incentives reward students' efforts when they quit smoking [43]. Reinforcing initial attempts to quit may improve the efficacy of smoking-cessation programs for people who present difficulties with quitting [44].

Lastly, it is important that the methodology of programs is rigorous in terms of duration, number of sessions, components, and follow-up evaluations. It would be advisable, knowing the evidence of certain programs, that these are implemented without changes to reduce the variability of the results and to control the fidelity of implementation and integrity of the applications. Furthermore, programs that have proven effectiveness must be used in real settings (not only in

research-based work), instead of designing new ones for the same purposes. More research is required for a better understanding of why smoking prevention and cessation programs succeed so that efforts may be directed to identify the variables that determine the efficacy of such programs.

Compliance with Ethical Standards

Conflict of Interest The authors declare they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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