Review Article

Strategies for prevention or reduction of drug use for adolescents: systematic literature review

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ABSTRACT

A systematic review was conducted with the objective of identifying scientific evidence of strategies for prevention or reduction of drug use among adolescents. Searches were conducted in databases LILACS, CINAHL, MEDLINE, Scopus and Cochrane Library, with descriptors Ensino, Educação em Saúde, Transtornos relacionados ao uso de substâncias, Adolescentes and Enfermagem Psiquiátrica. Twenty-seven articles were chosen. Results pointed to a variety of software, projects and interventions that are used as strategies for prevention or reduction of drug use among adolescents. Among the studies, 74.1% (n=20) reached satisfactory results and 25.9% (n=7) reached partially satisfactory results. Only Narconon Project and Brief Intervention were widely effective in reducing use of a variety of drugs among adolescents, since the other studies were focused on specific drugs or were limited to use prevention among non-using adolescents.

Descriptors: Teaching; Health Education; Substance-Related Disorders; Adolescent; Psychiatric Nursing.

INTRODUCTION

Drug use is considered a serious public health problem, by the World Health Organization (WHO) since it causes a number of social, physical and mental issues[1]. According to WHO, approximately 10% of urban dwellers in the world, of different ages, genders, education levels or incomes, make unhealthy use of psychoactive substances[2].

In the international scenario, a research conducted in Mexico demonstrated that over 200,000

adolescents between ages 12 and 17 are involved in drug use, which begins, on average, at age 14. In terms of gender, there are 3.5 male users for each female user. These findings show that drug use is a more frequent practice in the adolescent demographic[3].

The *Centro Brasileiro de Informações sobre Drogas Psicotrópicas* (Brazilian Information Center on Psychotropic Drugs – CEBRID) also demonstrated in its last survey, published in 2010 and with participation of 50,890 middle and high schoolers from 27 Brazilian capitals, that 25.5% of adolescents mentioned instances of drug use in their lifetime[4].

A study also showed that drug use happens at increasingly younger ages because of the adolescents' vulnerability, which causes greater probability of issues such as: addiction; traffic accidents; violence; family conflict; work problems; and diseases, among others[5]. Use of substances that affect mental states is part of humankind's history, since it is related to cultural or religious aspects, recreational moments, strategies to handle problems and as tool for socialization or isolation[6].

Drug abuse also generates high social costs, which demands correct public health actions[7]. Thus, drug use is a relevant problem that demands attention from everyone, in other words, from society in general, from health workers, from the scientific community and from educators.

Recently, actions directed towards the use of psychoactive substances progressed from being focused on treatment and intervention to encouraging education, health, life and family contribution; in other words, they became focused on prevention strategies[8]. As some studies demonstrated, the school environment, of which adolescents generally are a part, is a favorable space for carrying out these strategies. A school's fundamental role of educating for life offers a better understanding of the world and can cause social changes for a better future for these young individuals[9]. In order to become an element for protection against drug use, the educational field must act in coordination with the health field so that together they can establish actions to be undertaken[3].

In this perspective, the authors considered relevant studies that demonstrate actions for prevention or reduction that are effective for decision-making. They also considered studies that help society in general to choose the best strategies for prevention or reduction of use of alcohol or other drugs. These studies were meant to be employed on the adolescent demographic and focused on actions which are capable of decreasing early use of drugs and its consequences.

Thus, the authors had the goal of identifying strategies for prevention or reduction of drug use directed at the adolescent demographic

METHOD

Systematic review of literature, which consists of a rigorous synthesis of all studies related to a defined theme, generally involving the effectiveness of an intervention. It also groups and analyses results of primary investigations[10]. This review was developed according to criteria from the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which contain 27 items of a checklist addressing

information that must be included in systematic reviews and a flowchart for article selection[11].

To reach the objective, the following questions were established: what strategies are used for the prevention of the use of alcohol and/or other drugs in the adolescent demographic? What are the strategies' objectives? Where, by whom and how are they developed? What is their effectiveness?

Searches were conducted in the databases Latin-American and Caribbean Center on Health Sciences Information (LILACS), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Pubmed/MEDLINE, Scopus and Cochrane Library using the following descriptors, separated by the Boolean operator "and": "*Ensino*/Teaching", "*Educação em Saúde*/Health education", "*Transtornos relacionados ao uso de substâncias*/Substance related disorders", "*Adolescentes*/Adolescent" and "*Enfermagem Psiquiátrica*/Psychiatric Nursing".

Eligibility criteria for selection of articles were: experimental and quasi-experimental studies that applied a prevention strategy against use of alcohol and other drugs among adolescents and that obtained scientific evidences above III, according to Stetler et al's rating[12]. These studies were published starting in 2003, since that was when the anti-drugs policy was implemented[13], in Portuguese, English and Spanish and with abstracts available for examination at the databases.

Data gathering happened in the months of February and March, 2015, followed by a thorough analysis of resulting studies, which involved an exploratory, selective, analytic and interpretative reading[11].

Nine-Hundred and ninety-one potential references were initially identified for this review; of those, 74 articles were selected for complete critical reading. Afterward, 47 articles were removed because of double entries or for not answering the study's guiding questions; in the end, 27 articles were selected for analysis. Diagram 1 shows the synthesis of the article selection process.

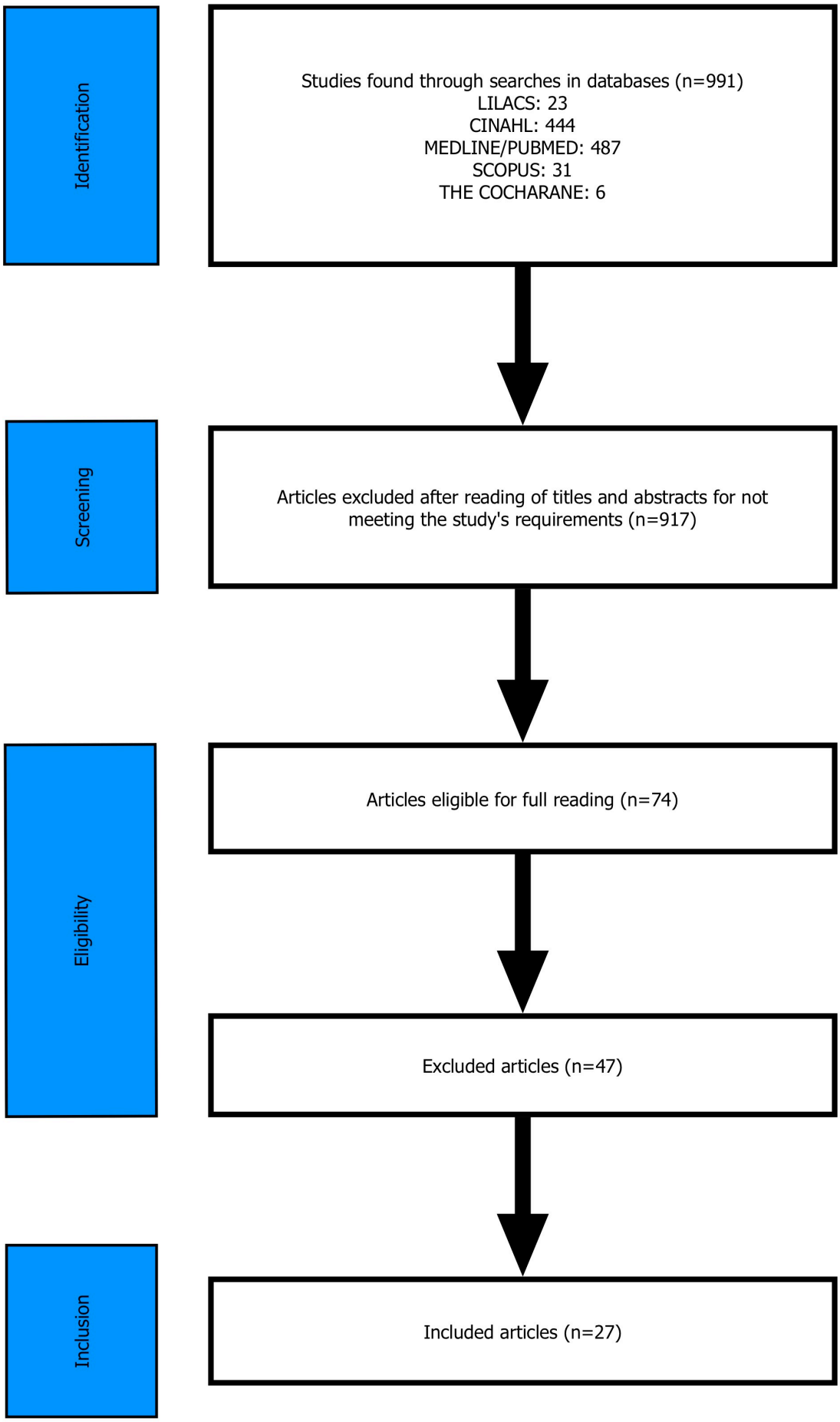

Diagram 1: Flowchart of article selection.

Data were organized in an instrument for the study's evaluation[10]. The instrument has the following items: Authors/Year of publishing; Country of origin; Method-level of evidences, chosen strategy; objective of strategy; where the strategy was applied and who carried it out and Effectivity. Critical analysis of the article's results happened at two different times. In the first one, to present characteristics of found articles and, in the second one, to analyze contents of articles.

RESULTS

Chart 1 presents the characteristics of studies included in systematic review according to strategies for prevention or reduction of use of alcohol and other drugs directed at the adolescent demographic. All articles were experimental and with level of evidence II[12]. Most articles were carried out in 2013 and the United States was the country with the highest number of articles (44.4%).

Chart 1: Characteristics of studies included in the systematic review according to the synthesis of prevention strategies against alcohol and other drugs focused on the adolescent demographic.

Authors, year of publishing	Country of origin	Method-level of evidence *	Strategy used	Objective of strategy	Location/who conducted the strategy	Effectiveness of strategy
Giannotta et al, 2013 [14] Faggiano et al, 2010[15] Caria et al, 2011 [16] Gabrhelik et al, 2012 [17]	[14-16] Seven European countries (Austria, Belgium, Germany, Greece, Italy, Spain, Sweden). [17] Czech Republic	Experimental studies- level II[14-17]	Unplugged curriculum program	Prevent or reduce drug use.	Schools/teachers	Demonstrated partial effectiveness since it focuses on a single drug.
Koning et al, 2013[18] Koning et al, 2012[19]	[18-19] Netherlands	Experimental studies – level II[18-19]	Project for Universal Prevention of Alcohol use for adolescentes and their parents (PAS)	Reduce early and heavy alcohol use in weekends.	School/Trained assistants	Effective in reducing alcohol consumption.
Sussman et al,2003 [20] Rohrbach;Sussman,2010 [21]	[20-21] United States	Experimental studies- level II[20-21]	Project Towards No Drug Abuse-TND	Prevent drug abuse	Schools/trained teachers	Demonstrated partial effectiveness since it decreased consumption of only a single drug.
Lennox; Cecchini, 2008[22]	United States	Experimental study – level II	Narconon Program	Prevent drug use in schools.	Schools/Professionally trained facilitators	Demonstrated effectiveness in reducing drug use.
Huang xet al, 2011[23]	Taiwan	Experimental study – level II	Program for prevention of drug use integrating planned behaviour theory and life skills.	Prevent drug use.	Schools/ teachers	Effective, because it improved attitudes, behaviors and life skills of adolescents with the intention of not using drugs.
Sloboda et al,2009 [24]	United States	Experimental study – level II	Universal prevention program in school environments Take Care of Your Life (TCYL)	Stop or reduce use of alcohol, tobacco and marijuana.	Schools/teachers	Demonstrated partial effectiveness since it decreased consumption of only a single drug.
Perry et al,2007[25]	United States	Experimental study – level II	Northland project	Prevent or delay alcohol use among adolescents.	Schools/teachers	The project affected the reduction of alcohol use among adolescents and in the increase of family problems.
Eisen; Zellman; Murray,2003[26]	United States	Experimental study – level II	Skills for Adolescence-SFA	Prevent or delay use of tobacco, alcohol and illegal drugs.	Schools/teachers	Life skills in adolescence were effective in the prevention of substance use among adolescents.

Authors, year of publishing	Country of origin	Method-level of evidence *	Strategy used	Objective of strategy	Location/who conducted the strategy	Effectiveness of strategy
Micheli; Fisberg; Formigoni,2004[27] Goti et al,2010[28] Patten et al,2006[29] Doumas et al,2014[30]	[27]Brazil [28] Spain [29-30] United States	Experimental studies- level II	Brief intervention	Prevent or reduce use of alcohol and other drugs.[25, 28] Increase knowledge about substance use risks.[26] End tobacco smoking among adolescents.[27]	*Center for support and attention for adolescents/four pediatric physicians. *Psychiatric service/service professionals. *Online/Health educator.	Promoted motivational reinforcement in adolescents and colaborated for drug use reduction.
Baer et al,2008[31]	United States	Experimental study – level II	Motivational intervention	Generate behaviour changes in adolescents such as substance use.	Social center/professionals	Effective in causing changes in behavior of adolescents related to substance use.
Gregor et al, 2003[32]	United States	Experimental study – level II	Portable interactive software	Avoid wrong alcohol use among adolescents.	Urgency service/professionals.	The program was effective, leading adolescents to rethink their alcohol consumption.
Werch et al,2005[33]	United States	Experimental study – level II	Intervention in multiple health behaviours with integration of physical activity for the prevention of substance use	Prevent and reduce use of alcohol and other substances and increase physical activities among adolescents.	School/trained team	This strategy was effective to prevent substance use.
Conrod et al,2013[34]	Reino Unido	Experimental study – level II	Personality-Targeted Prevention Program or HR treatment (Legal Education about drugs)	Prevent wrong use of alcohol.	School/trained instructors	Strategy had positive effects on alcohol use reduction.
Serrano et al,2013[35]	Spain	Experimental study – level II	Saluda program	Prevent and promote adolescent health against the use of alcohol and other drugs.	School/psychology undergraduates	The program is very effective in prevention and in the promotion of health for adolescents when it comes to the use of alcohol or other drugs.

Authors, year of publishing	Country of origin	Method-level of evidence *	Strategy used	Objective of strategy	Location/who conducted the strategy	Effectiveness of strategy
Guo et al,2010[36]	China	Experimental study – level II	School-based Health intervention program using cognitive motivation, emotional intelligence and resistance skills in prevention of drug use	Improve knowledge on drugs to decrease motivation for use and improve skills for resisting drugs.	Schools/teachers	The program was effective in preventing drug abuse.
Walton et al,2013[37]	United States	Experimental study – level II	Computer and therapist based brief interventions among cannabis-using adolescentes.	Reduce problems related to cannabis use.	Primary care service/Nurse	Brief intervention carried out in computers decreases cannabis use and related problems among adolescents.
Toumbourou et al,2013[38] Milburn et al,2012[39]	[38] Australia [39] United States	[38-39] Experimental studies- level II	Family intervention	Reduce adolescent alcohol consumption.	*Schools/instructors *Community-based organization/Trained facilitator	Adolescents presented reduction in consumption of this substance.
Primack et al,2014[40]	United States	Experimental study – level II	Selected anti-smoking medical literature	Reduce adolescent tobacco smoking.	Schools/teachers	Strategy improved young subjects' perception of smoking.

* Stetler et al., 1998.

Researched studies explored 18 different prevention or reduction strategies against drug use directed at the adolescent demographic. Those studies' strategies ranged from programs and projects to interventions. When exploring where and who conducted the prevention strategies against alcohol and other drugs directed at the adolescent demographic, it was found that among the 27 studies: 74.1% (n=20) of studies were conducted in schools by teachers or trained staff; 3.7% (n=1) at *Centro de Apoio e Atendimento ao Adolescente* (Center for Support and Attention for Adolescents – CAAA) by four pediatric physicians; 3.7% (n=1) at a social center by workers; 3.7% (n=1) by workers at a psychiatric service; 3.7% (n=1) by nurses at a primary care service; 3.7% (n=1) by a health educator and a trained worker online and 3.7% (n=1) by a trained facilitator at a community center organization.

When analyzing effectiveness of prevention or reduction strategies against alcohol or other drugs use with focus on the adolescent demographic it was found that 74.1% (n=20) of studies exhibited satisfactory results to prevent or reduce the use of alcohol and/or other drugs among adolescents and 25.9% (n=7) of studies exhibited partial effectiveness, since they presented satisfactory results only for some of the investigated substances.

Among limitations found in studies with partial effectiveness, there were geographical diversities in samples, refusal abilities, presence of normative beliefs and presentation of small mediation effects[14].

DISCUSSION

This study confirms the importance of applying prevention or reduction strategies against the use of alcohol and/or other drugs among adolescents because all investigated strategies, whether programs, projects or interventions favored prevention or reduction of substance use integrally (74.1%) or partially (25.9%).

In some studies[14-17,20-21,24], investigated strategies demonstrated partial effectiveness due to lack of results in reducing use of all drugs, presenting positive effects only on the use of a single drug. Brief intervention[27-30] was the strategy that stood out the most in this study, since it promotes motivational reinforcement among adolescents. It is also centered on client counseling conducted in a limited time, seeking behavior changes, decision-making and commitment to change[41].

School (74.1%) was elected the most favorable environment for the development of strategies. Yet, the effectiveness of some strategies employed at schools, such as Project for Universal Prevention of Alcohol use[18-19] involved both adolescents and parents simultaneously, which demonstrated the importance of making families part of the prevention strategies[38-39], with parents acting as restrictors of drug use and adolescents presenting higher self-control and reduction in use[18-19,25].

The Northland Project[25], besides preventing and delaying alcohol use among adolescents, also has the potential to reduce the growth rate of family problems. The project lasted for seven years, going through three phases of subjects' lives: early adolescence, transition phase and end of adolescence. It demonstrated that decreasing family conflict is conducive to the presence of mechanisms for the prevention of alcohol use

among adolescents, with an increase in parental awareness of these mechanisms resulting in closer monitoring and stronger consequences [25].

The Narconon program[22] is another program that has demonstrated satisfactory performance in reducing drug use in the school environment; it is composed of eight modules: drug education; motivation; social skills; recognition; social influence; risks; protection factors against drugs; etiology of drug abuse and addictions. The purpose of these modules' is to complement existing prevention activities in class. Personality-Targeted Prevention Program or HR treatment (Legal Education about drugs) also demonstrated success in class[34].

Also in the school environment, another effective program that improved attitudes, behaviors and life skills of adolescents aimed towards avoiding drug use was Program for prevention of drug use integrating planned behavior theory (TPB)[23] and life skills[23]. In that program, teachers used the seven quality criteria for intervention programs: interactive method; use of social influence; focus on social codes; commitment to not use drugs; community interventions; use of peer leadership and inclusion of life skills.

The use of life skills for adolescence is an important method to prevent or delay substance use among adolescents. Through such use, various means are employed to teach social competence and refusal skills[23,26]. Other resources that showed effectiveness in generating behavior changes in adolescents against substance use were Motivational Intervention and School-based Health intervention program using cognitive motivation, emotional intelligence and resistance skills[31,36].

To act on multiple health behaviors, a study[33] described positive effects found with application of a strategy that integrates physical activities and prevention of substance use among adolescents. This action was based on the Integrative Model Image-Behavior, which affirmed that positive personal and social images served as motivators for health development.

In addition to the resources required by prevention strategies against substance use mentioned previously, the use of technologies such as interactive software and the Internet are other tools that are beneficial in preventing use of alcohol and/or other drugs[29-30,32,37]. The effectiveness of these resources in the development of strategies may be related to lower costs and higher benefits, because they require little training, reach high levels of standardization and fidelity and are easily disseminated to a higher number of adolescents[30]. Moreover, these resources can be a means of promoting higher interest among adolescents, since they make it possible to develop a more exciting program that is interactive and autonomous for decision-making[37].

In a CAAA, pediatric physicians employed brief intervention against the use of alcohol and other drugs among adolescents, dividing them according to their levels of substance use in the previous month (who received the brief intervention) and no use in the previous month (who received preventive instructions)[27].

All investigated strategies in analyzed studies showed some level of effectiveness to prevent or reduce use of alcohol and/or other drugs among adolescents. However, seven studies showed reduction in use of only a single drug, such as alcohol, and the strategies employed by these tests were: Program with Unplugged

Curriculum[14-17], Project toward no drug use[20-21] Universal prevention program in school environments and Take Care of Your Life (TCYL)[24].

Among satisfactory strategies to prevent or reduce use of alcohol and/or other drugs among adolescents, only Project Narconon[22] and brief intervention[27] showed real effectiveness against the use of a variety of drugs.

As for the level of evidence, this enables proof of accuracy to support clinical choices as higher levels correspond to stronger evidence.[42] It should be noticed that all studies in this review presented strong levels of evidence, which can support important clinical decisions concerning the prevention or reduction of drug use among adolescents.

CONCLUSION

Analysis of the 27 studies that were part of this review identified 18 strategies for prevention of use of alcohol and other drugs with focus on adolescents, with 74.1% of them being completely effective.

The authors found a variety of studies involving the use of programs, projects and intervention in a number of countries, which had the intention of preventing or reducing use of psychoactive substances among adolescents. Schools were the most frequent locations where these studies were applied with teachers being the most frequent appliers. Identified strategies involved: the participation of parents in the prevention of substance use among their children; drug education; use of technology; use of life skills and counseling, among others. The involvement of families, schools and use of technology are considered important factors for the success of these strategies.

The authors conclude that employing prevention strategies against drug use among adolescents is an important action in minimizing this problem. The strategies, in addition to preventing or reducing substance use among young people, can also prevent possible consequences of that practice. Among the strategies investigated in this study, only Narconon Project and brief interventions showed wide-ranging effectiveness in reducing use of a variety of drugs among adolescents, since the others were focused on specific types of drugs or were limited to use prevention among non-using adolescents.

In this context, there is a necessity for new studies that can explore the effectiveness of strategies focused on groups of drug users or even longitudinal surveys that can assess their effectiveness on long-term use prevention.

This study contributed to knowledge on strategies for prevention or reduction of drug use among adolescents. However, meta-analysis studies will be useful to reinforce results explored in the analyzed investigations.

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