



A Review of the Prevention of Drug Addiction: Specific Interventions, Effectiveness, and Important Topics

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Abstract

Background: This study was a narrative review on prevention of addictive behaviors with an effort to clarify the major concepts of prevention and its dimensions.

Methods: The PsycInfo and MedInfo databases were used to identify prevention. A total of 65 articles were found 46 of which were included in the review. The data were analyzed using content analysis.

Findings: For a better understanding of the results, it was deemed advisable to categorize them into: (a) the types of major interventions and the theoretical approaches on which they were based, (b) the results of the review articles according to (1) variables and factors concerning the prevention proved important through the review and (2) a number of more general important topics which arose in the prevention of addictive behaviors.

Conclusion: The results highlighted the greater effectiveness of community-based programs, applied primarily in broader contexts but also secondarily in high-risk groups. The results were discussed based on the combination of the emerged factors with each other and prevention experience.

Keywords: Review, Primary prevention, Addictive behaviors

Citation: Flora K. A review of the prevention of drug addiction: specific interventions, effectiveness, and important topics. *Addict Health*. 2022;14(4):288-295. doi:10.34172/ahj.2022.1348

Received: January 27, 2022, **Accepted:** April 10, 2022, **ePublished:** October 29, 2022

Introduction

One of the most important questions in the field of psychotropic substances addiction, including alcohol abuse, is which ways, methods, techniques, or interventions are effective in substance use prevention. Given the fact that there are various kinds of prevention strategies, this question becomes even more complicated as it is hard to find and systematize these factors. It is essential to continue research in this direction since the question why young people resort to substances and get addicted to them has not been fully answered yet. Furthermore, it is generally accepted that prevention is better than treatment.

Psychotropic substances addiction refers to the substance-related disorders as described by Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V). Although the psychological mechanism of addictive substance use is considered to be common with or at least similar to that of addiction to illegal substances and alcohol, in this study, the surveys that focus exclusively on alcohol were not included. The reason for this decision was that articles on alcohol prevention are numerous and could be investigated –as already done– in a separate study. Besides, alcohol use displays certain peculiarities; for example, it is a legal and easily accessible substance.

Traditionally, prevention strategies have been categorised into primary, secondary, and tertiary preventions. Primary prevention refers to the prevention of substance use and abuse. Secondary prevention refers to the early identification and treatment of individuals already using substances, while tertiary prevention refers to the treatment and reduction of harm in people who have already used substances and have consequences from their use. We can literally talk about prevention only in primary and partially in secondary types. Tertiary prevention is essentially not prevention but treatment and reduction of harm.

Another distinction that has been made in recent decades (e.g., National Advisory Mental Health Council Workgroup on Mental Disorders Prevention Research¹) classifies prevention strategies into universal, selective, and indicated preventions. The universal strategies apply to the general population (e.g., students) in order to inform and raise awareness about the issue of drugs.² Selective strategies target individuals at increased risk of substance use and abuse (e.g., children of addicts, children growing up in high-risk environments or neighborhoods). Indicated strategies are for people who may not already be addicted to drugs but have had a contact with them (e.g., young people experimenting with substances).



Preventive interventions in the three categories described above may have different goals, including the following: (a) increasing the knowledge about drugs in adolescents; (b) reducing the use of drugs; (c) delaying the onset of first use; (d) reducing abuse of drugs; and (e) minimising the harm caused by the use of drugs.³ Additionally, regarding the context of implementation of prevention interventions, it is evident that these interventions can aim at different settings such as schools, families, the wider community, the media,⁴ or even in places of gathering of young people e.g., cultural centres, parks, cafes, and so on.

The field of prevention is in general very broad as it includes prevention policies, designs, methods, techniques, and interventions. The design of interventions requires the appropriate theoretical background and the deployment of previous knowledge and results. Furthermore, it potentially includes various intervention implementation frameworks, a different extent of involvement, and participation of the individuals e.g., children, parents, and teachers.

There are a lot of important dimensions to be investigated in what is broadly defined as prevention. The effectiveness of the interventions is an important parameter. Effectiveness is usually defined as a reduction in substance use or a reduction in the positive attitude towards substances, after the implementation of a prevention program. The sustainment, however, of positive results on a long-term basis is an even more important dimension. The active participation of the involved members and the retention of the therapeutic results are other necessary components for the implementation of effective interventions.

As far as the evaluation of interventions is concerned, reliability should be tested as youth substance use programs are often of limited generalizability due to methodological restrictions and the absence of consistency in evaluation of interventions.⁵

Furthermore, it should be mentioned that the concepts usually studied (e.g., self-efficacy, motivation for change, coping skills) are complex and hard to be assessed in self-report measures. In addition, these psychological processes may not be part of conscious awareness and thus may not be possible to be evaluated using self-report measures. Additionally, it is doubtful whether they are indeed related to the underlying pathology of addiction.⁶

The main objective of this narrative review was to investigate the key modern trends in the prevention of psychotropic addiction and to identify which interventions are most effective and where and how they are performed.

Methods

A specific review of factors important for the prevention of drugs was conducted in PsycInfo and MedInfo

databases, entering as search items for the factors the words “prevention”, “addiction”, “drug addiction”, “drugs”, “drug prevention strategies”, “substance use” and “dependence” or the combination of the above words. The data were collected from 2018 to 2021. The search included articles published from 2000 onwards. A total of 65 articles were found among which 46 articles were included in the review. Articles that clearly referred to the prevention of substance use (interventions, strategies, or prevention systems) were included in this study. Articles that indirectly referred to prevention or were restricted to medication or genetic aspects of prevention were excluded. Regarding the type of articles, 26 of them were research articles and 20 were review articles. Among the research articles, 11 were correlational quantitative studies, 9 were quasi-experimental studies, and 6 used qualitative designs. Concerning the participants, 34 of the studies were conducted on school-based programs and 9 on community-based prevention programs. The remaining ones did not refer to specific intervention programs and focused on theoretical elements or prevention and health policies systems.

Taking into consideration the above mentioned as well as the theoretical concerns and the steady need to improve the problematic parts, a search of relevant findings from research and review articles was conducted. Given the dissimilarity of the research studies found, the data were analyzed using content analysis and systematized in different categories according to the point on which each research focused. For a better understanding and categorization of the research results, it was deemed expedient to mention a) the major interventions and techniques used in the studies and b) the results categorized through the above-mentioned analysis.

Results

(A) With regard to the type and the theoretical approach of the interventions applied in the studies found in this review, a wide range of theoretical approaches and techniques were identified that illustrate the preferred trends in prevention over the past years. Characteristically, there is a great heterogeneity among the programs and methods.^{7,8} Before reviewing the results in the following section, these interventions are elaborated. The following categorization of interventions was chosen because it contributes to a systematic and comprehensive display (Table 1).

a) A lot of studies used interventions that could be characterized as environmental interventions⁹⁻¹¹ which

Table 1. Intervention type and theoretical approaches

A. Intervention type and theoretical approaches
Environmental interventions
Interventions whose broader theoretical framework relies on the cognitive-behavioral approach

highlight mainly the implementation of interventions in a more natural, social, and cultural environment where the individuals act and behave. The aim of these interventions was to increase the cultural belonging to achieve which, a lot of interventions used culturally-based techniques.¹²

b) A second category of studies, possibly the one encompassing the majority of them, includes the studies that used more cognitive-based techniques, namely interventions whose broader theoretical framework relies on the cognitive-behavioral approach. Thus, it specifically includes social skills interventions, strengthening families programs and life skills trainings,¹³ enhancing communication channels interventions, CHAT- a solution focused strategies program, increasing self-efficacy methods,¹⁴⁻¹⁶ McGuire's persuasion,¹⁷ CHOICE program, Cherokee self-reliance program,¹⁸ Project ALERT program, Persuasion Communication Model, SMART program, random student drug testing,¹⁹ development and monitoring of career goals, and internet-based prevention programs.²⁰

c) A third research category includes methods that could be characterized in a broader sense as humanistic. These methods are based on the restricted results of the mainly informative (based on providing information) and more cognitive approaches and illustrate the experiential character of prevention. Thus, a lot of prevention strategies deal with the promotion of youth development,²¹ peer-to-peer mentoring,²² motivational interviewing^{23,24} (a method with a cognitive background as well), narrative therapy, educational and career counseling, and positive youth development strategies with the active participation of teachers and parents.^{21,25} Obtaining insight and expertise from program personnel and school staff and administrators can bring the program to a point where these strategies can still be achieved and theoretical linkages made after a program has been implemented. This is a necessary foundation for measuring the success of an intervention.²¹ A common characteristic of these methods is the intent of active participation of all the community members such as local media and teen networks. Some of them, when implemented in a school-based environment, are delivered by teachers,²⁶ not by specialized scientists alien to the school environment.

(B) In the second and main part of this section, the results of the reviewed articles are presented as categorized based on (a) variables and factors concerning the effectiveness proved important through the review and (b) a number of important topics highlighted for the prevention of addictive behaviors (Table 2).

a) Concerning the variables and/or the factors that proved more or less important to the implementation of prevention programs, the self-efficacy variable is the most frequently mentioned one. Self-efficacy is the optimistic self-belief in one's competence or chances of successfully

Table 2. Variables and important topics

B. Variables and important topics
a) Variables and factors concerning the effectiveness proved important through the review
Self-efficacy
Positive values (positive development, strengths, positive emotions, hopefulness)
Social support

accomplishing a task and producing a favorable outcome.^{27,28} The building of self-efficacy seems to be a characteristic of addiction-proof children.¹⁴ Apart from self-efficacy, other variables from the cognitive approach associated with successful efforts of prevention are motivational enhancement, life coping skills, decision-making,²⁰ enhanced drug resistance skills, increased knowledge, and behavior determinants (attitudes, subjective norms, self-efficacy, intention) more negative towards drugs.¹³

The variables that derive from the humanitarian tradition and positive psychology have very positive results when included in prevention programs. Thus, the promotion of positive youth development and the cultivation of an optimistic future orientation,²¹ the development of hopefulness,²⁹ harmony among family members,³⁰ and the strengths and the enforcement of a healthy lifestyle have been repeatedly associated with a reduction in use of addictive substances. The positive role of self-reliance which is defined as being true to one's self and being connected, responsible, disciplined, and confident¹⁸ can be included in the same context.

Other studies investigated the social support and generally the effect of the social environment on addiction prevention. The results are usually controversial. Therefore, the influence of friends and peer pressure³¹ may be associated with high-risk behaviors, but friends are preferred in seeking help.^{26,30} Self-evidently, having family members who use drugs and adverse life events are associated with high risk.^{31,32} On the other hand, peer networks and dynamic group leaders can also help to motivate the students.³³ The role of the teachers in prevention is estimated to be positive, as their involvement in prevention programs is associated with lower risk. A positive impact seems to be attributed to parenting monitoring and strict parenting as well as religiosity.²⁶ Especially in the school context, it seems that belonging to the public school network, development of activities targeting sexuality, development of "Health at School Program" activities, offering extracurricular activities, and having an administrator that participated in training courses on drugs are associated with program implementation.³⁴

b) With regard to the more general important topics highlighted in substance addiction prevention, a first point is that a lot of researches were based on an

informative approach about prevention (e.g., decision),³¹ namely the provision of information to the target group (youths or students) about the negative effects of addiction that is expected to lead to a logical refusal of substance use. The major conclusion drawn is that prevention strategies based mainly or exclusively on information have poor results,^{17,35} which is confirmed by a study according to which most youths were aware of the adverse health effects of substance use.³¹ However, other studies based on internet-based interventions supported that intervention groups have more knowledge and are less likely to use cannabis.²⁰ It is recommended to adopt a broader approach which embraces other directly or indirectly involved individual groups (parents, teachers) and control the quantity and quality of the information provided.^{35,36} Relevant to the provision of appropriately purposeful information about substance use was the finding about the inadequate awareness and messages in workplace,³⁷ an example of the expansion of prevention in environments outside the school.

The importance of development stages and the transition from one development stage to the next was another topic highlighted in the review.³⁸ Studies focused on the understanding and recognition of possible genetic risks and protective factors at the crucial age of children and teenagers.^{39,40} Some data seem to be confirmed, such as the fact that the onset of substance use at a later stage reduces the problematic use.¹²

A lot of studies^{18,41-43} mentioned the effectiveness of culturally grounded interventions. These interventions are culturally sensitive, which means that they primarily take into consideration the cultural characteristics of the population on which the intervention is implemented. Quite often sub-techniques are used that deploy special cultural characteristics of a place (e.g. canoe).⁴¹ The positive results of these efforts reinforce the poorer results of interventions, where a prevention program is transferred and implemented invariably from one country to another, mainly from a developed country to a so-called developing country.⁴² Therefore, the integration of appropriate theory and cultural elements seems to be necessary. However, there are also findings that consider that risk and protective factors concerning majority-based research may also be predictors for minorities.⁴³

Similar to the above is the finding that a lot of preventive interventions followed the ground-up methodology, namely the configuration of interventions after relevant research in population members, where the intervention was implemented later on.^{16,20} Therefore, in case the aim is to apply an intervention in the school-based environment, the prevention strategies are configured and chosen after some preliminary work (e.g., focus groups) with the affected populations (e.g., teachers, students), which illustrates the needs of these particular individuals at a specific time. This is in contrast with the most common

method (up-ground) where already tested interventions are applied to various populations.⁴⁰

As mentioned in the methods section, the greatest part of interventions took place in school-based environments that seem to be probably the most suitable ones for the implementation of interventions, as indicated by findings about effectiveness.¹⁹ However, the findings are not always consistent, as there are also findings that suggest minor to insignificant positive results.¹⁷ Furthermore, certain findings indicated a lower effectiveness in boys compared with girls and better results in children of a low socio-economic level compared with children of a higher socio-economic level.⁴² With regard to the frequent implementation of prevention programs in school-based environments, a question of generalization is raised, as expected, namely to what extent the whatsoever results achieved in this environment can be sustained outside this environment.²⁰

A classic study indicated small- to medium- sized differences in behavioral problems between students who participate for the longest period of time and those who participate for the shortest time¹⁹ which highlighted the importance of the sustainment of the results as well as the retention of students both in the school-based environment and the prevention programs. As noted, the impact of education and persuasion programs tended to be small, at best. When positive effects were found, they did not persist.¹⁷ Furthermore, in terms of effectiveness, the flexibility in delivering the program, such as offering the program in different days and times, seems quite important.²² However, low effectiveness, indicated even by large-scale studies, is probably attributed to issues of methodology, such as selection strategies.⁴³

A matter of greater importance with various social aspects that was highlighted was social responsibility with regard to addiction prevention.⁴⁴ The importance of the involvement of all the community members leads to the conclusion that prevention concerns potentially every member of the society and not just the populations included in the so-called high-risk groups. Thus, the involvement of school, neighborhood, family, and various associations and religious bodies⁴⁵⁻⁴⁸ seems to be important as it enhances the conscientiousness and responsible behavior of the citizens towards such a vitally important matter. In the same context, the importance of a broader collaboration and consistency between policy design and implementation of educational interventions¹⁷ is also highlighted; however, this is a very complex issue which faces various obstacles during its implementation such as the cost of the interventions.⁴

The policy issue comes to the forefront when addiction prevention issues are dealt with. Roumeliotis⁴⁹ showed drug addiction is presented as a problem to be handled by experts rather than politics. This shows an important shift in the role of policies in prevention and treatment.

Certainly, there is an increasing trend towards harm reduction and even educational approaches and other more traditional forms of prevention including harm reduction.⁴⁸ These matters are underlined by the necessity for transdisciplinary scientific collaborations that have the potential to strengthen substance use and abuse research and prevention.⁴⁹ Transdisciplinarity is distinguished from other forms of cross-disciplinary collaboration, such as multidisciplinary and interdisciplinarity. Transdisciplinarity is the process whereby researchers work jointly using a shared conceptual framework that draws together discipline-specific theories, concepts, and approaches to address a common problem.⁴⁹

Discussion

As indicated in the first part of the results, there is great heterogeneity in the interventions and techniques of addiction prevention. This might imply a great variety of available methods and strategies that can be used. The selection of the suitable methods in each case should be based on the needs of the population to which the respective program is applied and on the study of the effectiveness of the available interventions. Any combination of methods and techniques is legitimate as long as it is based on a justified theoretical background and previous experience from prevention programs. The reported trend of environmental interventions⁸⁻¹⁰ is a positive step, as it takes into account people's needs in the natural and social environment in which they act. Given the prevalence of cognitive-behavioral methods on a large scale in the treatment of mental disorders, it is absolutely natural for similar interventions to be used in prevention as well.^{15,16} These interventions, which require a rational data processing, have a proven effectiveness; however, quite often they seem to be inadequate for the prevention of rather complex psychosocial problems, such as addiction. For this reason, there is a prevalence of more experiential interventions (either in combination with cognitive-behavioral techniques or not), which attempt to include not only the directly affected people (e.g., the students) but also parents, teachers, and other community members or bodies.^{34,35} Apart from the above mentioned, other factors should be taken into account including 'Who is training the trainers?', 'How can quality delivery be ensured on a large scale?', 'How can a universal program become part of a chain of prevention?' and 'How do we handle the needs of practitioners?'²⁵⁰⁻⁵²

With regard to the factors/variables that play an important role in addiction prevention, as expected, the findings highlighted already known variables, such as self-efficacy¹⁴⁻¹⁶ and the development of positive characteristics like hopefulness²⁹ and social support.³¹ It could be assumed that based on the repeated findings, an effective prevention program could include the development of cognitive and social skills in line

with the development of a positive lifestyle, way of thinking, feeling, and behaving. The introduction of complementary concepts and interventions from the field of positive psychology would be a suggested step at the therapeutic level. Such interventions could be the emergence and strengthening of strengths as well as mental resilience and positive emotions, such as hope and gratitude. According to Peele,⁵³ addiction-proof children have skills to gain real rewards in life, values that sustain moderation, and reject addiction in favor of pursuing positive goals, and confidence that they can achieve these goals. This is in contrast with addiction-prone children, who are more likely to come from backgrounds that deny them any opportunity, are plagued by bad feelings (depression, anxiety, lack of purpose), and have history of dependence. The reinforcement of these characteristics seems to be even more effective when teachers, parents, and the broader community are involved in the program. Therefore, prevention should concern a bigger part of society and should not be implemented fragmentarily only to the population at risk.

As indicated by the findings, in the review of substance addiction prevention, certain repeated matters raised which were evaluated in order to improve future choices and practices. Therefore, the restricted effectiveness of strategies based exclusively on information^{17,35} has been confirmed, as aptly pointed out by Zafeiridis.⁵⁴ As we live in an era in which information constitutes a basic part of our lives, information is recommended to be provided at an initial stage of prevention, whereas later on it should become more experiential. As indicated, it is important to control the quantity and quality of the information^{35,36} to be essentially helpful to parents, teachers, and children.

Prevention programs should also take into account the importance of development stages.³⁸ A reasonable conclusion drawn by the findings is that prevention should be applied at a young age (even at pre-school age), because the beginning of substance use later on reduces the possibility of problematic use. This is probably due to the fact that young people, from an age onwards, have already managed to develop important cognitive and emotional mechanisms of dealing with situations. The recognition of protective factors, as well as risk factors at a crucial age is also helpful in designing an effective intervention.

An issue dealt with in numerous researches was the importance of culturally-based interventions.^{17,41} The programs implemented in developed countries can form a good knowledge and practice basis, but it is obvious that they should not be applied invariably in different cultural environments. A good suggestion in this regard would be the development of programs through the ground-up methodology, which initially illustrates the population needs, followed by the design of prevention interventions. To this end, the theoretical knowledge should be deployed

and there should also be an integration of the appropriate theory and cultural elements.

With regard to the usual choice of implementing prevention programs in school-based environments,¹⁹ it seems that school-based environment remains the most suitable one for these interventions as it combines the daily involvement of the child in a series of activities in the community environment where potentially significant others, such as teachers and parents, are also involved. The utilization of research findings is important in order to increase the so far minor positive results and generalize them in different conditions outside school.

On a broader level, it is commonplace that substance addiction prevention should be dealt with not only by the directly affected populations but by various bodies, such as associations, communities, religious bodies, as well as every individual member of the society. It is a reasonable assumption that the increase in social responsibility brings about an increase in individual responsibility and that the social well-being is interrelated with the individual one.

Finally, on a policy level, drug prevention is not something only experts should deal with, but requires an active political will and active involvement of the citizens. Accordingly, not only transdisciplinarity, but also the consistency of policy design and implementation of educational interventions is required and vital. To overcome possible obstacles, the cost of prevention should be calculated and compared to that of interventions. Effective prevention can, therefore, have multiple benefits on both personal and social levels.

Conclusion

The results of this study concerning the prevention of drug use showed the most effective interventions are those implemented in community contexts, such as schools, at a young age, and based on experiential methods tailored to the needs of each population. Humanitarian approaches are effective and can be applied in parallel with cognitive and behavioral approaches. In this context, methods from positive psychology could be used. It is important for clinicians working in the community to implement or recommend prevention programs with the above characteristics. Nevertheless, even for those clinicians who do not work in the community, it is important to know what really prevents substance use to make the right referrals and give the right directions. At the level of health services, it is important that prevention programs are implemented primarily universally in a broad context such as schools but also secondarily selectively in high-risk groups. Finally, it is important to emphasize that substance abuse prevention is not just for mental health professionals but also for the whole community, teachers, parents, and every individual citizen.

The present narrative review highlighted some important issues for addiction prevention. However, this

was not a systematic review or meta-analysis. Further studies are recommended to conduct a more systematic review.

Acknowledgments

I thank the colleagues in the Department of Psychology at the University of Western Macedonia and the students in the course of psychopathology for their support.

Conflict of Interest

Author declares no conflict of interests.

Ethics Approval

Not applicable.

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