

Article

Systematic Review: Preventive Intervention to Curb the Youth Online Gambling Problem

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Abstract: This systematic review focuses on all the gambling addiction prevention programs carried out in schools, with the intention of making their effectiveness known and encouraging the creation of more such programs. During the third quarter of 2021, an exhaustive search was conducted using the databases of Scopus, Medline (via Pubmed), WOS, and PsycINFO. The search strategy was based on a combination of specific search terms: “Gambling Disorder [Mesh]”, “Online Gambling Disorder [Mesh]”, and “Prevention Programs [Mesh]”. A total of 15 articles were chosen for systematic review. All the programs analyzed show effective results, although there are several methodological shortcomings in the way they are conducted. Effective programs need to focus more on long-term results and the emotional aspects of gambling. We need professionals who can convey the causal nature of the problem the youth are facing.

Keywords: youth problem gambling; preventive intervention; program intervention



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1. Introduction

Play has always been one of the most important educational processes in people’s lives. In fact, our cognitive and personal development is based on a game of constant exploration of our surrounding environment [1], allowing us to experience different situations for continuous learning throughout life. This is why play is considered an unparalleled pedagogical tool. However, any game must be guided by a controlled procedure to prevent it from reaching an obsessive or pathological extent. Although this is not common in the case of most leisure activities, there is a high percentage of risk involved in certain activities, such as video games and, especially in recent years, gambling.

Recently, pathological gambling was classified within the Substance-Related Disorders section of the DSM-5 and was renamed gambling disorders [2] because the number of people addicted to gambling is so high. However, the term “gambling disorder” is commonly used for adults; the authors in the studied literature preferred to talk of “problem gambling” when referring to this type of situation with teenagers. In this sense, there is a high percentage of adolescents who, at some point in their lives, have gambled and/or continue to do so, which highlights a worrying trend.

Data collected by the Ministry of Culture and Sport (MCD) from Spain indicate that 25% of young people aged 15–17 years are habitual gamblers and that 4.5% of young adults aged 18–25 years would be considered pathological gamblers as well [3]. On the other hand, the Spanish Observatory on Drugs and Addictions noted in 2019 that 0.5% of the population who were aged 15–64 years had a pathological gambling disorder or a gambling problem [4]. The increasingly frequent use of mobile devices in the daily lives of students, the great ease of access to gambling opportunities, and the normalization in society of these types of activities have turned adolescents or young adults into the main risk group prone to pathological gambling. Spain witnesses a yearly progressive expansion of gambling as an economic and social activity [5], mainly due to the emergence of new forms of online gambling, as stated in reports by the Directorate General of Gambling Regulation [6]. In

2020, the Spanish population spent EUR 851 million on online gambling alone, which is 13.7% more than in 2019. This contributed almost 36% of the Gross Gaming Revenue (GGR), an indicator that reveals the gross amount of money obtained by a particular operator in the gambling sector in a given period [6].

1.1. Online Problem Gambling in Adolescents

Internet use on mobile devices has increased considerably in recent years. The universal use of smartphones and computers in adolescents increases the accessibility of gambling, as well as increasing its intensity and the immediate reinforcement of the concept of reward while making it difficult for guardians and parents to control its use. Contributing to the problems of its availability, immediacy, and accessibility are the mode of online problem gambling through any device [7] and, in the case of minors, anonymity [8].

The Internet and the modernization of devices have meant that classic gambling opportunities, such as lotteries, cards, and casinos, have been replaced by what is now known as online gambling [9]. This concept is new and is not yet accepted by some authors, although recent data reported by González-Cabrera et al. showed that almost 1% of Spanish adolescents had a clinical problem related to online gambling, while more than 6% were at risk [10].

Recent studies have shown that cell phones are the main means of access and addiction to online gambling [10]. There are many factors that cause teenagers to show more prevalence of online gambling use and the subsequent possible addiction.

Lloret-Irles, Cabrera-Perona and Castañón-Monreal [11] group these factors into three different levels. However, it should be noted that there are cultural differences between countries, so there will be bidding factors listed below that may not match a particular region or may not match at all. These are just a few examples from the research carried out by the authors mentioned above:

- (1) The **individual level**, which would include: (a) *personality traits*. These are understood as the values that define a person. Some authors have observed that high levels of impulsivity correlate positively with a high predisposition toward gambling and correlate negatively with emotional intelligence [12]. (b) *Risk perception*: these are defined as the ability to perceive gambling and betting as an action with possible negative consequences. Several studies have observed that those adolescents with a higher risk perception toward online gambling would have a lesser intention to gamble [13]. (c) *Illusion of control*: these are cognitive distortions generated by the gambling companies themselves, which bias the probability of winning beliefs, encouraging the gambler's fallacy. Increased knowledge of probability calculations in teenagers has been found to be associated with lower risk-taking behavior in gambling [14].
- (2) The **microsocial level**, which would include: (a) *family*. Parental permissiveness toward gambling indicates that poor parental supervision is associated with the emergence and consolidation of gambling behavior in children [15]. (b) *Peer pressure*: this is understood as the influence on a person exerted by close individuals with similar characteristics. Adolescents would be directly influenced by their close friends who have already placed some kind of bet.
- (3) The **macrosocial level**, which would include: (a) *publicity*. Adolescents' access to the Internet leads to an influx of excessive advertising, causing both positive and negative attitudes toward gambling [16]. (b) *Accessibility*: closely related to the previous point, it has been shown by many authors that a high percentage of accessibility correlates with a risky attitude toward online gambling [17].

Consequently, the repercussions of gambling reach all levels of the student's life. It has been predicted that students with a greater predisposition to gambling would have a high probability of suffering problems derived from low levels of self-esteem, such as anxiety or depression [18]. Many authors have tried to demonstrate the negative implications of gambling addiction in teenagers, but it is important to know that, in this case, it is very difficult to differentiate between cause and effect. However, we can show the comorbidity

that this type of disorder presents by using other problems. For example, pathological gambling and problem gambling have high comorbidity with a large number of other mental health disorders, particularly substance-use disorders [19]. Other studies show that pathological online gambling has high comorbidity with delinquency and criminality, even if we do not know whether it is the cause or the effect [20].

1.2. Online Gambling: Educational Preventive Intervention

Despite the evidence, there is no common preventive intervention framework in the educational system that aims to reduce the proportion of adolescents who are attracted to gambling. It is worth noting that in recent years, some progress has been made in this regard with the prohibition of gambling advertisements, for example, such as the prohibition in Spain of establishing betting shops within 500 m of schools [21].

It is important to note that the prevention of gambling addiction is carried out within the framework of the prevention of drugs, be they psychoactive substances (alcohol, tobacco, inhalants or modern psychoactive substances, or “smart drugs”) or gambling itself, and should, therefore, be approached from a holistic point of view, i.e., sharing the same common objective: to help people in general to avoid or delay the use of these activities and, if they have started to use them, to work with them to prevent further addiction [22]. In this regard, the UNODC (United Nations Office on Drugs and Crime) points out that the drastic changes that occur in the adolescent brain make them particularly vulnerable to gambling [23]. For example, they state that one of the key elements that should not be forgotten in school-based prevention is the training of teachers, who will later hold the key to motivating their students to participate, ultimately achieving the objectives of the intervention itself. They also advise that socio-emotional educational competencies should be included at all times.

On the other hand, SAMHSA (the Substance Abuse and Mental Health Services Administration) presents “*A Guide to SAMHSA’s Strategic Prevention Framework*”, which sets out what the strategy for developing a prevention intervention should be: (1) *the assessment* of local prevention needs; (2) *the capacity* to create resources to prevent the need; (3) *planning* an action guide that works in the specific setting; (4) *the implementation* of the workshops or programs that have been created; and finally, (5) *the evaluation* of the results of the intervention [24].

The schools in which this strategy was not adhered to were significantly affected. There is no framework for action within the margins of the educational legislative law that focuses on alleviating the problem of gambling within the classroom environment. This is concerning, especially since several preventive interventions in other countries of the European Union have proved the effectiveness of such programs. For example, a prevention program against gambling was conducted by Dodig-Hundric et al. [25], involving 629 students of school-going age, with an average age = 15.67 years. Nine workshops were conducted, focusing on the awareness of all aspects related to gambling. Significant results were observed in terms of knowledge, cognitive distortions, and the frequency of gambling.

The creation of prevention interventions in the field of addiction is of vital importance. As indicated above, the percentage of the adolescent population that is engaging in this type of activity is increasing every day, so one of the ways to act would be through prevention. As pointed out by Larry Cohen [26], an intervention should consist of a spectrum composed of six levels: (1) strengthening individual knowledge and skills, (2) promoting community education, (3) educating the providers, (4) fostering coalitions and networks, (5) changing organizational practices, and (6) influencing policy and legislation [27].

When it comes to developing a preventive intervention in the educational setting, there are some types of difference according to their final objective. For example, St-Pierre and Derevensky [28] state that these programs are differentiated into (1) *psychoeducational pre-intervention programs* and (2) *comprehensive psychoeducational prevention and skills training programs*. Both types of intervention aim to increase knowledge about the use of gambling

and all that is related to it, such as erroneous beliefs or associated probabilities, among others. The second type of intervention, unlike the first one, includes topics such as self-esteem, interpersonal skills, and problem-solving, among others. The latter type is understood to be somewhat more comprehensive as it includes risk and the protective factors associated with gambling and adolescent behaviors.

In addition, this intervention can have two levels, depending on what type of target population is being addressed, either: (1) *universal*—aimed at the entire population; (2) *selective*—aimed at groups with above-average risk factors [29].

The effectiveness of preventive interventions or programs for addictions is an issue that generates a great deal of discussion among the professionals who deal with it. While it is true that the vast majority of studies are universal, i.e., such intervention only covers a population that does not meet specific risk criteria, this means that the long-term effects are limited [30]. In addition, these programs are often characterized by a short intervention duration, further reducing the likelihood of longer-term effects. In this sense, it is recommended that more longitudinal studies are conducted to observe the real effects in adolescents of gambling behavior [30].

1.3. Objectives

Thus, this systematic review focuses on all the online gambling preventive interventions that are carried out in schools, with the aim of observing whether they are effective in reducing problem gambling in a sample of students in primary and secondary education. This study aims to observe the effectiveness of preventive interventions that reinforce the knowledge and individual skills of primary and secondary school students.

2. Materials and Methods

A literature review was conducted following the PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analyses) recommendations for descriptive and systematic reviews.

2.1. Search Strategy

During the third quarter of 2021, an exhaustive search was conducted using the databases of Scopus, Medline (via Pubmed), WOS, and PsycINFO. The search strategy was based on a combination of specific search terms: “Gambling Disorder [Mesh]”, “Online Gambling Disorder [Mesh]”, and “Prevention Programs [Mesh]”.

2.2. Data Extraction

Data extraction was conducted using a standard data-extraction form developed by the Joanna Briggs Institute Reviewers’ Manual for the Systematic Review of Prevalence and Incidence Data [25].

2.3. Inclusion Criteria

Studies were included according to the following criteria: (a) empirical studies; (b) preventive interventions; (c) articles about online problem gambling; (d) articles with a sample of young people attending as students of primary or secondary education; (e) articles published between 2010 and 2021 (at the date the literature search ends); (f) articles published in Spanish or English; (g) the chosen articles should evaluate the effectiveness/non-effectiveness of prevention programs using standardized instruments. Articles of an informative nature, experts’ opinions published in editorials, and letters to the editor were excluded (Figure 1).

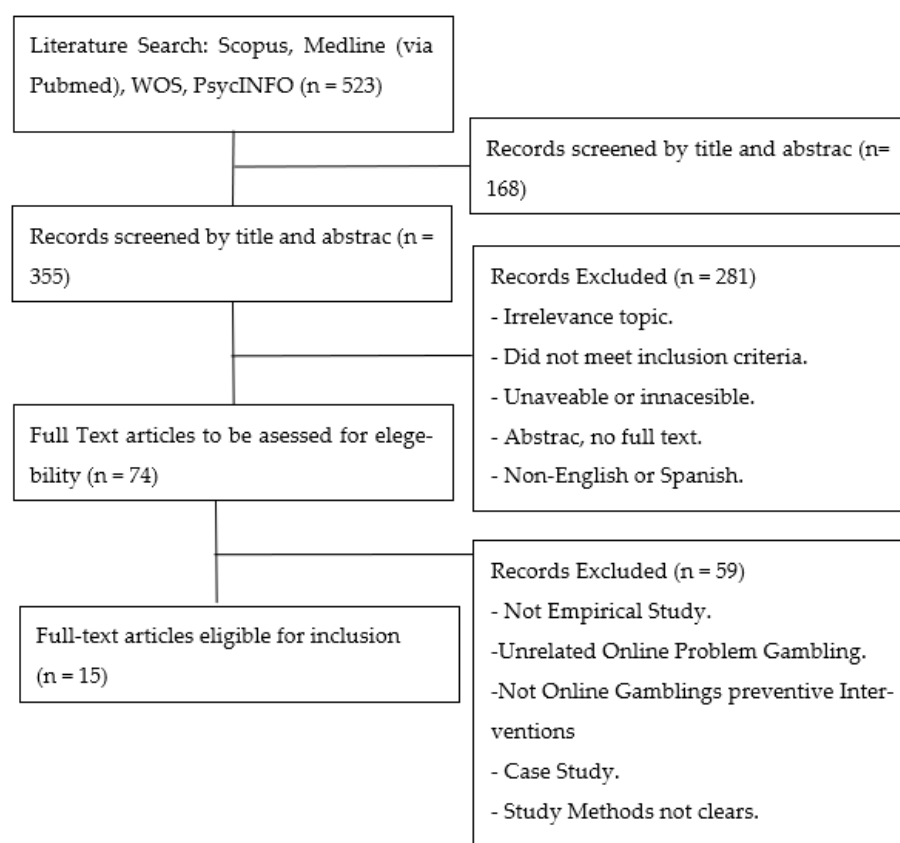


Figure 1. Flow Chart.

2.4. Selection of Studies

The main search yielded 523 publications. A total of 168 duplicate publications were eliminated, giving a final result for the first selection of 355. The first selection of studies was made by reading the titles and abstracts. A total of 74 articles were retained for the reading and final selection. Studies that were not empirical studies, that were not published after 2010, that were not written in Spanish or English, that were not on the topic of gambling prevention in students in primary or secondary education, and wherein the evaluation was qualitative, were excluded. Finally, a total of 15 articles were chosen for systematic review.

2.5. Analysis of Selected Data

All information and variables were extracted from the studies analyzed. The results of the literature search and data extraction were summarized descriptively. To exclude duplicate articles, Endnote was used for the manual selection. A summary of efficacy results was presented, based on the different outcome measures, controls, and interventions. Therefore, a narrative synthesis was generated, taking into account the total number of studies reporting the results, the methodological quality, and the quality of evidence of the results to derive the final conclusions. The general characteristics of the extracted systematic reviews were used as an exploratory variable for PRISMA scores. The variables included were: authors, country, school-based intervention types, intervention types (universal vs. selective), the objective of the intervention, the number of participants, mean age of the participants, assessment instruments, and outcomes (Table 1).

Table 1. Results of selected studies.

Authors	Country	Description	Type of Intervention	n	x	Evaluation Tools	Results
[31]	USA	Stacked Deck is a pre-post assessment program that consists of five to six interactive lessons that are geared toward teaching the history of the game, the true odds and the “house edge,” the misconceptions of the game, the signs, risk factors, and causes of gambling problems; and the skills to make good decisions and solve problems.	Comprehensive psychoeducational prevention and skills training programs and Universal	949	16	<ul style="list-style-type: none"> - Scale Gambling Attitudes (Williams, 2003) - Gambling Knowledge Scale (DSM-IV-Multiple Response-Juvenile) - Gambling Fallacies Scale (Moore and Ohtsuka, 1999) - High-Risk Activities Scale (DSM-IV-Multiple Response-Juvenile) - Gambling behavior in the past 3 months (DSM-IV-Multiple Response-Juvenile). - Problem Gambling Scale (Fisher, 2000) 	<p>Four months after the program, the students showed:</p> <ul style="list-style-type: none"> • + negative attitudes toward gambling • + knowledge of gambling fallacies • + decision-making and + problem-solving, • – frequency of gambling, • – rates of pathological gambling. <p>There was no change in participation in high-risk activities or loss of money from gambling.</p>
[32]	Romania	<p>A pre- and post-evaluation program that tries to compare the effectiveness of a preventive intervention of rational emotive education, using as an aid the interactive software “Amazing Chateau,” with a program exclusively formed of rational emotive education.</p> <p>-G.C = Group without any intervention. AC + REE = Group with 10 weekly meetings of 50 min each, with 2 specialists in pathological gambling: a psychologist and a psychiatrist. The software consists of interactive games to raise awareness of pathological gambling, how to lose money and the impossibility of predicting the outcome.</p> <p>REE = Group exclusively with 10 weekly meetings of 50 min each, with 2 specialists in pathological gambling: a psychologist and a psychiatrist.</p>	Psychoeducational pre-intervention and Universal	<p>C. G. = 23 AC + REE = 24 REE = 28</p>	12.5	Questionnaire on erroneous beliefs about gambling from: Teacher’s Manual: Youth Gambling Awareness and Prevention Program, Level II, “Hooked City”	<p>Both experimental groups had significant results with respect to the control group, reducing the erroneous beliefs about gambling.</p> <p>However, the AC + REE group obtained better results than the REE group.</p>

Table 1. Cont.

Authors	Country	Description	Type of Intervention	n	x	Evaluation Tools	Results
[33]	Germany	<p>An education and preventive intervention, conducting a cluster randomized control trial with two arms (intervention group vs. control group). The intervention group received four sessions of one and a half hours each:</p> <ul style="list-style-type: none"> - Features that distinguish the game from other games; - Development and symptoms of pathological gambling; - Characteristics of gambling that promote addiction; - Real chances of winning; - Popular fallacies - Existence and profits of the gambling industry. 	<p><i>Psychoeducational pre-intervention</i> and Universal</p>	2109	12.0	<ul style="list-style-type: none"> - Gambling Outcomes Scale (Walther, Hanewinkel, and Morgenstern, 2012) - Gambling Attitudes and Beliefs Scale (Breen and Zuckerman, 1999) - Gambling Knowledge Scale (Walther, Hanewinkel, and Morgenstern, 2012). 	<p>In all, 30% percent of the sample reported having ever played; 6.7% classified themselves as current players. The results shown in the CG were:</p> <ul style="list-style-type: none"> • Gambling knowledge. • Problem gambling attitudes. • Current gambling.
[34]	Spain	<p>A regional prevention program that is characterized by being exclusively two sessions, taught by experts in psychology, with the aim of teaching the techniques of the various companies to induce gambling behavior.</p>	<p><i>Psychoeducational pre-intervention</i> and Universal</p>	2372	16.5	<ul style="list-style-type: none"> - Gambling disorder. NODS (Gernstein et al., 1999) - Monthly gambling frequency (DSM-V) - At-risk gambling (DSM-V) 	<p>After the administration of intervention, significant reductions were observed in:</p> <ul style="list-style-type: none"> • Monthly frequency of gambling. • The percentage of adolescents with problem gambling.
[35]	Romania	<p>To compare the influence of specific primary prevention with rational emotive education in a pre-post study. The experimental design randomly assigned students into three groups: (1) control, (2) game-specific information using the “Amazing Chateau” interactive software, and (3) game-specific information with REE.</p>	<p><i>Psychoeducational pre-intervention</i> and Universal</p>	<p>C.G. = 24 AC = 29 REE = 28</p>	13.0	<p>Questionnaire on erroneous beliefs about gambling from: Teacher’s Manual: Youth Gambling Awareness and Prevention Program, Level II, “Hooked City”</p>	<p>The use of the software significantly improved the subjects’ knowledge of the game and corrected their information about the game’s operation. The results of the study confirmed that the use of specific primary prevention tools to change misconceptions about games is more effective than the use of OER alone.</p>

Table 1. Cont.

Authors	Country	Description	Type of Intervention	n	x	Evaluation Tools	Results
[36]	Switzerland	This study examines the impact of a preventive intervention on the social representations of men who do not gamble, in an attempt to reduce stereotypes and provide a more holistic perspective on this issue.	<i>Psychoeducational pre-intervention and Universal</i>	475	19	Social Representation Scale (Tomeil, Richter1, 2019)	The results showed <ul style="list-style-type: none"> + negative representations that those who attended the prevention class showed compared to their peers who did not attend.
[37]	Spain	An evaluation of the “cubilete” program in secondary and high school students. It consists of 4 sessions of 50 min each, spread over 4 weeks. Sessions led by specialist psychologists, in addition to presenting videos of real cases in order to raise awareness among participants about the risks of the abusive use of ICT, online games, and virtual gambling.	<i>Psychoeducational pre-intervention and Universal</i>	637	X	- School Questionnaire of Beliefs, Attitudes and Use of Technology, Virtual Games and Gambling (CCAU) (Pérez-García, Sánchez-Valenzuela and Pantoja-Vallejo, 2020). - Cuestionario de Experiencias Relacionadas con Internet (CERI) (Beranuy, Chamarro, Graner, and Carbonell, 2009). - ESPAD European Survey (Group, 2016).	The results showed: <ul style="list-style-type: none"> Significant reduction in the use of ICTs, as well as their frequency of use. There was also an increase in the recognition of ICT addiction after the intervention ended. Gambling and online gambling were considerably reduced. There was a clarification regarding the meaning of the concept of addiction.
[38]	Canada	A prevention program that aims to reduce the problem of adolescents addicted to gambling. To this end, an experimental group was formed that would be included in their school curriculum with a series of lesson plans, transparencies, a text, and a CD-ROM prepared for the study, discussion questions, and some other demonstration materials. A control group received nothing, only pre- and post-evaluation.	<i>Comprehensive psychoeducational prevention and skills training programs and Selective</i>	E. G. = 100 C. G. = 101	16.5	- South-Oaks Problem Gambling Screen-Revised for Adolescents (SOGS-RA; Winters et al., 1993) - Preventative Resource Inventory (PRI; McCarthy and Lambert 2001). - Knowledge Gambling (Turner et al., 2006)	The results showed: <ul style="list-style-type: none"> Significant reduction of addiction in adolescents through SOGS. + knowledge, + self-control, + coping skills.

Table 1. Cont.

Authors	Country	Description	Type of Intervention	n	x	Evaluation Tools	Results
[39]	Canada	A program examining the preventive effects of an animation-based video that aims to educate participants about the operation of slot machines, the wisdom of setting financial limits, and strategies to avoid problems in students without addiction problems, who were randomly assigned to watch a video or animation.	Psychoeducational pre-intervention and Universal	242	X	- Gambling Severity Index (PGSI: Ferris and Wynne 2001). - Informational Biases Scale (IBS; Jefferson and Nicki 2003)	The results showed: <ul style="list-style-type: none"> • Participants who watched the control video reported greater intention to use the strategies and exceed pre-set limits less frequently during the next play session. • – error cognitions. • + strategies to avoid problematic play • + intentions to use strategies or habits • Some effects diminished over a 30-day period, suggesting that booster sessions may be necessary for long-term sustainability.
[40]	Italy	A program that evaluates the effectiveness of a prevention program in which the intervention group receives online classes related to gambling awareness.	Psychoeducational pre-intervention and Universal	E. G. = 95 C. G. = 73	15	- South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA; Winters, Stinchfield, and Fulkerson, 1993). - Gambling Attitude Scale (GAS; Delfabbro and Thrupp, 2003)	The results showed: <ul style="list-style-type: none"> • Reduction in problem gambling (GE) • No differences in the frequency of gambling, gambling expenditure, and attitudes toward the profitability of gambling between the two groups. <p>Frequent gamblers showed reductions in problem gambling and frequency of gambling after the intervention.</p>
[41]	Portugal	A pre–post study to evaluate the efficacy of an integrative intervention to prevent youth problem gambling based on a multidimensional set of factors, including gambling-related knowledge, misconceptions, attitudes, frequency of gambling, amount of money spent, total hours spent gambling per week, and sensation seeking.	Psychoeducational pre-intervention and Selective	E. G. = 56 C. G. = 55	17	- Questionnaire of misconceptions and knowledge about gambling (Ferland et al. 2002). - DSMIV Multiple-Response Juvenile (DSMIVJMR, Fisher 2000). - Attitudes Toward the Gambling Scale (ATGS8, Wardle et al., 2011). - Brief Sensation-Seeking Scale (BSSS, Hoyle et al., 2002).	The intervention was: <ul style="list-style-type: none"> • Effective at improving correct gambling knowledge, Reducing misconceptions and attitudes. • Reducing total hours spent gambling per week. <p>The intervention was also effective in reducing the number of risk/problem gamblers.</p>

Table 1. Cont.

Authors	Country	Description	Type of Intervention	n	x	Evaluation Tools	Results
[25]	Croatia	To evaluate the effectiveness of the national “Who really wins? (Who really wins?).” The program consists of 9 workshops with students, usually over 9 weeks (once a week for 45 min). The overall aim of this program is to prevent and/or delay involvement in gambling activities and to contribute to personally responsible gambling behavior.	Comprehensive psychoeducational prevention and skills training programs and Universal	629	15.67	<ul style="list-style-type: none"> - Gambling-Related Knowledge (Huic, Hundric, Kranželic, and Ricijaš, 2017). - Gambling-Related Cognitive Distortions (Ricijaš, Dodig, Huic and Kranželic, 2021). - Problem-Solving Skills (Huic, Hundric, Kranželic and Ricijaš, 2017). - Resisting Peer Pressure Skills (Huic, Hundric, Kranželic, and Ricijaš, 2017). - General Self-Efficacy (Schwarzer and Jerusalem, 1995) - Problem Gambling Severity Scale (GPSS) (Tremblay, Stinchfiel, and Wiebe, 2010). 	<p>The program was:</p> <ul style="list-style-type: none"> • Effective in reducing cognitive distortions related to gambling • Improving knowledge about gambling. • No effects on socioemotional skills were observed.
[42]	Italy	A pre–post study, evaluating the efficacy of an integrative intervention to prevent pathological gambling among adolescents by targeting a multidimensional set of factors, including gambling-related knowledge and misconceptions, economic perception of gambling, and superstitious thinking.	Psychoeducational pre-intervention and Universal	181	15.95	<ul style="list-style-type: none"> - South Oaks Gambling Screen-Revised for Adolescents (SOGS-RA; Winters et al., 1993) - Questionnaire of Attitudes and Knowledge About Gambling (Ferland et al., 2002). - Gambler’s Fallacy Task (GFT) Primi and Chiesi 2011). - Gambling Attitude Scale (GAS) Delfabbro and Thrupp 2003). - Superstitious Thinking Scale (STS, Kokis et al., 2002) 	<p>The results showed:</p> <ul style="list-style-type: none"> • + gambling knowledge • – misconceptions, • – perceived gambling profitability, • – superstitious thinking. <p>Except for the misconceptions, these effects were obtained for both the participants classified as non-problem and risk/problem gamblers at the start of the intervention.</p>

Table 1. Cont.

Authors	Country	Description	Type of Intervention	<i>n</i>	<i>x</i>	Evaluation Tools	Results
[43]	USA	An evaluation of the national pre-post program “Don’t Gamble Away our Future (DGAOF),” which features 60-min sessions that mix teaching, interactive discussions, and games. The research compares those who receive a single session with those who receive multiple sessions.	<i>Psychoeducational pre-intervention</i> and Universal	16,262	14.05	- Modified South Oaks Gambling Screen for Teens (MSOGST) (Edgren, et al., 2016). - Gambling knowledge questionnaire for high school students. (Moberg, Scuffham, Guan, and Asche, 2019)	The results showed: <ul style="list-style-type: none"> • Students who received multiple interventions had higher test scores compared to those who received a single intervention. • + awareness of gambling was observed. <p>In just two sessions, the tendency toward gambling addiction was reduced.</p>
[44]	Italy	A study that evaluates the teacher training prevention program through two groups, an experimental group and a control group. The experimental group receives expert talks, debates, exercises, and group reflections in each session, as a way of detecting and preventing gambling addiction in their students. Students are evaluated pre-post sessions between the four sessions by the teacher.	<i>Psychoeducational pre-intervention</i> and Universal	<i>T.</i> = 33 <i>S.</i> = 393	<i>x</i>	- South Oaks Gambling Screen-revised for Adolescents (SOGS-RA) Winters et al., 1993) - Gambling Related Cognitions Scale (GRC) - Gambling Attitude Scale (GAS) Delfabbro and Thrupp, 2003)	Teachers who received training were better able to recognize misconceptions about gambling and the links between gambling and other risky behaviors. They were also better able to recognize gambling advertisements.

Notes = *n* = number of participants; *x* = mean age; CG = control group; AC = Amazing Chateau + rational emotive education; REE = rational emotive education; P = teachers; AI = students.

3. Results

Table 1 shows the results of the final selection of studies. The total number of participants evaluated in the computation of all studies was 25,119, of whom 33 were teachers [44]. The rest were all primary, secondary, or high-school students. The average age, excluding teachers, was 14.15 years (*Mean* = 14.15).

The provenance of the gambling addiction prevention programs analyzed was very varied: three were from Italy [40,42,44], two from the United States [31,43], two from Canada [38,39], two from Spain [34–37], two from Romania [32–35], one from Switzerland [36], one from Croatia [25], one from Portugal [41], and one from Germany [33].

The characteristics of the studies were very similar. Half ($n = 7$) of the studies analyzed the effectiveness of the programs through a quasi-experimental pre-post evaluation [36]. For example, Ramona-Todirita and Viorel Lupu [32] conducted a quasi-experimental study with three groups: a control group; another group that was only given just the prevention information related to gambling; the last group, in addition to being given the relevant information, was given an interactive game created to reduce gambling addictions: “Amazing Chateau”. Similarly, Turner, Macdonal, and Somerset [35] evaluated the effectiveness of a program that seeks to reduce the myths related to gambling by creating an experimental group and a control group.

Of the fourteen studies reviewed, only two are from a selective perspective [38,41]. The programs are usually characterized by being purely informative. Although following different ways of proceeding, most of the studies analyzed were intended to test the effectiveness of prevention programs based on informative sessions. For example, Pérez-García, Sánchez-Valenzuel, and Pantoja-Vallejo [37] evaluated the effectiveness of the “Cubilete” program. This program consists of four sessions, taught by experts, that aim to reduce the success of false myths, stereotypes, and strategies that companies use to attract more customers, by showing videos of real cases or creating debates. On the other hand, Choliz, Marcos, and Bueno [34] observed the effectiveness of the Ludens program, which only has two sessions and helps students to understand the operating procedures of gambling companies and how they make the customer believe that they are in control when the opposite is true.

The materials the programs work with range from participatory activities or discussions [38] to an interactive game called “Amazing Chateau”: this is a game that gives students the opportunity to distinguish between games of chance and games of skill. They also become familiar with important concepts related to gambling, such as luck, independent events, myths, and facts as well as concepts such as risk-taking, the consequences of addiction, and making responsible choices. It is not possible to give a specific estimate regarding the assessment materials used, since they are very varied.

Most studies obtained similar results. For example, the authors of [33] observed that by participating in the program, students increased their knowledge about gambling and showed a significantly decreased inclination toward gambling. Dogic-Hundric, Mandic, and Ricijas [25] reduced the cognitive distortions about gambling and the knowledge of gambling, in turn, reducing their subsequent addiction to it. No effects were observed in terms of their socio-emotional skills. Turner, Macdonal, and Somerset [34] observed a reduction in students’ addiction, which significantly increased their self-control and coping skills. However, Canale et al. [40] found no significant differences in the variables evaluated after the program, compared to the control group.

4. Discussion

The aim of this systematic review was to consider the effectiveness of gambling addiction prevention programs for elementary, middle, and high school students.

Attempting to elucidate the effectiveness of programs is difficult because of challenges that cannot be easily controlled for in the research design process. The most important indicator that determines the effectiveness of a program, however, is long-term behavior change. However, most of the studies did not measure long-term effects, so it is somewhat

difficult to identify the real efficacy of reducing gambling addiction among children and adolescents. As for the design of the prevention interventions analyzed, it is very varied. These studies limited their outcome measures to cognitive changes, mainly in the short term [33,37]. In this sense, some authors claim that preventive interventions only have a short-term effect, but the real problems related to online gambling addiction are still present in the person, in this case, the child or adolescent; therefore, another type of intervention would be necessary [45]. On the other hand, Canale et al. [40] found that there were no significant differences between the control and experimental groups in their study. In this sense, there are some authors who found that the main drawback faced by a preventive intervention of this type is the small sample of the population at risk available, and that to obtain statistically significant results, a very large sample and the certainty of having at-risk players in the population should be taken into account [45].

It is observed that of the fourteen studies analyzed, only two approached the subject from a selective perspective [38,41]; the rest approached it from a universal perspective. In this sense, no statistically significant differences are observed among the rest of the interventions with a universal approach. For example, in the intervention carried out by Calado, Alexandre, Rosenfeld, Pereira, and Griffiths [41], a pre-post intervention was carried out with students, with a duration of 6 weeks of intervention and with the aim of reducing false beliefs, the frequency of gambling, etc. A variety of methods and techniques were used to deliver the activities to the students, including interactive methods, such as live discussions and real-life situations where students could practice newly learned skills, learning in teams, in pairs, in threes, and in small groups, or by creating a positive environment for students to express themselves freely [46]. The results collected through various questionnaires show that the intervention is significant in the short term on some of the variables assessed, such as the reduction of hours of access to online gambling per week, false beliefs, and an increase in related knowledge. However, no significant results were found on other variables, such as the amount of money spent or sensation-seeking. These results are shared with the related research. Stautz and Cooper [47] observed that a reduction in these variables, especially sensation-seeking, correlates significantly with a reduction in the percentage of gambling experiences.

All the preventive interventions focused on known cognitive aspects of pathological gambling, including gambling fallacies and misconceptions, among other variables specific to each study. Despite the variability of the heterogeneity of the studies analyzed (duration, methodology, and number of samples), similar results were observed in the vast majority of preventive interventions. These results are often characterized by an increased awareness of personal components, such as impulsivity or the predisposition toward gambling [42], or the reduction of false beliefs surrounding online gambling [41]. It is possible that this improvement in cognitive values, as in assessment tools such as the Gambling-Related Cognitive Distortions test [9], is due to the effects of testing rather than cognitive development.

Regarding the assessment tools, the most widely used is the South Oaks Gambling Screen, revised for adolescents (SOGS-RA) [25,38,40,42]. In this sense, there is no consensus on the use of a common assessment instrument, as there are many scales used by the various interventions. Most studies disaggregated the amount of money spent by students or problem gamblers. This makes the level of harm experienced by those categorized as “problem gamblers” still questionable. In addition, the average amounts of money wagered are low. This makes it difficult to detect and interpret reductions in average spending over time.

Analyzing the results, depending on their point of view, we found that ($n = 12$) preventive interventions were *psychoeducational pre-intervention programs*, while ($n = 3$) were *comprehensive psychoeducational prevention and skills training programs*. These results coincide with other research that has been carried out, in which the type of study, focused exclusively on cognitive factors, tends to predominate, leaving aside the more emotional aspects [48]. There is not much data on which type of program is best, although some argue

that the emotional aspects are a key factor in addiction prevention in general [49]. Reducing false beliefs or increasing awareness of the risks involved in gambling, as performed in psychoeducational pre-intervention programs, is a good way forward and should not be neglected, but we must not forget the emotional (and social) aspects that this problem entails. In a study by Jara-Rizzo, Navas, Catena, and Perales [50], they observed that cognitive distortions related to gambling addiction had a statistically significant correlation with the emotional regulation of gamblers.

The results of this study have important implications. This systematic review provides an objective viewpoint, with the aim of integrating into the educational system various methodological and procedural interventions aimed at promoting more responsible play within the curricula and syllabi of both primary and secondary grades. As Oh et al. [51] point out, in adolescence, risk behaviors increase due to a constant search for sensations, together with cognitive development that has not reached the peak of its maturity, which is why this age group is more vulnerable to this type of gambling game. However, he points out that action should not be limited to adolescents. By carrying out preventive interventions with the youngest children, it has been shown that they avoid later access to these games.

5. Conclusions

Despite the variability of the programs analyzed, all of them reported significant results. It is important to emphasize that the vast majority of the studies reviewed make a short-term assessment, so the results should be viewed from that perspective.

Emphasis should be placed on the need for prevention models that evaluate their long-term effectiveness. Moreover, programs in administrations or schools do not require expensive or hard-to-find materials. They only need professionals who can convey the causal nature of the problem they are facing. In addition, an effort should be made to carry out real prevention programs, with subjects at real risk of falling into addiction and with techniques and objectives that are adapted to their needs, based on evidence and not on facilities.

However, considering the seriousness of the situation related to gambling and the high prevalence in adolescents, this systematic review found only 14 studies that analyzed the effectiveness of preventive interventions. This is a very low number if we look at the data previously provided about the percentage of adolescents who place a bet daily via mobile phones. It is, therefore, necessary to make more efforts in this regard. Institutions must create such programs and incorporate them into the students' curriculum.

In conclusion, the results of this study provide an important contribution to the emerging body of literature on youth problem gambling prevention programs. However, we must bear in mind that interventions or programs must reflect their effects beyond the short term, as it is in the long-term effects where the importance of the intervention lies.

6. Limitations

The limitation encountered in this systematic review is the impossibility of creating a single set of information and data collected. This is due to the great variety of procedures and methodologies that characterize these programs and interventions. We recommend that in subsequent studies, we try to collect information and data from programs and interventions that are similar in their methodological process.

Although the aim of this systematic review was not to evaluate the quality of the programs, it is recommended that future studies should evaluate the quality of interventions and programs.

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