

# School-Based Interventions for Suicidal Behavior Prevention in Adolescence: An Integrative Review

## Intervenciones escolares para la prevención de la conducta suicida en la adolescencia: revisión integrativa

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### Abstract

Adolescent suicidal behavior is a major global public health concern. Although effective treatments have advanced, most have been developed in clinical rather than school settings. This review aimed to identify, evaluate, and synthesize school-based interventions for preventing and managing adolescent suicidal behavior, comparing their key characteristics. Following elements of PRISMA and PICO guidelines, studies published between January 2016 and June 2025 were searched in EBSCO, OVID, and PubMed. Of 2,549 records, 33 met the inclusion criteria. Most interventions were conducted in English-speaking countries, with few in Latin America, and primarily used psychoeducational or cognitive-behavioral approaches within pre- or quasi-experimental designs; randomized trials were less common. Overall, studies reported improvements in knowledge, help-seeking, and suicide risk indicators, although effect sizes were reported inconsistently. Findings suggest school-based interventions are promising, but highlight the need for more rigorous, culturally adapted research in Latin America.

### Keywords

Suicidal behavior; adolescents; intervention; school-based; integrative review.

## Resumen

La conducta suicida en adolescentes es un problema de salud pública de gran importancia a nivel global. Aunque los tratamientos han avanzado, la mayoría se ha desarrollado en contextos clínicos más que escolares. La presente revisión tuvo como objetivo identificar, evaluar y sintetizar intervenciones escolares para prevenir y manejar la conducta suicida en adolescentes, comparando sus características principales. Siguiendo los elementos de PRISMA y PICO, se buscaron estudios publicados entre enero de 2016 y junio de 2025 en EBSCO, OVID y PubMed. De 2549 registros, 33 cumplieron los criterios de inclusión. La mayoría de las intervenciones se realizaron en países angloparlantes, con pocas en Latinoamérica, y emplearon enfoques psicoeducativos o cognitivo-conductuales en diseños preexperimentales o cuasiexperimentales; los ensayos aleatorizados fueron menos frecuentes. En general, se observaron mejoras en conocimiento, búsqueda de ayuda e indicadores de riesgo suicida, aunque los tamaños del efecto se reportaron de forma inconsistente. Los hallazgos sugieren efectos prometedores, pero subrayan la necesidad de investigaciones más rigurosas y culturalmente adaptadas en América Latina.

## Palabras clave

Conducta suicida; adolescentes; intervención; ámbito escolar; revisión integrativa.

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## Introduction

Suicidal behavior is a major public health concern among adolescents worldwide. The World Health Organization (WHO, 2025) reported that in 2021, suicide was the third leading cause of death among youth aged 15–24. Adolescence spans ages 10–19, and “young people” includes ages 10–24; nonetheless, youth statistics are typically reported for ages 15–24. It ranks second among females and third among males, with the highest rates observed in adolescents aged 13–18. Suicide is the most severe expression of suicidal behavior, and 73% of cases occur in low- and middle-income countries. Although rare in childhood, suicide rates increase with age: from .5 (females) and .9 (males) per 100,000 children to 12.0 and 14.2 in adolescents (Castellví *et al.*, 2017). In Mexico, overall rates are lower than in other countries (Borges *et al.*, 2012), but adolescents aged 15–19 are the most affected group (Sánchez-Cervantes *et al.*, 2015). Thus, suicide remains a critical mental health issue in Mexico and a leading cause of death among youth globally (Instituto Nacional de Estadística y Geografía [INEGI], 2022; Nock *et al.*, 2013).

Despite the current discussion about the suicidal behavior definition from different perspectives, such as the *Diagnostic and Statistical Manual of Mental Disorders*, fifth edition (DSM-5; American Psychiatric Association, 2018) and the *International Classification of Diseases*, eleventh edition (ICD-11; WHO, 2023), there is a relative consensus that suicidal behavior includes a wide range of behaviors like purposefully self-inflicted injuries and suicide attempts (Iorfino *et al.*, 2020; Klonsky *et al.*, 2016; McHugh *et al.*, 2019; Paul, 2018). Immediate outcomes (death, injury, or no harm) are the primary concern for care services, particularly in emergency settings (Rangel-Villafañá & Jurado-Cárdenas, 2022). Research shows that adolescent self-injury predicts later suicidal behaviors and mental health problems (Iorfino *et al.*, 2020); therefore, prevention requires evidence-based early interventions in contexts where adolescents spend most of their time. Despite advances in effective treatments, suicidal behavior has increased

in recent decades, particularly among adolescents (e.g., Morris-Perez *et al.*, 2023). Most interventions rely on cognitive and behavioral approaches to reduce suicide ideation and attempts (e.g., Finlayson *et al.*, 2023). Accordingly, WHO (2021) recommends comprehensive, school-based prevention for children and adolescents.

“School-based programs” have been shown to be successful (Chodkiewicz & Boyle, 2016), as they enable early intervention within adolescents’ natural context and allow for targeted strategies based on school data. Given that adolescents spend a substantial portion of their time in school, this context can function as both a risk and protective factor in their development (Posamentier *et al.*, 2023); either promoting positive youth development, academic achievement, and resilience (e.g., Lerner *et al.*, 2016; Pearlman *et al.*, 2018) or preventing emotional and behavioral problems such as bullying, aggression, and substance use (e.g., Taub & Pearrow, 2013). These interventions may include assertiveness training, social-emotional and coping skills, and decision making to prevent suicidal behavior (e.g., Gijzen *et al.*, 2022; Posamentier *et al.*, 2023).

Important meta-analyses on suicide have primarily examined community samples (ages 18–65), across diverse settings (clinical, school, social), and interventions (e.g., Fox *et al.*, 2020; Hofstra *et al.*, 2019; Schmeckenbächer *et al.*, 2022). Reported approaches include systemic brief therapy (SBT; Finlayson *et al.*, 2023), cognitive behavioral therapy (CBT; Tarrier *et al.*, 2008), and dialectical behavior therapy (DBT; Linehan *et al.*, 2006), as well as mindfulness and contextual therapies, implemented at different levels (e.g., psychoeducation, selective, and target interventions). However, relatively few studies focus specifically on school settings. Hence, this review aims to identify, evaluate, and summarize the findings of all relevant school-based studies for preventing and managing suicidal behavior in adolescents, comparing their key characteristics. Such evidence may inform better decision-making in intervention design.

## Method

### Study Type

This study is an integrative review conducted using a structured search strategy, guided by selected elements of the PRISMA statement (Page & Moher, 2017; Page *et al.*, 2021). The review aimed to collect, evaluate, and synthesize available evidence addressing a specific research question using a transparent and reproducible method. The process was guided by the PICOS (Population, Intervention, Comparison, Outcome, Studies) framework and applied across multiple databases with predefined inclusion and exclusion criteria.

### Procedure

A structured literature search was carried out in the EBSCO, OVID, and PubMed databases. It included studies published between January 2016 and June 2025 to capture the most recent evidence on school-based intervention programs.

The search strategy followed the PICOS framework (Huang *et al.*, 2006): Population (P) included adolescents aged 13–18 years. Intervention (I) consisted of school-

based psychological or psychoeducational interventions to prevent suicidal behavior. Comparison criteria (C) were based on pre- and post-assessments and study characteristics. Outcomes (O) included symptom reduction and increased knowledge of risk factors. Finally, for intervention designs (S), studies ranged from pre-experimental to randomized controlled trials, and the application settings were examined. Searches used MeSH terms and Boolean operators (e.g., suicide\* OR parasuicide\* OR self-harm) AND (intervention\* OR treatment\* OR psychoeducation\*), adapted to each database (see Table 1).

Inclusion criteria were: (1) peer-reviewed articles published in English or Spanish; (2) studies involving adolescents aged 13–18 years; (3) interventions conducted in school settings; (4) studies aimed to examine school-based suicide prevention interventions from any theoretical approach.

Exclusion criteria included studies not focused on suicide prevention, studies with samples outside the 13–18 age range, and interventions targeting academic staff or adults who interact with adolescents rather than adolescents themselves.

**Table 1.** MeSH Words and Boolean Operators

| Words                                                                                                           | Boolean operators | Words                                                     | Boolean operators | Words                                                                                  |
|-----------------------------------------------------------------------------------------------------------------|-------------------|-----------------------------------------------------------|-------------------|----------------------------------------------------------------------------------------|
| Adolescent OR<br>Teenager<br>OR<br>Adolescence<br>OR<br>Adolescent<br>behavior<br>OR<br>Adolescent<br>attitudes | AND               | Suicide prevention<br>OR<br>Suicide prevention<br>program | AND               | School-based<br>OR<br>School-based<br>intervention<br>OR<br>Evidence-based<br>practice |

Extraction process: Data were recorded using a structured screening form that included country of origin, sample size, intervention objectives and description, measures of change, outcomes, and study design. The selection process involved sequential filtering by (1) population, (2) type of intervention, and (3) additional criteria (e.g., year, language). Four psychologists reviewed and analyzed the search results, determining which studies met the inclusion criteria and should be synthesized in line with the review's objectives (Booth *et al.*, 2012).

## Results

A total of 2,549 records were identified in the previously established databases (EBSCO = 793, OVID = 1,010, and PubMed = 746); 1,172 of these records were removed prior to screening (19 due to unavailable full text, 78 duplicates, and 1,075 unrelated to the topic of this review). We screened 1,377 records, of which 1,269

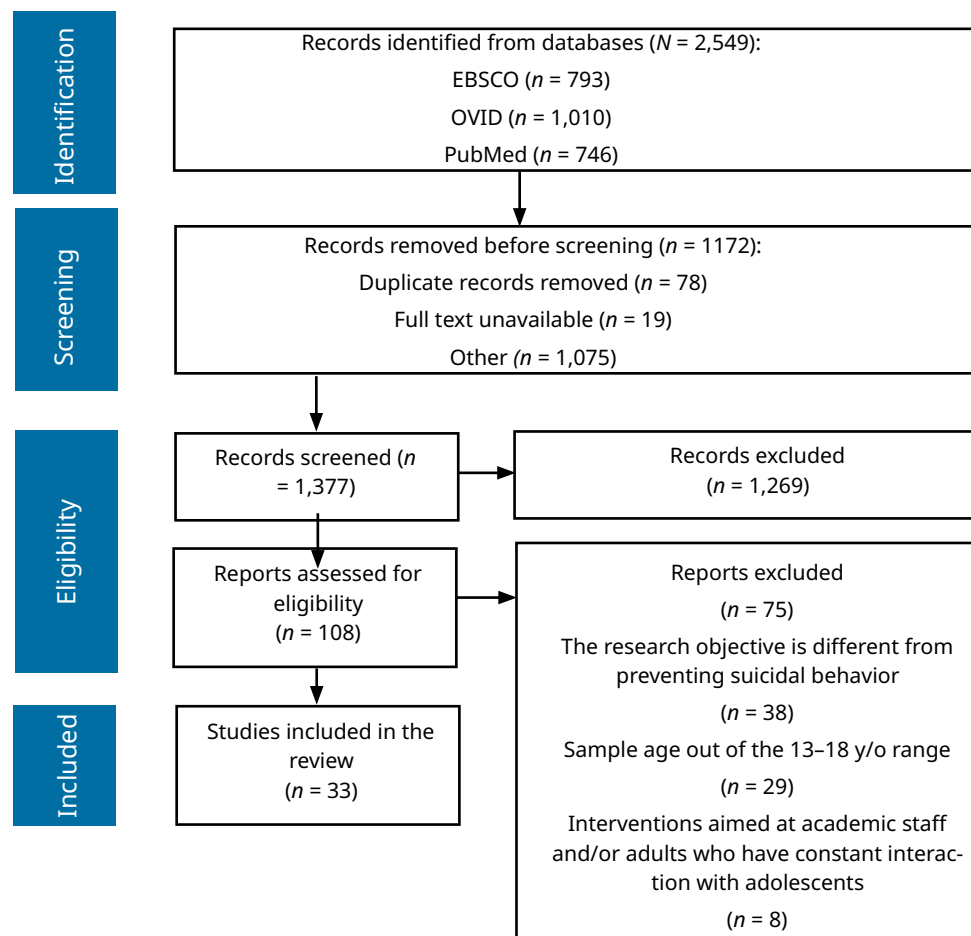
## Ethical Considerations

This integrative review was based exclusively on previously published studies and did not involve primary data collection or direct interaction with human participants; therefore, ethical approval was not required. All sources were appropriately cited and accessed through open-access platforms. The authors have no conflicts of interest.

were excluded due to low relevance to the purpose of this review.

The process of identification, screening, assessment, and selection of the studies is outlined according to PRISMA flow chart procedures (Page *et al.*, 2021), as shown in Figure 1.

**Figure 1.** Flow Diagram of the Study Selection Process Based on PRISMA Guidelines



A total of 108 records were screened at the full-text stage for their eligibility. Of these, 75 records were excluded based on the predefined criteria. Finally, 33 studies were included in this review; their characteristics are described in the following sections.

Table 2 shows the frequency of articles by country, year, and language of publication, as reported by the

databases used. Most articles were retrieved from PubMed and EBSCO, with fewer from OVID. The majority were conducted in English-speaking countries (mainly the United States and Australia), with limited representation from Latin America and Europe. Most studies were published in 2019 and in English.

**Table 2.** Distribution of Articles by Country, Year of Publication, and Language of Publication According to Databases

|                     | Database |      |          |      |          |      |          |      |
|---------------------|----------|------|----------|------|----------|------|----------|------|
|                     | PubMed   |      | OVID     |      | EBSCO    |      | Total    |      |
|                     | <i>n</i> | %    | <i>n</i> | %    | <i>n</i> | %    | <i>N</i> | %    |
| Country             |          |      |          |      |          |      |          |      |
| USA                 | 6        | 37.5 | 2        | 66.7 | 8        | 57.2 | 16       | 48.5 |
| Australia           | 2        | 12.5 | -        | -    | 4        | 28.6 | 6        | 18.2 |
| European Union      | 2        | 12.5 | -        | -    | -        | -    | 2        | 6.1  |
| Chile               | 2        | 12.5 | -        | -    | -        | -    | 2        | 6.1  |
| Germany             | 1        | 6.2  | -        | -    | -        | -    | 1        | 3    |
| Switzerland         | 1        | 6.2  | -        | -    | -        | -    | 1        | 3    |
| Brazil              | -        | -    | -        | -    | 1        | 7.1  | 1        | 3    |
| Colombia            | -        | -    | 1        | 33.3 | -        | -    | 1        | 3    |
| Italy               | 1        | 6.2  | -        | -    | -        | -    | 1        | 3    |
| Peru                | 1        | 6.2  | -        | -    | -        | -    | 1        | 3    |
| Mexico              | -        | -    | -        | -    | 1        | 7.1  | 1        | 3    |
| Total               | 16       | 100  | 3        | 100  | 14       | 100  | 33       | 100  |
| Year of publication |          |      |          |      |          |      |          |      |
| 2016                | 2        | 12.5 | -        | -    | 2        | 14.3 | 4        | 12.1 |
| 2017                | 1        | 6.2  | -        | -    | 3        | 21.4 | 4        | 12.1 |
| 2018                | -        | -    | 1        | 33.3 | -        | -    | 1        | 3.0  |
| 2019                | 3        | 18.8 | 2        | 66.7 | 1        | 7.1  | 6        | 18.2 |
| 2020                | 5        | 31.3 | -        | -    | 3        | 21.4 | 8        | 24.2 |
| 2021                | -        | -    | -        | -    | -        | -    | -        | -    |
| 2022                | 1        | 6.2  | -        | -    | 2        | 14.3 | 3        | 9.1  |
| 2023                | -        | -    | -        | -    | -        | -    | -        | -    |

» Table 2. (continued)

» Table 2. (continued)

|          | Database |      |          |      |          |      |          |      |
|----------|----------|------|----------|------|----------|------|----------|------|
|          | PubMed   |      | OVID     |      | EBSCO    |      | Total    |      |
|          | <i>n</i> | %    | <i>n</i> | %    | <i>n</i> | %    | <i>N</i> | %    |
| 2024     | 3        | 18.8 | -        | -    | 3        | 21.4 | 6        | 18.2 |
| 2025     | 1        | 6.2  | -        | -    | -        | -    | 1        | 3.0  |
| Total    | 16       | 100  | 3        | 100  | 14       | 100  | 33       | 100  |
| Language |          |      |          |      |          |      |          |      |
| English  | 16       | 100  | 2        | 66.7 | 12       | 88.9 | 31       | 93.9 |
| Spanish  | -        | -    | 1        | 33.3 | 2        | 11.1 | 2        | 6.1  |
| Total    |          | 100  | 3        | 100  | 14       | 100  |          | 100  |

The essential features of each research study are presented in Table 3. Analysis categories included publication year, sample size, age range (13–18 years), inclusion criteria, intervention name and objectives, key characteristics (e.g., theoretical approach, number of sessions, and duration), research design, and outcomes (e.g., measures of change). Regarding age, 33.33% did not report the age range or mean age; in the remaining studies, participants were primarily high school students. Most interventions aimed to reduce suicide risk from a preventive perspective; however, some involved small-group therapeutic interventions led by trained professionals and therapists. Besides, 63.64% of studies used psychoeducational techniques, 24.24% used therapeutic interventions, and around 12.12% used mixed procedures (psychoeducation and

psychotherapy). Concerning the outcomes, 72.73% of studies used specific psychometric measures to assess suicide and related factors such as depression or anxiety, as well as mood states, before and after treatment, to compare pre-test and post-test scores (e.g., Columbia Suicide Scale, CDRSR, Suicide Risk Scale, BDI-II). These studies used different analytical methods and statistical procedures (e.g.,  $\chi^2$ , ANOVA, MANOVA, linear and logistic regression); however, only 12.12% of the papers reported effect sizes for changes. Regarding design, most large-group preventive interventions used either psychoeducation or psychotherapy, whereas small-group studies often employed experimental or quasi-experimental designs (72.73%). Of these, 24.24% were experimental, including 18.18% randomized trials. Few studies (12.12%) were descriptive.

**Table 3.** Studies Regarding Interventions. Overview of Participants, Interventions, Comparisons, Outcomes, and Study Design (PICOS)

| Authors (year), country         | Sample (age range) Inclusion criteria (if any)      | Intervention name and objectives                                                                                                                                                          | Intervention description Theoretical and methodological approach | Outcomes Change measures                                                                                                                                                                                                           | Study design                                     |
|---------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Flynn <i>et al.</i> (2016), USA | 3,257 adolescents (11–18 y/o)<br>Intentional sample | <b>Yellow Ribbon Suicide Prevention program</b><br>To provide information about suicide risk factors, ways to talk effectively about suicide, and how to seek help for oneself and others | Universal psychoeducation: one-hour presentation                 | They used their own measure<br><br>Significant changes in knowledge about suicide risk factors (Cramer's $V = .243$ to $.376$ , $p < .001$ ) included where to go to get help, available resources, and comfort level to seek help | Pre-experimental with post-test only<br><br>X O1 |

» Table 3. (continued)

» Table 3. (continued)

| Authors (year), country                  | Sample (age range) Inclusion criteria (if any)                                        | Intervention name and objectives                                                                                                                                                                                                                       | Intervention description Theoretical and methodological approach                                                                                                                                            | Outcomes Change measures                                                                                                                                                                                                                                                                                                                                                                                                                                            | Study design                                                                                                      |
|------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Robinson <i>et al.</i> (2016), Australia | 21 adolescents (14–18 y/o) who presented with suicidal ideation within the last month | <b>Reframe IT</b><br>To develop and test the impact of an Internet-based program among secondary school students at suicide risk                                                                                                                       | CBT approach<br>Online intervention (eight modules, 15–20 min. each)<br>Selective                                                                                                                           | Suicidal Ideation Questionnaire-Junior (SIQ-JR), Children's Depression Rating Scale-Revised (CDRSR), Reynolds Adolescent Depression Scale Version 2 (RADS)<br><br>Decreased levels of suicidal ideation, depressive symptoms, and hopelessness throughout the study                                                                                                                                                                                                 | Pre-experimental with pre-post test                                                                               |
| Schilling <i>et al.</i> (2016), USA      | 1,052 high-school students (age not reported) (9th to 12th grades) (58% girls)        | <b>Suicide Signs (SOS)</b><br>To ensure that participants understand that suicidal behavior is not a normal reaction when they face stress or emotional distress<br>To detect warning signs of suicidal risk and seek adult help if there are any sign | Psychoeducational perspective<br>Participating schools receive a kit of materials that includes a DVD, a discussion guide, and other materials, as well as a manual describing how to implement the program | Outcome categories: 1. Self-reported suicidal ideation, suicide planning, and suicide attempts, 2. Knowledge and attitudes about depression and suicide. OD ratios are presented. EG was 64% less susceptible to reporting suicide attempts compared with CG. Increased knowledge about depression and suicide, and supportive attitudes towards peer intervention and seeking help. Data shows the main and interaction effects between sex and intervention group | Experimental randomized controlled trial with pre-post test<br><br>RG1: O1 X O3<br><br>RG2: O2 - O4               |
| Vidot <i>et al.</i> (2016), USA          | 746 Hispanic adolescents and primary caregivers ( $M = 13.9$ y/o)                     | <b>Familias Unidas</b><br>To prevent and reduce substance abuse, suicidal behavior, and sexual risk behaviors through the improvement of family functioning                                                                                            | Family-based intervention<br>Psychoeducation program with adolescents and parents<br>Audio Computer Assisted Self-Interview (ACASI) software was used                                                       | Parent-Adolescent Communication Scale<br><br>Decrease in suicidal behavior in adolescents with low levels of parental communication. There were no significant intervention effects on suicidal behaviors                                                                                                                                                                                                                                                           | Experimental randomized controlled trial with pre-post test and 6, 18, 30-month follow-up<br><br>O1-X-O2-O3-O4-O5 |

» Table 3. (continued)



» Table 3. (continued)

| Authors (year), country                | Sample (age range) Inclusion criteria (if any)                                                 | Intervention name and objectives                                                                                                                                                                          | Intervention description Theoretical and methodological approach                                                                                             | Outcomes Change measures                                                                                                                                                                                                                                                                 | Study design                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Asarnow <i>et al.</i> (2017), USA      | 42 adolescents (12–18 y/o) who had a suicide attempt or self-harm within the last three months | <b>SAFETY</b><br>To address challenges identified in treating self-harming youths<br>To reduce self-harm and suicidal behavior, suicide testing, SAFETY effectiveness                                     | From CBT and DBT approaches, with 12 therapy sessions aimed at the adolescent and their caregivers                                                           | Cognitive Therapy Rating Scale (CTRS), Columbia-Suicide Severity Rating Scale (CSSRS)<br><br>Less propensity to suicide attempts according to a 3-month follow-up                                                                                                                        | Experimental, pre-post test with 3 and 6-month follow-up<br><br>O1-X-O2 |
| Bailey <i>et al.</i> (2017), Australia | 129 adolescents (16–18 y/o)                                                                    | <b>SafeTALK</b><br>To help the participants recognize warning signs of suicide and refer those who need it to support services                                                                            | One-session training workshop<br><br>Psychoeducation perspective (presentations, video, discussion, questions, and role-play)                                | Columbia Suicide Screen (CSS), Profile of Mood States-Modified (POMS-M)<br><br>Significant decrease in POMS scores between Time 1 and Time 2, and Time 3. Increases in knowledge about suicide, trust, and willingness to talk about related topics, and the possibility of seeking help | Pre-experimental with four-week follow-up<br><br>O1 X O2- O3            |
| Humensky <i>et al.</i> (2017), USA     | 107 female participants (11–18 y/o)                                                            | <b>Life is Precious (LIP)</b><br>To reduce suicidal behavior through the promotion of family relationships, communication skills, academic support, creative expression, and activities aimed at wellness | Psychosocial program based on risk and needs evaluation                                                                                                      | Suicidal Ideation Questionnaire, Trauma Symptom Checklist for Children (TSCC), Reynolds Adolescent Depression Scale (RDS)<br><br>Decreased suicidal risk amongst the participants                                                                                                        | Pre-experimental with repeated measurement                              |
| Torcasso and Hilt (2017), USA          | 193 screened high school students (40 positive; age not reported)                              | <b>Connected Community Teen-Screen</b><br>To educate about warning signs related to suicide and depression, to identify them in themselves and others                                                     | Screening: clinical or informative interview and referring to mental health services if necessary                                                            | Diagnostic Predictive Scales (DPS), Youth Risk Behavior Survey (YRBS)<br><br>Significant increase in the utilization of mental health services among students with high scores in screening. Reduced proportions of suicidal ideation and suicide attempt comparing cohorts              | Quasi-experimental pre-post test                                        |
| Pearlman <i>et al.</i> , 2018 (USA)    | 328 elementary, middle, and high school students (age not reported)                            | <b>Rhode Island Suicide Prevention Initiative</b><br>To avoid emergency service usage in youth at risk, and instead, refer them to a local mental health service with monitoring                          | Four-level stage model, including staff training and multidisciplinary work for universal suicide prevention in schools<br><br>Psychoeducational perspective | Columbia-Suicide Severity Rating Scale, Violence Injury Protection and Risk Screen<br><br>Effectiveness in identifying students at risk and greater efficiency in their referral to local mental health services                                                                         | Non-experimental<br><br>Descriptive                                     |

» Table 3. (continued)

» Table 3. (continued)

| Authors (year), country                       | Sample (age range) Inclusion criteria (if any)                                 | Intervention name and objectives                                                                                                                                                   | Intervention description Theoretical and methodological approach                                                                      | Outcomes Change measures                                                                                                                                                                                                                    | Study design                                                                                                            |
|-----------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Bahamón <i>et al.</i> (2019), Colombia        | 106 adolescents (13–18 y/o)                                                    | <b>CIPRES</b><br>To reduce suicidal risk in adolescents by enhancing their psychological well-being                                                                                | Universal intervention: 12 one-hour sessions per week. Exercises, techniques, and tools for individuals and groups                    | Scale of Suicide Risk, Positive and Negative Suicide Inventory (PANSI)<br><br>Effectiveness in reducing suicidal ideation, planning, self-harm, social isolation, lack of family support, and overall suicidal risk                         | Quasi-experimental with pre-post test                                                                                   |
| Barzilay <i>et al.</i> (2019), European Union | 11,110 high school students ( $M = 14.8$ y/o) from 10 European Union countries | <b>Youth Aware of Mental Health</b><br>To increase mental health awareness and enhance coping skills in the face of adverse life events, stress, and suicidal thoughts             | Universal and manualized intervention consisting of a workshop with five interactive sessions, a booklet, and six educational posters | Beck Depression Inventory (BDI-II), Strengths and Difficulties Questionnaire (SDQ)<br><br>The intervention was effective in mitigating the harmful effects of self-injurious behavior and can be enhanced by including parental involvement | Experimental (randomized groups) with baseline and follow-up at 12 months<br><br>RG1: O1 X O3 O5<br><br>RG2: O2 - O4 O6 |
| Capps <i>et al.</i> (2019), USA               | 58 students (13–18 y/o) who went through a total of 78 separate crisis events  | <b>Prevention of Escalating Adolescent Crisis Events (PEACE) Protocol</b><br>To provide a thorough and systematic assessment of suicidal risk                                      | Categorization according to the level of risk presented, and provide action plans in accordance with each level                       | YRBS<br><br>No suicide deaths or suicide attempts were reported after the application of the PEACE protocol. Students who required hospitalization, psychological, or psychiatric care were able to have it in a timely manner              | Non-experimental Descriptive                                                                                            |
| Wienke <i>et al.</i> (2019a), USA             | 418 high-school students (age not reported) (47.5% men, 52.3% women)           | <b>A Promise for Tomorrow</b><br>To raise awareness of the problem of suicide among adolescents and its facilitators<br>To encourage referrals of youth requiring specialized care | Cognitive-Behavioral Approach<br><br>Three sessions (40 min each) including interactive activities                                    | Planned Behavior and Implementation Questionnaire (PBIQ)<br><br>Hierarchical regression analyses demonstrating predictive validity of both alliance and involvement on post-training intentions to refer adolescents at risk for suicide    | Pre-experimental pre-post test<br><br>O1 X O2                                                                           |
| Wienke <i>et al.</i> (2019b), USA             | 233 high-school students (age not reported) (46% boys, 54% girls)              | <b>A Promise for Tomorrow</b><br>To raise awareness of the problem of suicide among adolescents and its facilitators<br>To encourage referrals of youth requiring specialized care | Cognitive-Behavioral Approach (Theory of Planned Behavior)<br><br>Three sessions (40 min each) including interactive activities       | PBIQ<br><br>Significant $\beta$ s were reported in adolescents' beliefs and may be more important than intentions                                                                                                                           | Pre-experimental with two-month follow-up<br><br>O1 X O2 O3                                                             |

» Table 3. (continued)

» Table 3. (continued)

| Authors<br>(year),<br>country                      | Sample<br>(age range)<br>Inclusion criteria<br>(if any)                                  | Intervention name and<br>objectives                                                                                                                                                                                                            | Intervention description<br>Theoretical and<br>methodological<br>approach                                                                                                                                                      | Outcomes<br>Change measures                                                                                                                                                                                                                                                                                                                          | Study design                                                                                                           |
|----------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Wright-Berryman<br><i>et al.</i> (2019),<br>USA    | 1,174 adolescents<br>(age not reported)<br>(546 suicide concerns)                        | <b>Hope Squad</b><br><br>To train students to gain knowledge and recognize suicidal risk factors in their peers so that they can facilitate help-seeking, which can minimize the harm that the crisis can cause                                | Training to students (8–10 per grade) selected through a peer nomination process                                                                                                                                               | Referrals comprised 24 percent of all reported contacts (N = 287) of the contacts reported by HOPE Squad                                                                                                                                                                                                                                             | Non-experimental<br>Descriptive                                                                                        |
| Amaral <i>et al.</i><br>(2020), Brazil             | 30 (13–17 y/o)<br>adolescents with<br>suicidal ideation<br>and depressive<br>symptoms    | <b>Intervention Program</b><br><br>To promote adolescent mental health in order to identify and reduce potential suicide risk in this population                                                                                               | Fifteen therapeutic and psycho-educational sessions, 3 times a week, each lasting 50 minutes                                                                                                                                   | Scale for Suicide Ideation (SSI)<br><br>Sixty percent of the participants already reported no suicidal ideation after intervention. Decreases in scores on the depression and hopelessness measures                                                                                                                                                  | Quasi-experimental<br>with pre-post test<br><br>O1 X O2                                                                |
| Hart <i>et al.</i><br>(2020),<br>Australia         | 1,605 adolescents<br>(15–17 y/o)                                                         | <b>Teen Mental Health First Aid</b><br><br>To increase adolescents' knowledge about mental health, promote support for peers with mental health problems or in crisis, and help-seeking with trusted adults, and reduce stigmatizing attitudes | Universal psychoeducation<br><br>Three 75-minute classroom sessions facilitated by outside instructors<br><br>PowerPoint presentations, videos, role-plays, group discussions, small-group activities, and workbook activities | Items adapted from the Australian National Survey of Youth Mental Health Literacy<br><br>Increased recognition of suicidal behaviors and suicidal ideation, as well as appropriate first aid intentions towards a peer at risk of suicide, compared to the control group. 12 months later, the effects of the intervention remained significant      | Pre-experimental<br>with pre-post test<br>and 12-month<br>follow-up<br><br>O1 X O2 O3                                  |
| Kahn <i>et al.</i><br>(2020),<br>European<br>Union | 5,654 adolescents<br>(14–16 y/o) from<br>85 schools in 10<br>European Union<br>countries | <b>Youth Aware of Mental Health (YAM)</b><br><br>To raise awareness of risk and protective factors associated with suicide, promote reflection on different coping strategies, and decision-making in difficult situations                     | Universal and manual-based intervention consisting of a workshop with five interactive sessions, a booklet, and six educational posters                                                                                        | SEYLE questionnaire<br><br>Cohen's d ranged from .02 to .13<br>Significant direct and interaction effects in coping strategies were shown to influence levels of suicidal ideation. The YAM program is effective for students who underuse adaptive strategies such as learning or help-seeking, as well as for those who use maladaptive strategies | Quasi-experimental<br>with baseline and<br>follow-up at 3 and<br>12 months<br><br>G1: O1 X O3 O5<br><br>G2: O2 - O4 O6 |

» Table 3. (continued)

» Table 3. (continued)

| Authors (year), country                 | Sample (age range) Inclusion criteria (if any)                                                 | Intervention name and objectives                                                                                                                                                                     | Intervention description Theoretical and methodological approach                                                                                                   | Outcomes Change measures                                                                                                                                                                                                                                                                       | Study design                                                                                                                                |
|-----------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Kim <i>et al.</i> (2020), Peru          | 768 high-school students (age, not reported); experimental group (379) and control group (359) | <b>Proyecto KOICA-Yonsei</b><br>To prevent suicidal behavior in adolescents                                                                                                                          | Psychoeducation<br>Needs-based intervention program in the community using health education sessions and workshops involving youth and their parents               | Global School-Based Student Health Survey in Peru<br><br>6.3% of EG reported suicide ideation vs. 8.1% of CG ( $X^2$ ; $p < .05$ ). Positive effect on mental health, suicidal behaviors, and ideation, and risk behaviors of adolescents (OD; $p < .001$ )                                    | Quasi-experimental with pre-post test<br><br>G1: O1 X O3<br>G2: O2 - O4                                                                     |
| Kinchin <i>et al.</i> (2020), Australia | 28 students (15–16 y/o)                                                                        | <b>SafeTALK</b><br>To help the participants recognize warning signs of suicide and refer those who need it to support services                                                                       | Psychoeducation<br>Included the use of presentations (PPT), videos, and group discussions. At the end of the program, a card was given to the students             | A mixed-method questionnaire assessed behavior changes, including help-seeking and helping others at risk. Increase in knowledge related to suicide, trust, willingness, and the possibility of seeking help                                                                                   | Pre-experimental with 4-week follow-up<br><br>O1 X O2 O3                                                                                    |
| Lindow <i>et al.</i> (2020), USA        | 1,878 high-school students (9th grade) (age not reported)                                      | <b>YAM</b><br>To raise awareness of risk and protective factors associated with suicide, promote reflection on different coping strategies, and decision-making in difficult situations              | Universal and manual-based intervention consisting of a workshop with five interactive sessions (three role-play sessions), a booklet, and six educational posters | Quality Control of YAM Delivery, Satisfaction Questionnaires<br><br>The YAM program was widely accepted by students, parents, and school staff, as indicated by the satisfaction survey. In summary, this program is suitable for implementation in U.S. schools                               | Quasi-experimental with post-test<br><br>X-O1                                                                                               |
| Testoni <i>et al.</i> (2020), Italy     | 150 (81 in the experimental group, 69 in the control group) (12–14 y/o)                        | <b>Death Education (Beyond the Wall)</b><br>To help young people deal with suicide cases and make them aware of their negative emotions and representations of death, touching on existential issues | Psychoeducation<br>Four two-hour sessions taught by psychologists<br><br>Activities such as film discussion, psychodrama, and photovoice                           | The Resilience Scale for Adolescents (READ), Hopelessness Scale for Children (HSC), Alexithymia Questionnaire for Children (AQC)<br><br>The intervention did not have a significant impact on all the variables studied. There was a decrease in alexithymia levels                            | Quasi-experimental with control group<br><br>G1: O1 X O3<br>G2: O2 - O4                                                                     |
| Tingey <i>et al.</i> (2020), USA        | 394 Native American teenagers (13–16 y/o)                                                      | <b>Arrowhead Business Group (ABG)</b><br>To enhance protective factors among native adolescents to promote healthy behavioral and mental health development                                          | Psychoeducation<br>Sixteen sessions                                                                                                                                | Self-report and questionnaires via ACASI<br>Hard copies had to be used more frequently during follow-up. Suicide attempts decreased from baseline and up to 24 months later in both groups, but this was only significant for the experimental group. Self-report and questionnaires via ACASI | Experimental with a 2:1 randomization design. With baseline and follow-up at 6, 12, and 24 months<br><br>RG1: O1 X O3 O5<br>RG2: O2 - O4 O6 |

» Table 3. (continued)

» Table 3. (continued)

| Authors<br>(year),<br>country                  | Sample<br>(age range)<br>Inclusion criteria<br>(if any)                                                                                                                         | Intervention name and<br>objectives                                                                                                                                                                                                               | Intervention description<br>Theoretical and<br>methodological<br>approach                                                                                                                                                                             | Outcomes<br>Change measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Study design                                                                                      |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Baggio<br><i>et al.</i> (2022),<br>Switzerland | 305 adolescents<br>(209 in experimental group, 96 in control group, mean age = 15.28 y/o)<br><br>Inclusion: aged ≥14, French-speaking, had not previously attended the workshop | <b>Stop Suicide</b><br><br>To increase suicide awareness, identify risk factors and warning signs, dispel myths, and provide resources for seeking and offering help                                                                              | Universal psychoeducation<br><br>90-minute workshop that included: lecture, group discussions based on case examples, myths and facts quiz, and an illustrated booklet<br><br>Delivered by trained Stop Suicide staff with the help of a psychologist | Literacy of Suicide Scale (LOSS, French version), Self-developed scale of knowledge of help-seeking resources COPE Inventory, Columbia-Suicide Severity Rating Scale (C-SSRS, French version), Kessler Psychological Distress Scale (K-6, French version)<br><br>Significant improvements in perceived suicide awareness, willingness, confidence, intention to seek help, and knowledge of help-seeking resources. Improvement in planning coping skills                                    | Non-randomized cluster-controlled trial with baseline and 1-month follow-up                       |
| Calear <i>et al.</i><br>(2022),<br>Australia   | 4,806 students<br>(years 7 -12, approx. 12 -18 y/o) from 16 schools                                                                                                             | <b>Sources of Strength Australia Project</b><br><br>To promote protective factors for suicide prevention, improve help-seeking behaviors, and build resilience through peer-led messaging                                                         | Peer leader training (half-day workshop) led by adult advisors, followed by ongoing messaging campaigns promoting strengths, connectedness, and help-seeking. Adult advisors are trained in a separate one-day workshop                               | General Help-Seeking Questionnaire (GHSQ), Actual Help-Seeking Questionnaire (AHSQ), Adapted Stigma of Suicide Scale Short Form (SOSS-SF), Youth-adult connectedness, self-report scale<br><br>Increased help-seeking intentions from adults at post-test and follow-up. No significant change in actual help seeking. Small reduction in stigma and improvements in youth-adult connectedness at post-test                                                                                  | Cluster-randomized controlled trial with baseline, post-test (3 months), and follow-up (6 months) |
| Williford<br><i>et al.</i> (2022),<br>USA      | 28 peer leaders<br>(current high school students and recent graduates) from two rural high schools                                                                              | <b>Sources of Strength, peer leader role</b><br><br>To understand how peer leaders function as gatekeepers and change agents, and identify traits, beliefs, and behaviors that contribute to effective suicide prevention and wellbeing promotion | Qualitative exploration within the framework of the Theory of Planned Behavior (TPB)<br><br>Peer leaders are trained to promote help-seeking, healthy coping, and protective factors through peer-to-peer messaging                                   | Semi-structured interview protocol based on the TPB (eliciting behavioral, normative, and control beliefs; intentions; and behaviors), demographic questionnaire<br><br>Peer leaders exhibited personal traits (empathy, optimism, kindness, extraversion) and beliefs that aligned with TPB constructs, thereby supporting gatekeeping and influence. To promote protective factors for suicide prevention, improve help-seeking behaviors, and build resilience through peer-led messaging | Qualitative interview study with thematic analysis, cross-sectional, and follow-up interviews     |

» Table 3. (continued)

» Table 3. (continued)

| Authors (year), country                  | Sample (age range) Inclusion criteria (if any)                                                                                                                       | Intervention name and objectives                                                                                                                                                                                                                                                 | Intervention description Theoretical and methodological approach                                                                                                                                                                                                                                                                | Outcomes Change measures                                                                                                                                                                                                                                                                                                                                                                                                               | Study design                                                                                                           |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Casas-Muñoz <i>et al.</i> (2024), Mexico | 195 adolescents (12–19 y/o) from four public high schools in Mexico City<br><br>Inclusion: enrolled in participating schools, aged 12–19, and consent to participate | <b>National Program for Suicide Prevention (PRONAPS)</b><br><br>To increase awareness, identify warning signs, guide appropriate actions, and reduce stigma regarding mental health care among adolescents                                                                       | Development and implementation of a health communication strategy using advertising principles and peer leaders<br><br>Activities included training adolescents to be peer communicators and delivering awareness messages through social media, posters, videos, and interactive school events                                 | Ad hoc questionnaire on suicide knowledge and myths, suicide stigma scale (adapted from prior Mexican research), self-reported willingness to seek help and to help peers<br><br>Significant increase in correct knowledge about suicide and warning signs, reduction in stigma scores, and increased reported willingness to seek professional help and to support peers in distress                                                  | Quasi-experimental pre-post design without a control group, with baseline and immediate post-intervention measurements |
| Gibson <i>et al.</i> (2024), Australia   | 276 Aboriginal adolescents (mean age: 13.46) from rural Queensland                                                                                                   | <b>Project Yarn Circle</b><br><br>To strengthen cultural identity, resilience, and mental health among youth                                                                                                                                                                     | Co-designed program developed with local Elders, community members, and youth<br><br>Incorporated yarning circles, storytelling, art, and cultural activities to promote connection to culture, identity, and community support. Sessions facilitated by trained Aboriginal staff<br><br>Universal school-based psychoeducation | Growth and Empowerment Measure (GEM), Kessler Psychological Distress Scale (K10), Social and Emotional Wellbeing (SEWB) self-report items, qualitative feedback interviews<br><br>GEM scores increased, indicating greater empowerment; K10 scores decreased, suggesting reduced psychological distress; qualitative data showed enhanced cultural pride, connectedness, and perceived ability to support peers                        | Mixed-methods pilot study with pre-post quantitative measures and qualitative interviews                               |
| Grosselli <i>et al.</i> (2024), Germany  | 745 secondary school students (≥12 years old; mean age = 15.5) from academic and vocational schools                                                                  | <b>HEYLIFE Suicide Prevention Program</b><br><br>To reduce barriers to help-seeking, unfavorable attitudes towards suicidality, and stigma towards suicidal peers<br><br>To promote mental health literacy, coping strategies, and mitigation of individual suicide risk factors | Universal school-based psychoeducation<br>180 minutes in one or two sessions. Includes presentations, group discussions, case vignettes, quizzes, local help information, and role-play. Delivered by trained master's students in Clinical Psychology                                                                          | SOS-k (knowledge), SOS-a (attitudes), ERMIS (emotional reactions: rejection, fear, prosocial), SDS (social distance), GHSQ (help-seeking intentions), AHSQ (help-seeking behaviors), RFS (risk factors)<br><br>Short-term: significant increase in knowledge, small improvement in attitudes, decreased fear, decreased prosocial emotions, decreased willingness for social contact; no change in rejection or help-seeking intention | Randomized controlled trial; 6–9 months follow-up. Parallel design, allocation ratio 1:1                               |

» Table 3. (continued)

» Table 3. (continued)

| Authors<br>(year),<br>country          | Sample<br>(age range)<br>Inclusion criteria<br>(if any)                                                                                                              | Intervention name and<br>objectives                                                                                                                                                                                                                                                    | Intervention description<br>Theoretical and<br>methodological<br>approach                                                                                                                                                                                                                                       | Outcomes<br>Change measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Study design                                                                                                                                         |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Núñez <i>et al.</i><br>(2024), Chile   | Secondary school<br>students (grades<br>9–11) from 21<br>school                                                                                                      | <b>Reframe-IT+</b><br>Blended (internet + face-to-face)<br>CBT indicated intervention aiming<br>to reduce suicidal ideation and<br>related symptoms (depression,<br>anxiety, hopelessness) and to<br>improve problem-solving, beha-<br>vioral activation, and cognitive<br>reappraisal | Eight ~20-minute<br>online modules (access<br>in school and at home)<br>+ five brief face-to-face<br>CBT sessions (safety<br>plan, emotion recogni-<br>tion, relaxation,<br>problem-solving, cog-<br>nitive restructuring)<br><br>Delivered in schools by<br>trained psychologists                              | Suicidal Ideation Questionnaire<br>(SIQ); PHQ-8, GAD-7, Beck Hope-<br>lessness Scale (BHS), SPSP-R Short<br>Form, ERQ-CA, CBT-SQ<br><br>The intervention significantly<br>reduced suicidal ideation and<br>improved depression, anxiety,<br>and hopelessness (small-to-<br>moderate effect sizes). The<br>reduction in suicidal ideation was<br>mainly explained by improved<br>social problem-solving skills;<br>no serious adverse events were<br>reported                                                                                                                                                                                                                                | Cluster randomized<br>controlled trial.<br>Post-intervention<br>assessment                                                                           |
| Pisani <i>et al.</i><br>(2024),<br>USA | 223 high school<br>students (14–18<br>y/o)<br><br>Inclusion: owners<br>of a cellphone,<br>the ability to<br>bring it to school,<br>and an internet<br>connection     | <b>Text4Strength</b><br>To promote help-seeking atti-<br>tudes and norms, strengthen<br>youth-adult connections, and<br>enhance coping and emotion<br>regulation skills to reduce suicide<br>risk                                                                                      | Universal, school-<br>based psychoeducational<br>intervention delivered<br>via 1–2 personalized, interactive<br>SMS text message sequences<br>per week over 9 weeks, concurrent<br>with Sources of Strength. Content<br>included peer testimonials, games,<br>coping strategies, and positive<br>affect prompts | Ways of Coping Checklist, Lack<br>of Emotional Clarity subscale<br>(DERS), Limited Access to Strategies<br>subscale (DERS), Help-Seeking<br>from Adults at School scale, Adult<br>Help for Suicidal Youth scale,<br>Trusted Adults scales (school/<br>community), Short Mood and<br>Feelings Questionnaire (SMFQ),<br>PROMIS Pediatric Anxiety scale,<br>suicide subscale (MFQ)<br><br>No significant effects on coping,<br>emotional clarity, help-seeking,<br>trusted adult relationships,<br>depression, anxiety, or suicidal<br>ideation at post-test or 3-month<br>follow-up. Analyses ruled out<br>moderate or large effects; any<br>possible effect was small and<br>non-significant | Pilot randomized<br>controlled trial with two arms:<br>interactive texting vs. informational<br>texts. Pre-test, post-test, and<br>3-month follow-up |
| Walsh <i>et al.</i><br>(2024),<br>USA  | 4,983 educators,<br>school staff, and<br>students (mean<br>age 15.11)<br><br>Inclusion: individuals<br>working with youth in<br>educational or community<br>settings | <b>LEARN Comprehensive Suicide<br/>Prevention Training</b><br>To increase participants' knowl-<br>edge, skills, and confidence in<br>identifying and responding to<br>suicide risk among youth                                                                                         | In-person, 90-minute,<br>interactive training focused on<br>suicide risk recognition, response,<br>and referral. Based on a public<br>health approach to suicide<br>prevention. Includes didactic<br>instruction, discussion, and<br>role-play scenarios                                                        | LEARN Suicide Prevention<br>Knowledge Test, Perceived Pre-<br>paredness Scale, Self-Efficacy for<br>Suicide Prevention Scale<br><br>Significant improvements in<br>suicide prevention knowledge,<br>perceived preparedness, and<br>self-efficacy from pre- to post-<br>training                                                                                                                                                                                                                                                                                                                                                                                                             | Single-group pre-post design.<br>Assessments administered<br>immediately before and after<br>training                                                |

» Table 3. (continued)

» Table 3. (continued)

| Authors (year), country           | Sample (age range) Inclusion criteria (if any)  | Intervention name and objectives                                                                                                                                                                                                                                | Intervention description Theoretical and methodological approach                                                                                                                                                                                | Outcomes Change measures                                                                                                                                                                                                                                                                                                            | Study design                                                                                                                                                                    |
|-----------------------------------|-------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gaete <i>et al.</i> (2025), Chile | 45 middle school students (mean age = 15.7 y/o) | <b>Reframe-IT+</b><br>Blended (internet + face-to-face) CBT indicated intervention aiming to reduce suicidal ideation and related symptoms (depression, anxiety, hopelessness) and to improve problem-solving, behavioral activation, and cognitive reappraisal | Eight ~20-minute online modules (access in school and at home) + five brief face-to-face CBT sessions (safety plan, emotion recognition, relaxation, problem-solving, cognitive restructuring)<br>Delivered in schools by trained psychologists | Suicidal Ideation Questionnaire (SIQ), PHQ-8, GAD-7, Beck Hopelessness Scale, SPSS-R Short Form, ERQ-CA, CBT-SQ<br><br>Large decrease in suicidal ideation at post-test. Medium-large effects for depression, anxiety, and hopelessness. Improvements in problem-solving, reappraisal, and behavioral activation were also observed | Pilot cluster randomized controlled trial; three schools randomized to IG or CG; assessments at baseline and post-intervention; feasibility and acceptability outcomes included |

Additionally, peer-led interventions such as Hope Squad (Wright-Berryman *et al.*, 2019) and the Rhode Island Suicide Prevention Initiative (Pearlman *et al.*, 2018) were identified, with a focus on peer nomination and referral systems. Crisis-response protocols, including the PEACE Protocol (Capps *et al.*, 2019) and the LEARN Training Program (Walsh *et al.*, 2024), were reported as strategies to reinforce immediate response capacities in schools. Furthermore, innovative

approaches such as Death Education (Testoni *et al.*, 2020) and Stop Suicide (Baggio *et al.*, 2022) introduced existential and awareness-raising perspectives. Culturally tailored programs, such as Project Yarn Circle (Gibson *et al.*, 2024) for Aboriginal youth and HEYLIFE (Grosselli *et al.*, 2024) in Germany, were also documented, along with technology-based interventions such as Text4Strength (Pisani *et al.*, 2024), although the latter did not demonstrate significant outcomes.

## Discussion and Conclusions

The aim of the current review study was to identify, evaluate, and summarize the findings of all relevant school-based studies to prevent and manage adolescent suicide behavior, comparing the characteristics of various treatments of suicidal behavior in adolescents in school settings. Additionally, the level of treatment was examined regarding the target, selective, and universal interventions. The review using the PICOS strategy (Huang *et al.*, 2006) summarized 33 papers. PICOS proved to be a helpful algorithm for identifying samples of interest, the names and purposes of interventions, outcomes, methods of data analysis, and study designs; however, data in some papers were incomplete.

The choice of intervention depends largely on its availability in scientific articles. Most of the articles were obtained in PubMed, EBSCO, and OVID; however, EBSCO and OVID provided overlapping records, reducing the final number of papers. PubMed yielded the largest number of studies related to suicide interventions. Despite conducting a secondary search, only a limited number of studies met the established inclusion criteria. Moreover, the restriction to articles published in English and Spanish further limited the scope of the search.

Based on the reviews consulted, this paper demonstrates how studies have developed research to test the influence of diverse methods and procedu-



res, many of them derived from cognitive-behavioral approaches and psychoeducation (Asarnow *et al.*, 2017; Robinson *et al.*, 2016; Wienke *et al.*, 2019a, 2019b) to reduce the suicide risk in adolescents from a preventive and evidence-based perspective. Most studies report satisfactory results, demonstrating that school programs can be successfully implemented in the natural school environment of adolescents using various theoretical approaches and well-known measures with adequate psychometric properties, focusing on different issues related to suicidal behavior (e.g., bullying, violence), as previously reported (Evans *et al.*, 2014; Gijzen *et al.*, 2022; Posamentier *et al.*, 2023).

These findings are consistent with the recommendations of the WHO (2021), which emphasize the importance of early, context-based preventive strategies given the high rates of suicidality among adolescents aged 15 to 19 years worldwide, including Latin American countries (Borges *et al.*, 2016; Castellví *et al.*, 2017; Sánchez-Cervantes *et al.*, 2015), as well as the increase in self-harm with suicidal intentionality. From this perspective, school-based interventions represent a strategic setting for universal, selective, and indicated prevention efforts.

### **Methodological Limitations and Challenges**

Regarding methodological characteristics, many interventions involve caregivers, parents, or teachers to reinforce program effects and ensure the physical integrity of at-risk adolescents, which is particularly relevant for selective and indicated interventions. Most studies employ well-known questionnaires, such as the Columbia-Suicide Severity Rating Scale, the CED, and the BIDI-II, and use quantitative measures of change while also incorporating subjective reports. Methodologically, most interventions rely on pre-experimental or quasi-experimental designs (pre-test/post-test) with a single intervention group, and only a few include control groups or randomized experimental designs. Consequently, although these studies contribute valuable preliminary evidence, their methodological variability limits direct comparisons of effectiveness.

Many studies do not report effect sizes; instead, they focus on changes, some of which are statistically significant based on bivariate and multivariate analyses.

Although main and interaction effects are sometimes assessed pre- and post-intervention, indicators of change are rarely specified in the methods or results.

In several interventions, the conceptual framework is not clearly described; nevertheless, attempts were made to identify theoretical foundations, ranging from humanistic and systemic models to approaches primarily focused on cognitive aspects. In addition, peer-led and community-oriented interventions highlight the potential of empowering adolescents and school staff as active agents of prevention, as observed in Hope Squad (Wright-Berryman *et al.*, 2019), Sources of Strength (Williford *et al.*, 2022), the Youth Aware of Mental Health (Kahn *et al.*, 2020), and the Rhode Island Initiative (Pearlman *et al.*, 2018). Models such as the PEACE Protocol (Capps *et al.*, 2019) and LEARN Training (Walsh *et al.*, 2024) emphasize the importance of clear procedures and teacher training to recognize suicide risk and facilitate timely referrals, which are essential components of indicated prevention.

Programs adapted to specific cultural contexts, including Project Yarn Circle in Aboriginal communities (Gibson *et al.*, 2024), PRONAPS in Mexico (Casas-Muñoz *et al.*, 2024), and HEYLIFE in Germany (Grosselli *et al.*, 2024), demonstrate how cultural adaptation improves acceptance and perceived effectiveness. Other innovative strategies, such as Death Education (Testoni *et al.*, 2020) and Stop Suicide (Baggio *et al.*, 2022), expand the range of school-based prevention approaches, although their effects appear limited. Finally, technology-based programs like Text4Strength (Pisani *et al.*, 2024) demonstrate both the potential and the limitations of digital tools when they are not integrated with direct interpersonal interaction. Overall, these studies suggest that, beyond psychoeducation and cognitive-behavioral approaches, including cultural adaptation, peer leadership, and crisis-preparedness strategies may enhance the reach and relevance of suicide prevention efforts in school settings.

### **Implications for Future Interventions**

Beyond the descriptive characterization of existing programs, the findings of this review identify several patterns with implications for the design, implementation, and evaluation of school-based suicide prevention

interventions for adolescents. Although the heterogeneity of studies limits causal inferences, the convergence of certain methodological and conceptual features suggests a set of practical recommendations that future interventions may consider:

- (1) *Prioritize multi-level intervention models with school settings.* The predominance of psychoeducational and cognitive-behavioral interventions, combined with the involvement of teachers, peers, and caregivers in several programs, suggests that interventions are more likely to be feasible and acceptable when they operate across multiple levels of prevention. Universal interventions appear to facilitate awareness and early detection, while selective and indicated strategies address higher-risk adolescents.
- (2) *Emphasize feasibility and sustainability over clinical intensity.* The predominance of pre-experimental and quasi-experimental designs, as well as the frequent use of brief psychoeducational formats, reflects structural constraints inherent to school environments. Programs that rely on clear procedures, teacher training, and structured protocols appear better aligned with school routines and resources, supporting their potential for scalability.
- (3) *Strengthen conceptual clarity and theory-driven design.* Although most interventions report positive changes, the lack of explicit conceptual frameworks in many studies limits interpretability and replicability. Future school-based interventions would benefit from clearly articulated theoretical models, linking specific components to targeted outcomes related to suicidal behavior, emotional regulation, or help-seeking.
- (4) *Incorporate peer leadership and relational components as active mechanisms.* The consistent presence of peer-led and community-oriented programs across contexts highlights the importance of social connectedness and peer influence during adolescence. School-based programs should therefore incorporate structured peer leadership roles and relational components that foster a sense of belonging, support, and help-seeking behaviors.
- (5) *Ensure cultural adaptation as a core design principle.* Programs developed or adapted to specific cultural, social, and community contexts demonstrate greater relevance and engagement. Future interventions, particularly in underrepresented regions such as Latin America, should prioritize cultural adaptation processes from the design phase, rather than applying modifications to imported models.
- (6) *Integrate technology as a complementary component.* Technology-based interventions show potential to increase reach and accessibility; however, their limited effects in practice suggest that digital tools should complement, rather than replace, interpersonal and school-based supports.

### Study Limitations

Several limitations should be considered when interpreting the findings of this review. Many studies did not report on participants' age ranges, despite adolescence encompassing a broad developmental period with significant psychobiological differences (Kim *et al.*, 2020; Lindow *et al.*, 2020; Pearlman *et al.*, 2018; Schilling *et al.*, 2016; Torcasso & Hilt, 2017; Wienke *et al.*, 2019a, 2019b; Wright-Berryman *et al.*, 2019). This issue should be considered when designing interventions. Most interventions were carried out in school settings with high school adolescents and in small groups; however, reports of large samples from national surveys or programs were also observed. In addition, the lack of effect size reporting and the heterogeneity of designs and outcome measures limit the ability to compare intervention effectiveness. Given the limitations of this integrative review, publication bias cannot be ruled out, as only articles from selected databases and within a defined time frame were included, excluding other potentially relevant sources. Furthermore, tools such as ROBIS or AMSTAR 2 were not used, which may have limited the assessment of methodological bias.

Given these limitations, the findings of this review should be considered preliminary, and no definitive

conclusions regarding the intervention's effectiveness can be drawn. Nevertheless, by focusing on recent, peer-reviewed studies, this review provides an overview of existing school-based interventions, their theoretical orientations, and methodological characteristics. Despite the relatively small number of studies meeting the inclusion criteria, this article offers descriptive and

organizational evidence to inform decision-makers, researchers, and practitioners in school settings. The review highlights the need for more systematic, methodologically rigorous, and culturally adapted intervention research, particularly in Latin America, to strengthen suicide prevention strategies for adolescents within the school context.

## References

An asterisk (\*) denotes studies that were included in the systematic review.

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