

**Title:** The effectiveness of school-based intervention programs for adolescent suicidal behavior:  
a scoping review protocol

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**Abstract:**

Suicide is a leading cause of death in adolescence. Schools are logical contexts for adolescent suicide prevention, given their wide-ranging capacity for reaching adolescents and mandated enactment. The purpose of this scoping review is to summarize the key components and characteristics of effective school-based suicide prevention programs for adolescents aged 14 - 19 who live in rural and/or remote areas.

**Keywords:** suicidal behavior, school-based suicide prevention program, secondary school students

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## **Objective:**

The objective of this scoping review is to summarize the extent and type of evidence available on the effectiveness of a school-based suicide prevention programs for adolescents who live in rural and/or remote areas, and to synthesize information on key components and characteristics of these effective school-based prevention programs.

## **Introduction**

Suicide is a leading causes of death in adolescence. [1] In the United States, suicide among young people is an ongoing public health crisis.[2] Notably, the rates of suicide in rural areas are often more than double rates in urban locale.[2-3] For example, in Hawai'i, suicide is the second leading cause of death for individuals ages 10 - 24 years. Similarly, in Asia, Mashere, Rahman, & Rahman (2013) found that the rate of suicide in Bangladesh was found to be 17 -fold higher (95% CI 5.36–54.64) in the rural population, compared to urban rates and adolescent suicide rate in rural areas was 20.1 (95% CI 12.6–31.7) per 100,000.[6] Youth living in rural communities, and especially Native Hawaiians and other Pacific Islanders (NHOPI), are at greater risk of suicide.[4] Living in rural areas often has a negative impact on mental health outcomes, sometimes leading to higher rates of suicide.[5] Preventing suicide is therefore a public health priority and there is a critical need for effective national prevention strategies.[7] The consequences of not addressing adolescent mental health conditions extend to adulthood, impairing both physical and psychological health and limiting opportunities to lead fulfilling lives as adults.[8] Also, adolescent suicidal behavior issues cause distress for the adolescents themselves, their peers, and family, and lead to substantial health care costs. [9-10]

Schools are logical contexts for adolescent suicide prevention, given their wide-ranging capacity for reaching adolescents and mandated enactment.[9] Having schools involved in preventing and detecting suicide risk can be particularly impactful because parents/caregivers may not realize that their child about suicide.[11] Although previous reviews have examined the effectiveness of suicide prevention on suicidal ideation and self-harm [12], these reviews have not specifically focused on school-based interventions delivered to youth in rural and/or remote settings. The proposed review will fill this gap.

In general, suicide prevention occurs across three levels: universal interventions that target a whole group of population; selective interventions which target a subgroup of population who experience risk factors for suicide; and indicated interventions that target specific individuals who display symptoms and behaviors indicative of risk for suicide. [13-17] This review will include literature describing school-based suicide prevention activities at any of these levels.

The purpose of this scoping review is to summarize the extent and type of evidence available on the effectiveness of school-based suicide prevention programs for adolescents who live in rural and/or remote areas, and to synthesize information on key components and characteristics of these effective school-based prevention programs. Findings of this review will be used for the development of recommendations for interventions focused on adolescents living in rural and/or remote areas and inform both research and practice. Findings will inform mental health professionals about the key aspects of effective interventions to integrate into school-based programs and support the development of guidelines to improve the provision of care, leading to better outcomes for improving adolescents' health status in the transitional period.

## **Review question**

What are the key components of effective school-based suicide prevention programs for reducing suicidal ideation and/or intentions among adolescents who live in remote areas?

## **Methods**

The proposed scoping review will be conducted in accordance with the JBI Reviewers' Manual 2020 for scoping reviews. [18] Scoping review methods are suitable for this study because the primary aims of this study are to synthesize evidence from studies that use a variety of research methods, identify knowledge gaps and determine the value of undertaking a systematic review, including the appraisal of the methodological quality of studies.

## **Inclusion criteria**

### **Population:**

Female and male adolescents who are living in rural and/or remote areas, attending secondary schools equivalent to U.S. grades 9-12, approximately age 14 – 19 years. Rural/remote areas are defined as geographic areas with low population densities and often consist of open countryside, agriculture and farming. According to the U.S. Census, rural areas are characterized as open countryside with “population densities less than 500 people per square mile and places with fewer than 2,500 people”.[19] Remote areas are sparsely populated areas that are also geographically isolated.

### **Conceptual:**

The review will consider the quantitative and qualitative studies that evaluate the effectiveness of school-based suicide prevention programs for adolescents who live in rural and/or remote areas.

**Context:**

The review will consider any quantitative and qualitative studies on the effectiveness of a school-based suicide prevention program for adolescents who live in rural and/or remote areas. The review will only include studies conducted in school settings.

**Exclusion criteria:**

This scoping review will not include articles that focus only on self-harm; urban or suburban only studies; or articles focused on interventions delivered in settings other than schools. The review will not include interventions that include components delivered to individuals other than the student (e.g., teachers, parents).

**Types of sources**

This scoping review will consider both quantitative and qualitative research designs. Quantitative study designs include randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion.

Qualitative studies will also be considered that focus on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research and feminist research.

## **Search strategy**

The search strategy will aim to locate both published and unpublished primary studies in both Thai and English languages. The search strategy will be searched as follows:

Stage 1: The reviewers will use a limited set of keywords to find potentially relevant studies. These studies will be reviewed in an effort to expand key words and phrases for a more in-depth search. The databases including (PubMed), CINAHL Complete (EBSCO), PsycINFO (EBSCO), ERIC (Proquest), Scopus (Elsevier) , Cochrane Library (Wiley), Joanna Briggs Institute (Ovid) databases will be undertaken followed by an analysis of the text words contained in the title, abstracts, and subject description. This search strategy was developed with the support of an experienced informationist. English key words will be used including suicide prevention, suicidal behavior, suicide attempts, suicide intentions, school-based, secondary school, high school, grades 9-12, adolescent (ages 14-19). In addition Thai language keywords will be used including Kan Kha Tua Tai (suicide), Wairuan (adolescent), Kan Pong Kun Kan Kha Tua Tai Nai Rong Rien (school-based intervention).

Stage 2: All identified key words and synonyms identified in Stage 1 will be used for an extensive search in respective electronic databases. Individual search strategies will be developed for each database, adopting the different terminology of index thesauri, if available. The databases that will be searched include: The databases including Medline (PubMed), CINAHL Complete (EBSCO), PsycINFO (EBSCO), ERIC (Proquest), Scopus (Elsevier) , Cochrane Library (Wiley), Joanna Briggs Institute (Ovid), Web of Science (Clarivatem), <https://tdc.thailis.or.th/tdc/basic.php> (Not sure what the name of this one is), and <https://www.tci-thaijo.org> databases. Relevant unpublished studies such as conference papers, research reports, and dissertations will be searched using the following sources: MEDNAR---Dissertation International Conference Proceedings.

## **Study selection**

One author (SC) will perform the search and collate all identified records into EndNote X8.2 (Clarivate Analytics, PA, USA) and remove duplicates. Two authors (SC and CM) will independently screen titles and abstracts against the inclusion criteria for the review. Potentially relevant sources will be retrieved in full and their citation details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI) (JBI, Adelaide, Australia), and the full text will be assessed in detail against the inclusion criteria by (SC and CM). Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion and involvement of a third reviewer (SS). The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram.[20]

## **Assessment of methodological quality**

Identified articles will be independently assessed by two reviewers for methodological quality prior to inclusion in the review using a standardized critical appraisal instrument from the Joanna Briggs Institute.

## **Data extraction**

Data will be extracted from studies included in the review using the standardized data extraction tool from the JBI-MAStARI. Data from each study will be placed into a table to facilitate synthesis. Key information will include study characteristics such as the authors, year of

publication, study design/methodology, sample size, country (See Table 1). Adolescent suicidal risk behavior such as depression, negative life events, suicidal ideation/intention, suicide attempted, resilience, and social support. School-based suicide intervention program/contents such as known score of warning signs of suicide, attitude towards suicide, help-behavior seeking skills (information seeking accessing services, seeking treatment and other resources), reducing suicidal ideation/intensions, enhancing self-resilience and social support, number of sessions, conceptual framework, and outcomes of significance to the review question and specific objectives. Data will again be extracted by two reviewers. All records will be audited by a third and fourth reviewer to consult for any discrepancies.

Table 1. Data Extraction Categories for Each Included Study

Data to be gathered from each study	
Study characteristics	<ul style="list-style-type: none"> <li>- Author (s), year</li> <li>- Study design/methodology</li> <li>- Sample size, country</li> <li>- Sample description</li> </ul>
Adolescent suicidal risk behavior	<ul style="list-style-type: none"> <li>- Depression</li> <li>- Negative life events</li> <li>- Suicidal ideation and/or intensions</li> <li>- Suicide attempt</li> <li>- Resilience</li> <li>- Social support</li> <li>- Substance use</li> </ul>
School-based suicide intervention program/content(s)	<ul style="list-style-type: none"> <li>- Number of sessions</li> <li>- Conceptual framework</li> </ul>



## **Data analysis and presentation**

A numerical summary using descriptive statistics will be provided to give an overall presentation of the included studies. This will be supplemented by a narrative review, describing the included studies under the specific objectives of the scoping review. The findings from this review will be submitted for publication at a peer-reviewed journal and for presentation at conferences.

## **Supplementary information**

Additional File 1 Search Strategy.

## **Acknowledgements**

The authors would like to thank Kate M. Saylor, University of Michigan: Taubman Health Science Library for her assistance in the development of the scoping search strategy. I am grateful for the advice and support reviewed from both of my mentors, Associate Professor Dr. Sarah Stoddard, and Professor Dr. Warunee Fongkaew. Also, I would like to thank the D43 postdoctoral training program, School of Nursing, University of Michigan for the grant.

## **Contributions**

The authors have contributed substantially and meet authorship criteria per the Committee on Publication Ethics (COPE) guideline

## **Funding**

Funding was provided for this research by the United States Department of Health and Human Services, National Institutes of Health, Fogarty International Center, 5D43TW00988306D43 (PI: Potempa).

## Conflict of interest

There is no conflict of interest regarding this scoping review.

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