

Exploring Digital School-based Interventions for Alcohol Prevention Among Adolescents: A Scoping Review Protocol

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Background

Alcohol use and misuse among adolescents remain a significant public health problem worldwide. Globally, 26.5% of all 15-19-year-olds were current drinkers (World Health Organization, 2018). Among these drinkers, 45.7% engaged in heavy episodic drinking (HED) (World Health Organization, 2018). Moreover, the trend of underage drinking increases over time. In 2018 and 2019, approximately 20.8% and 21.2% of adolescents aged 12-17 years drank within the prior year (Substance Abuse and Mental Health Services Administration, 2019). Adolescent drinking leads to problems in their current age groups and their next age groups as they age.

Early alcohol initiation and early heavy drinking during adolescence can lead to heavier alcohol use or alcohol dependence in adulthood (Dawson et al., 2008; DeWit et al., 2000; Merline et al., 2004). Moreover, early alcohol use can give rise to behaviors leading to additional problems. Underage drinking may lead to mental health problems, such as depression and anxiety (Hussong et al., 2017; Jun et al., 2015; Mezquita et al., 2018), risk behaviors, such as sexual risk behaviors (Stueve & O'donnell, 2005) and academic problems (Ellickson et al., 2003) and may impair brain development (Squeglia et al., 2014). Although these problems and outcomes are related to alcohol use, there are surprisingly few existing preventive interventions to target adolescent alcohol use. Many of these interventions are delivered in school settings.

In the past two decades, the use of internet and technology has grown exponentially and has become a behavior, in the digital context (Musetti & Corsano, 2018), related to socializing, academic research, acquiring new information, entertainment, and healthcare concerns. It has become central to adolescent groups whose technological literacy is pivotal to their life (Wallace, 2014). National surveys show approximately 92% of teens go online daily and 95% of teens report having a smartphone or access to one (Anderson & Jiang, 2018; Lenhart, 2015). Moreover, approximately 93% of adolescents in the U.S. have been reported to use the internet and approximately 70% of adolescents in Europe are online for 2–4 hours per day (Holstein et al., 2014; Moreno et al., 2011). In South-East Asia, 60% of youth, aged 16 to 24, have used internet or online and 99.6% of them have used social media every month (Kemp, 2021).

Technological, or digital, intervention generally offers adaptations of evidence-based interventions to reduce alcohol use. For example, web-based brief alcohol interventions and added value of normative feedback can reduce alcohol use among 15- to 20-year-old binge drinkers (Spijkerman et al., 2010). E-interventions have been shown to produce small reductions in alcohol consumption at 6 months (Dedert et al., 2015). Moreover, the results of three systematic reviews of digital intervention to reduce alcohol use or alcohol-related behaviors. The first systematic review discovered five studies on web-based interventions intended to reduce alcohol use in students (Bewick et al., 2008). The second one found

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twelve studies of online interventions to reduce alcohol use in students (White et al., 2010). Lastly, only four studies presented online interventions to reduce alcohol use in the same group (Rogers et al., 2017). Obviously, they focused on adolescents who were only college students.

Several literature reviews have established that school-based interventions can be effective in reducing alcohol use among adolescents and youths (Gottfredson & Wilson, 2003; Hennessy & Tanner-Smith, 2015; Lipp, 2011; Reyes-Rodríguez et al., 2018; Salam et al., 2016; Werch & Owen, 2002). Moreover, the results of an overview of systematic review about interventions for adolescent substance abuse presented that school-based alcohol prevention interventions have been associated with reduced frequency of alcohol drinking (Das et al., 2016). The systematic review suggested that digital platform is one of delivery platforms that has the potential to improve substance abuse outcomes, in addition to alcohol abuse, among adolescents. However, recent reviews on digital interventions targeting adolescent alcohol use in school settings are lacking. The present study provides a scoping review of school-based digital interventions for adolescents. The objective of this scoping review is to investigate digital interventions developed to prevent adolescent alcohol use that are delivered in school settings.

Methods

The proposed scoping review will be conducted following the Joanna Briggs Institute (JBI) method for scoping reviews (Peters et al., 2020). The study will apply the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA-ScR) checklist (Tricco et al., 2018) and AACODS checklist (Tyndall, 2010). The review protocol will be published in the University of Michigan Deep Blue Repository.

The scoping review will use the methodological framework proposed by Arksey and O'Malley (2005) and adaptations by the Joanna Briggs Institute (Peters et al., 2020). The framework consists of five consecutive stages: (1) identifying the research questions, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarizing and reporting the results.

Stage 1: Identifying the research questions

Based on gaps in the literature, the main review question is: “what are available digital school-based interventions to prevent alcohol use among adolescents?”

Along with this review question, four sub-questions are addressed:

1. What are the conceptual frameworks used in digital school-based interventions to prevent alcohol use among adolescents?
2. What are the number of sessions, duration of the sessions, and session contents of school-based digital interventions to prevent alcohol use among adolescents?
3. Which measurement tools were used to assess the effectiveness of the digital interventions to prevent adolescent alcohol use that were delivered in school settings?
4. How effective were different digital intervention platforms in preventing adolescent alcohol consumption when delivered in a school setting?

Stage 2: Identifying relevant studies

Inclusion criteria

A comprehensive search strategy will be developed to review the available literature using the “Population-Concept-Context (PCC)” framework for scoping review (Peters et al., 2020). The pre-defined inclusion criteria will be underpinned (Table 1)

Table 1*Inclusion criteria*

Component	Characteristics
Population	The focus of this review is studies that evaluated digital interventions to prevent alcohol use in adolescents from 13 to 18 years of age that were delivered in a school setting. However, any studies of this type that included participants aged from 13 to 18 will be included, even if they also included participants in other age groups outside 13-18 years of age.
Concept	This review will examine studies describing digital interventions to prevent alcohol use with content delivered in a school setting. Interventions that provide advanced competencies to help children (under age 13), adults, and elderly people with alcohol-related problems, and interventions focused on alcohol dependence, will not be included.
Context	<p>This review will include studies within a school setting. Studies which include a school setting along with other settings will also be included.</p> <p>This review will include published and unpublished studies. Quantitative, qualitative, and mixed methods studies will be considered. Experimental studies, including randomized controlled trials, non-randomized control trials, and other quasi-experimental studies, will be included, as well as cross-sectional and longitudinal studies.</p> <p>The review will only include studies conducted within the time frame of the past 10-years (from 2011 to 2021) due to the changes that have occurred related to an apparent growing interest in digital interventions to prevent alcohol use and alcohol literacy. The World Health Organization (2018) has highlighted efforts to prevent and decrease alcohol use in persons 15 years of age and older by 2025. Furthermore, a scoping review suggested that using a digital platform will be an alternative avenue for preventing and reducing alcohol use in adolescents.</p> <p>This review will include studies in English or Thai, taking into account the language proficiency level of the reviewers, thus enabling good, quality evidence selection and data extraction.</p>

Exclusion criteria

Studies will be pre-defined exclusion criteria. There will be no information about a digital intervention to prevent alcohol use, duplicate publication, published before 2011, and the intervention targeting ones aged 19 years or more. Review articles will be excluded.

Search strategy

As recommendation in JBI(Peters et al., 2020), a three-step search strategy will be utilized. The first step is online databases. The databases will incorporate two genres. The first genre will include standard international research databases, such as PubMed/MEDLINE, CINAHL, PsycINFO, Embase, and Scopus. The second genre will include Thai literature as grey literature (Vaska et al., 2019), such as Thaijo, ThaiLIS, and the Center of Alcohol Studies databases. The Thaijo database is from a Thai organization and a Thai language data base of Thai journals. ThaiLIS, or the Thai Library Integrated System, is

run by the Thai Office of the Higher Education Commission and is Thai language digital collection of Thai theses and Thai research reports. The Center of Alcohol Studies by the Prince of Songkla University is a Thai academic institution concerned with alcohol-related problems in Thailand. Hand searching from sources' reference list will also be included.

The second step will be literature search. The first search will review potentially relevant text words in the title and abstract of retrieved papers and of the index terms used to describe the articles. The second search will be identified keywords and index terms that will be combined with search strategy. The literature search will be drafted for PubMed (Additional file 2). The third step will be to review reference lists of the included studies to determine if any additional articles should be included that were missed in the initial search. References without correspondence will not be considered. The search strategy and iteration will be peer review by a librarian.

Stage 3: Study selection

All identified records will be uploaded into the Endnote (University of Michigan Library, 2020) and Rayyan (Ouzzani et al., 2016) programs and processed (duplicates will be removed). The articles will then be reviewed by two independent reviewers to assess their relevance based on their titles, abstracts, and full-text information. If the reviewers disagree about an article at any stage of the selection process, they will discuss it with a third reviewer, who will also analyze it. The reasons for the exclusion of an article will be included in the scoping review report. The following is a detailed description of the review process.

All identified records will be uploaded into Rayyan and processed (duplicates will be removed). The titles and abstracts of the identified records will be reviewed by two independent reviewers to assess their relevance. Articles with titles and abstracts that indicate a focus on digital interventions to prevent alcohol use will be examined further. Articles with titles and abstracts that do not include content related to digital interventions to reduce alcohol use will not be considered.

Once the relevant articles have been identified, the full-text articles will be retrieved for all studies that meet the inclusion criteria of the review. If some full-text articles cannot be retrieved, the authors of this review will email the authors of the paper to request the full-text of the articles.

The full-text studies that meet inclusion criteria of the review will then be examined. Two authors will independently examine and record the characteristics, geographical locations, program frameworks, tools, content of the intervention, and outcomes of the studies. Then, two independent reviewers will compare their coding of the studies and test interrater agreement using k statistics (McHugh, 2012). If there are any disagreements, a third reviewer will decide the issue.

Stage 4: Charting the data

The charting form for data extraction will be developed by the authors to aid the collection of key information (Table 2) using Excel. Data extraction will be performed by two independent reviewers through the charting form. The initial draft of the charting form will be modified and revised if deemed necessary during the process of data extraction. Changes will be recorded in detail in the full scoping review report. If data from the draft extraction is inconclusive and unclarified, the data will not be extracted.

Table 2

Draft data charting form

Study characteristics	Extracted data
General information	-Authors -Year - Journal - Research design - Country (study location)
General and specific descriptions	- Objectives of study - Population/samples - Tools - Digital intervention type, comparison (if any); framework, principle, content, duration, session, follow-up - Outcome measured - Important results

Stage 5: Collating, summarizing and reporting the results

The findings from the retrieved data will be combined to generate summary for identifying and mapping digital interventions and characteristics. The data will be presented through visual presentations, narratives, and tables. The data extracted from the studies will be presented in relation to the year, country, and type of study. Information presented about the digital interventions will include the name of intervention, results, participants, context, duration and number of sessions in the intervention, the method or strategy the intervention was based on, the content of the intervention, actions, assessments and instruments, and the persons who conducted the interventions.

The results of the search will be included in the final scoping review and presented in the PRISMA flow diagram (Page et al., 2021).

Dissemination

To an overview of reviews, scoping review will identify and map the digital intervention applied to adolescent's alcohol use at school setting. As a vital review, it will inform to stakeholders preventing adolescents with alcohol use. Researchers, health educators, health practitioners, policy makers, and organization will gain the information from the existing digital school-based interventions to prevent adolescents' alcohol use. The study findings will not only be disseminated through peer-reviewed publication and conference presentations but also fundamentally used in reviewing and developing an appropriate digital school-based intervention to prevent alcohol use among adolescents of new generation in Thailand.

Supplementary Information

- Additional file 1
- Additional file 2

Acknowledgements

The authors would like to thank Kate Saylor for providing search and Gurpreet Rana for providing advice during searching and writing of the protocol.

Contributions

All authors have made substantive intellectual contributions to the development the protocol. PJ, SS, and SA jointly conceived the idea for the project. PJ, SS, and SA contributed to the study design and

development of research questions. PJ conceptualized the review approach and led the writing of manuscript. SS and SA led the supervision of the manuscript preparation. All authors provide detailed comment on earlier drafts and approved this manuscript. SS and SA are guarantors of this review.

Funding

This research will be funded by Direct Sponsor Award ID: 5-D43-TW-009883-07 AWD013400 F0055241n099752-Expansion of NCD Research Capacity in Thailand with Outreach to Indonesia. The funder had or will have no role in the development of this protocol, the collection and analysis, or interpretation of results, or in the writing or publication of the review's results.

Availability of data materials

Not applicable

Declarations

Ethics approval and consent to participate

Not applicable

Consent for publication

Not applicable

Competing interests

None of the authors have any competing interests.

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