

# BMJ Open School closures and reopenings during the COVID-19 pandemic: a scoping review protocol

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## ABSTRACT

**Objective** The objective of this scoping review is to provide an overview of existing studies and evidence on the impact of school closures and reopenings during the pandemic.

**Introduction** The COVID-19 pandemic has necessitated widespread school closures, and reopening schools safely has a pivotal role in the well-being of children and teachers, SARS-CoV-2 transmission control and optimal societal functioning. Widespread school closures in response to the COVID-19 pandemic have caused adverse effects on the education, physical health and mental well-being of children. An understanding of the impact of school closures and reopenings as well as factors influencing school safety is critical to bringing schools' operational status back to normal. Despite the implication of individual concerns and knowledge on disease prevention practices, there is a paucity of research on individual knowledge, needs and behaviours in the context of school reopenings. In the proposed study, we will conduct a scoping review to identify and provide inventory of the current research and evidence on the impact of COVID-19 on K-12 schools (primary and secondary schools) and vice versa.

**Methods and analysis** Eligible studies/literature include members of K-12 (primary and secondary) schools (students, parents, staff, faculty, COVID-19 coordinator, school nurses) in countries affected by the COVID-19 pandemic. We will exclude university or college students. There will be no exclusion based on methods, timing or school operational status.

All concepts regarding school closures and reopenings will be considered, and all types of research will be considered.

This scoping review will follow the Joanna Briggs Institute methodology for scoping reviews. Sources of evidence published from 2020 to 31 October 2021 will be included. The search will include PubMed, preprints in EuropePMC, ERIC, Scopus, Web of Science Core Collection, PsycINFO, Embase, CINAHL and VHL. We will cover grey literature in Harvard Think Tank Database, COVID-19 Evidence Hub like COVID-END and Google Scholar. The abstract and title screening, full-text screening and data extraction will be done by two independent reviewers.

Disagreements will be resolved by an independent third reviewer. Data extract will be done on Qualtrics form to ensure accurate extraction. Citation chaining will be performed on key articles identified. A critical appraisal will be performed.

## Strengths and limitations of this study

- The proposed study is the first and only scoping review to thoroughly provide inventory of current studies on the impact of COVID-19 on K-12 schools' (primary and secondary schools) closures and reopenings.
- The scoping review is reviewing literature from a comprehensive set of databases and grey literature hubs. A strength of the proposed review is that the author group can read at least three languages and we also will use translating software to review articles that are not written in English.
- The scoping review methodology will not allow us to directly assess safety strategies and make conclusions on safety interventions.
- We rely on the subject index and English titles and abstracts to retrieve foreign-language papers.

The scoping review will take place from 1 August 2021 to 15 November 2021. We will perform a final round of updated search and citation chaining.

**Ethics and dissemination** The review will be based on published works and grey literature, thus it is exempt from formal ethical approval. This protocol cannot be registered in the Prospective Register of Systematic Reviews because this registry is not for scoping reviews. We will register it in OSF Registration. The paper will appear in a peer-reviewed, open-access journal to ensure a broad dissemination.

## INTRODUCTION

The SARS-CoV-2 pandemic is the worst global respiratory viral emergency since the influenza pandemic of 1918–1919.<sup>1 2</sup> Schools worldwide were forced to close due to absenteeism, prevent disease transmission and limit risk to vulnerable members of the school community. Due to the unique social dynamics of educational settings, in-person schooling increases the risk of viral transmission to more vulnerable individuals, particularly in lower-income areas where crowding is more likely.<sup>3 4</sup> Schools are a major concern for novel coronavirus transmission given

the social dynamics among schoolchildren, crowding in institutional environments and extracurricular events that may increase risk.<sup>5,6</sup> Children and adolescents often have closer interactions with each other than adults, and younger children may struggle to follow mask use and hand hygiene guidance. To promote adherence to recommended COVID-19 prevention practices, adult supervision, student buy-in/engagement and regular encouragement of safe personal behaviours are essential.

In-person school plays a vital role in the societal function and children's well-being. School closures have had clear detrimental effects on student well-being.<sup>7-11</sup> Children, especially those from vulnerable communities,<sup>3,10</sup> are exposed to educational deficits, lack of resources, isolation and domestic violence.<sup>5,7-9,11-15</sup> According to a national survey, 4 out of 10 US teens did not use online learning portals during the first semester following the start of the pandemic.<sup>16-19</sup> Without access to customary channels of support, such as schools and doctors' offices, school shutdowns have made some children more vulnerable to abuse and neglect.<sup>8</sup> In addition, working parents from all societal sectors are more likely to miss work due to added childcare burden during school closures.<sup>20-22</sup> As a result, local governments have prioritised school reopenings given the large individual and societal costs of closures, particularly for students whose parents have essential jobs in healthcare, transportation and other key societal services.<sup>5</sup> Controlling outbreaks among children is crucial to keeping schools open and protecting the well-being of the community at large.<sup>23,24</sup> Many secondary teachers reported concerns about both environmental safety and student well-being.<sup>25</sup> There are many factors that play a critical role in school safety during the pandemic. First of all, school members' (students, teachers, staff and parents) attitudes, perceptions and knowledge will influence the practise of safety behaviours. Individual protective behaviours play an important role in limiting the spread of infectious diseases. These include preventive measures (such as hand hygiene, wearing face masks and physical distancing) and illness management measures (such as medical consultation, testing and infection control).<sup>26</sup> Second, school-directed initiatives are also crucial to develop a safe environment. Some of the commonly practised school-directed initiatives include engineering control, contact tracing, quarantine/isolation systems, scheduled disinfection and occupancy control. Finally, school members deserve a definitive answer on the impact of school reopening status on viral transmission and school members' physical and mental health.

Despite the importance of the topic, to date, there is no comprehensive review that provides inventories of the impact of COVID-19 on K-12 schools (primary and secondary schools) and vice versa. In this scoping review, we will provide an overview of existing studies and evidence on the impact of school closures and reopenings during the pandemic. We present research from or on K-12 schools (primary and secondary schools), which include

students, teachers, faculty, staff, parents, COVID-19 coordinators and school nurses (or other school clinic staff). We will include studies from any country that has been affected by the COVID-19 pandemic. The purpose of this study is to identify the contents and themes that have been researched, and to analyse the quality of evidence. The goal of the scoping review is to identify and analyse the existing knowledge gaps regarding school reopenings and safety during a viral respiratory pandemic and to serve as a precursor to future research in this field. Finally, we hope to guide future areas of research and recommend policies to support school safety during a pandemic.

## METHODS

### Review question/objective

What is known about school closures and reopenings during the COVID-19 pandemic? What research questions and themes have been covered in the current studies? What methods have been used to explore this issue? What types of studies have been done on investigating the impact of COVID-19 on school members' physical and mental health? What are the knowledge gaps in the impact of COVID-19 on primary and secondary schools and school members?

### Inclusion criteria

#### Types of participants

Target participants for this review are school members in K-12 schools (primary and secondary schools). Members include students, teachers, faculty, staff, parents, COVID-19 coordinators and school nurses (or other school clinic staff).

#### Concept

1. A summary of the topics that have been studied and published on school reopenings.
2. The types of research studies and publications on primary and secondary schools and COVID-19.
3. Knowledge gaps regarding the impact of COVID-19 on primary and secondary schools and school members.

#### Context

The context in this review includes all countries that have been affected by the COVID-19 pandemic.

#### Source of evidence

In this review, the following databases will be searched for the year 2020 or 2021: PubMed, preprints in EuropePMC, ERIC, Scopus, Web of Science Core Collection, PsycINFO, Embase, CINAHL and VHL. We will cover grey literature in Harvard Think Tank Database, COVID-19 Evidence Hub like COVID-END and Google Scholar. Through the data extraction process, we will identify key articles to perform citation chaining. Citation chaining to identify additional relevant publications will be conducted following the screening process.

**Table 1** Data extraction chart

Domain	Extracted information	Explanation
Study characteristics	First author	Copy and paste first author's last name
	Title	Copy and paste the title
	Journal	Copy and paste the title
	Year of publication	Number only
	Type of publication	Journal article, letter, editorial, opinion, news, case reports, reviews, guidelines, protocols
	Academic discipline	Education, public health, medicine, government
	Field and profession of the authors	Reviewers summarise
	Sample size	Number only
	Study objective	Copy and paste study objective from the manuscript
	Author's main conclusion	Copy and paste main conclusion (<5 sentences)
	Funder	Copy and paste funding source
	Conflicts of interest	If available, then copy and paste conflicts of interest
	Method and design	Reviewers read full text and summarise method and design
	Country	Copy and paste from the manuscript
	Population characteristics	School type
Participant age		Reviewers summarise
Roles in school		Reviewers summarise
School status		Open, closed, remote, hybrid model. Reviewers read full text and summarise
Duration/start and end day		Reviewers summarise
Key themes/outcomes	Viral strains	Reviewers read full-text and extract information
	Safety protocols	Reviewers summarise definition and conclusions
	Transmission	Definitions; themes; conclusions
	Physical health	Definitions; themes; conclusions

### Keywords and PubMed/Scopus search strategy for literature on safe school reopenings during the COVID-19 pandemic

("sars cov 2"[MeSH Terms] OR "sars cov 2"[All Fields] OR "covid"[All Fields] OR covid19[All Fields] OR "covid 19"[MeSH Terms] OR "covid 19"[All Fields] OR ("pandemic"[Title/Abstract] AND 2020:3000[pdat])) AND ((School[tw] OR schools[tw] OR schools[mh:noexp] OR return to school[mh] OR student[mh:noexp] OR student\*[tw] OR teacher\*[tw] OR school teachers[mh] OR educational personnel[mh:noexp] OR kindergarten\*[tw] OR schoolchildren[tw]) NOT (Schools, health occupations[mh] OR universities[mh] OR college\*[tw]))

(TITLE-ABS-KEY (school\* OR student\* OR teacher\* OR kindergarten\* OR "educational personnel") AND NOT TITLE-ABS-KEY (college\* OR university\* OR "medical school\*" OR "nursing school\*" OR "dental school\*")) AND

(TITLE-ABS-KEY (covid OR covid OR covid OR "sars cov 2" OR pandemic)) AND (LIMIT-TO (PUBYEAR, 2021) OR LIMIT-TO (PUBYEAR, 2020))

We will conduct two rounds of screening. Two independent reviewers will screen the title and abstract, as well

as the full text of the manuscript retrieved by our search strategy. Conflicts will be resolved by a third reviewer.

### Extracting and charting the results

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart will be used to visualise the numerical outputs from scoping reviews and the inclusion decision process. In our flow chart, we will clearly illustrate the process for finding studies, removing duplicates, selecting the right research, retrieving the full article from the library and presenting the final analysis. To assist us in processing foreign-language manuscripts, Google Translator and DeepL will be used. In scoping review, 'charting the results' is an iterative process that involves the extraction of relevant data from all the studies included in the review. In order to address the issue of spin, we will have the data extractors read key meta-research articles about spin (in both intervention and observational studies) to 'prime' them to be aware of common spin that may be present in included articles.<sup>27 28</sup> We developed a charting template to facilitate the extraction of data across reviewers regarding characteristics of articles included in our review and key details

pertinent to our objectives. The form will be refined (or consolidated) once a sample of studies has been charted independently by two or more reviewers. Both quantitative and qualitative data are expected to be included in the results of the review. These findings will be presented in the form of narratives and visuals, such as evidence ‘maps’ and tabular presentations.

In order to address the objective of the paper, the following data will be extracted: first author; title; journal; year of publication; type of publication; academic discipline; field and profession of the authors; sample size; study objective; author’s main conclusion; funder; conflict of interest; method and design; country; school type; participant age; roles in school; school status; duration/start and end day; viral strains; safety protocols; transmission; physical health; educational outcomes; mental health; social outcomes; attitudes/beliefs; behaviours; gaps in research. Extraction instructions are detailed in the data extraction chart (table 1).

### Assessment of methodological quality

PRISMA extension for scoping reviews does not mandate scoping reviews to assess the methodological quality of evidence identified through literature search. To provide a structured and detailed method of critically analysing the characteristics of the evidence, it was decided that an assessment of methodological quality would be incorporated into the proposed scoping review. Critical appraisal of the methodological quality of all relevant studies will be assessed using the Joanna Briggs Institute critical appraisal tools.<sup>29</sup> Two independent reviewers will conduct the critical appraisal. A third independent reviewer will evaluate disagreements. All foreign-language manuscripts will be translated using Google Translator and DeepL, and then a critical appraisal will be conducted.

The results of the critical appraisal will be presented in the Results section.

### Ethics and dissemination

The study is not subject to ethics approval since it is based on published works. This protocol cannot be registered in the Prospective Register of Systematic Reviews, since this registry is not intended for scoping reviews. It has been registered with OSF Registration. The article will be published in a peer-reviewed, open-access journal to ensure wide distribution.

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**Contributors** The study was conceived by DL, SHV, KN and MB. The protocol was first drafted by DL and KN. The manuscript has been revised by KN, DL, YZ, XZ, DC, SHV and MB for important intellectual content.

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**Competing interests** None declared.

**Patient and public involvement** Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

**Patient consent for publication** Not required.

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