

Dimensions of Safety Practices in Educational Institutions: A Scoping Review Toward Boarding School Adaptation

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ABSTRACT

Introduction: The safety of educational institutions, especially at boarding schools, remains an underexplored area in safety management research. This scoping review aims to identify key dimensions of safety practices in educational institutions to provide a foundational framework for adapting safety assessments to boarding schools. **Methods:** Through the JBI's Framework, a comprehensive search of six databases (PubMed, CORE, DOAJ, ScienceDirect, Wiley, and SAGE Journals) yielded 240 articles. After applying inclusion and exclusion criteria, 14 articles were included in the final analysis. **Results:** Content analysis of these articles revealed four main categories of school safety guidelines: structural and environmental aspects (16 indicators), knowledge aspects (15 indicators), behavioral aspects (13 indicators) and social support aspects (10 indicators). Structural and environmental aspects primarily focused on physical facilities and infrastructure. Knowledge aspects focused on the content of safety education materials that students and teachers must understand. Behavioral aspects focus on daily activities in the educational environment that support a safe culture. Social support focused on the involvement of parties outside the educational institution to support a safety culture. **Conclusions:** Although none of the reviewed studies focused specifically on boarding schools, the identified dimensions offer a useful starting point for developing a culturally relevant safety assessment tool. This review highlights the lack of context-specific literature and the need for further research, including expert consultation and field validation, to ensure effective safety strategies in boarding school settings.

Keywords: boarding schools, educational institution, instrument, safety practices, scoping review

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INTRODUCTION

Becoming a major concern in educational settings around the world, school safety standards have developed in many countries with robust guidelines to ensure the well-being of students and staff (Mayer, Nickerson and Jimerson, 2021). The commonly adopted safety aspects include physical, health and environmental, emotional, psychological, behavioral, social, and, partially,

digital safety (Cornell, Mayer and Sulkowski, 2020; Kim, Carlson and Nelson, 2021; Madfis, Hirschfield and Addington, 2021).

However, most of the safety guideline provided are addressed to the general education system and overlook the boarding school system commonly adopted in the boarding school (Jackline, Tikoko and Ngala 2020). The implementation of boarding school systems integrated with Islamic values has a long history and has been effectively integrated into the national education system in Indonesia and Malaysia over decades (Pasi, Rasyidin and Harahap, 2020; Direktorat Pendidikan Diniyah dan Pondok Pesantren, 2023). These institutions often operate

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with a degree of autonomy rooted in religious and cultural traditions, which are significantly different from the operational frameworks in the general school (Muazza *et al.*, 2018).

The curriculum used at Islamic boarding schools frequently integrates moral with religious instruction, with the student's dormitory and class set in the same area (Muazza *et al.*, 2018; Pasi, Rasyidin and Harahap, 2020; Harahap and Tambunan, 2022), which may affect how particular safety regulations are applied (Saadati *et al.*, 2022). It is also challenging to assess how well these requirements have been implemented due to the intricacy and scope of the safety and security features of boarding schools (Suryana *et al.*, 2020).

Boarding schools also present unique hazards compared to other educational institutions, primarily due to their residential nature, which can exacerbate various health and safety risks. Overcrowded living conditions in dormitories facilitate the rapid spread of contagious diseases such as scabies (Yulfi, Zulkhair and Yosi, 2022). Poor hygiene practices can lead to outbreaks of respiratory infections and gastrointestinal illnesses (Hamzah *et al.*, 2018). The pressures of academic performance and social interactions in a boarding environment can lead to increased stress and mental health challenges among students (Noll *et al.*, 2020).

Considered as culturally sensitive, understanding the daily routines, interpersonal relationships, and unique physical configuration within these institutions is crucial for comprehensively addressing safety consideration (Nahidin *et al.*, 2021; Huda, 2024). This highlights the significance of creating a customized safety index tailored to Indonesia and Malaysia's boarding school system.

This is where the scoping review becomes a critical step, as it enables the methodical identification of gaps based on the current literature research and highlights the significance of the safety factor (Cornell, Mayer and Sulkowski, 2020; Nahidin *et al.*, 2021). Using this approach, researchers can learn more about the safety components that have been well investigated and the parts that have not, especially when it comes to boarding schools (Schmidt *et al.*, 2019; Saadati *et al.*, 2022).

By reviewing previous research or standards implemented by multiple educational settings, the scoping review method offers a framework for creating a customized safety index through a methodical analysis of studies conducted. It is also important to identify which dimensions—such

as infrastructure safety, emergency preparedness, transportation safety, and psychosocial well-being—are most relevant, which can be examined through a scoping review (Koon, Hawkins and Mayhew, 2016; Peterson *et al.*, 2017; Schmidt *et al.*, 2019). Furthermore, the review can provide a solid foundation for more focused investigations and the groundwork for the future studies, which will improve the boarding school systems.

The research question developed by author is: What aspects can be assessed as dimensions in the safety index of boarding school? This scoping review aims to identify and categorize key dimensions of school safety in general education institutions, as a preliminary step to develop a culturally relevant safety assessment tool for boarding schools addressing the unique needs of boarding schools in Indonesia and Malaysia that becomes the main objective of this study.

METHODS

Search Strategy

This scoping review was prepared regarding the framework developed by Joanna Briggs Institute (JBI), which went through the following stages: (1) defining the research question; (2) developing the inclusion criteria; (3) describing the planned approach to evidence searching, selection, data extraction, and presentation of the evidence; (4) searching, selecting, extracting and analysis the evidence; (5) presentation of the result; and (6) summarizing the evidence concerning the purpose of the review, making conclusions and noting any implications of the findings (Peters *et al.*, 2020). Six scientific databases were used to search for scientific articles: PubMed, Science Direct, Wiley Online Library, SAGE Journals, CORE and DOAJ. The article search focused on safety constructs in the population of educational institutions. The keywords were derived from the research question and fulfill the elements of Population, Intervention, Comparison, and Outcome (PICO). Population in this study means educational institution, intervention means safety assessment, comparison means another educational institution and outcome means accident rate or compliance with safety standards. We used keywords based on MeSH with a Boolean system to maximize the search coverage of scientific articles, i.e. ((instrument*) OR (scale*) OR (tool*)) AND ((assess*) OR (measure)) AND (safety*) AND

((school*) OR (education*)). The filters were applied to minimize discarded articles because they do not meet the criteria which include the article publication time span in the last decade (January 2015-September 2024), original research and review articles that have been peer-reviewed, full-text accessible, and in English. The review process was conducted in September-October 2024.

Due to the limited availability of studies specifically focusing on boarding schools, the scope of this review was broadened to include safety practices in general educational institutions. This expansion allowed for a more comprehensive identification of safety dimensions that can later be adapted to the unique context of boarding schools. Therefore, the results of this scoping review should be interpreted as a foundational mapping of relevant safety practices, rather than a direct representation of safety conditions in boarding schools.

Eligibility

The inclusion criteria that scientific articles must meet to be reviewed in this study are: (1) the

research was conducted in an educational institution; (2) the research participants were the academic community, including students, teachers, and educational staff. As the main objective of the review was to identify safety assessment instruments rather than synthesize research findings, a heterogeneous range of research questions, methodologies and result report formats were eligible. Research that aims to analyze the relationship between safety and other variables, using more than one instrument is allowed. Studies that use instruments that do not specifically measure safety aspects as a single construct are excluded. Studies that used instruments developed by the authors themselves without psychometric information were excluded. Articles that were research protocols were also excluded.

Screening and data extraction

Figure 1 shows the flow of the search strategy and article screening process. As referenced in the Peters *et al.* (2020) framework, the stages of scoping research are described as follows: Articles screened in the search on six databases were screened based

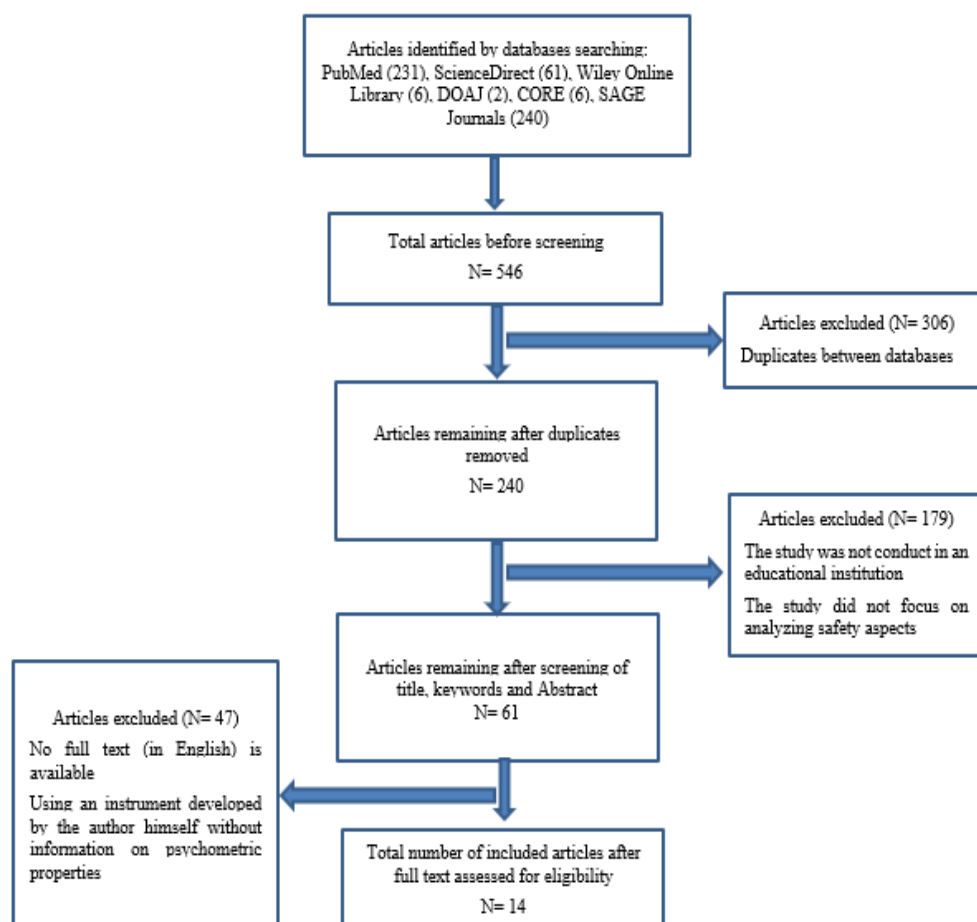


Figure 1. Flow Chart of Screening Process

Table 1. Safety Dimensions and Indicators Mapping

Structural and Environmental	Safety Knowledge
Class conditions (lighting, ventilation, etc.) (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Safety practices in class (Widowati <i>et al.</i> , 2019; Kim and Carlson, 2021)
Availability of clean drinking water (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Transportation safety (Mori <i>et al.</i> , 2021; Hidayatulloh, Rozikan and Musta'anah, 2022)
Wastewater collection and disposal systems	Safety content in curriculum (Kim and Carlson, 2021; Mori <i>et al.</i> , 2021)
Restroom conditions (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Safety practices in extracurricular activities (Mori <i>et al.</i> , 2021)
Presence of safety devices (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Availability of safety training (Kim and Carlson, 2021; Mori <i>et al.</i> , 2021)
Adequate protection for windows (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Emergency response knowledge (Widowati <i>et al.</i> , 2019; Kim and Carlson, 2021)
Availability of first aid kits (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Knowledge of handling hazardous material (Kim and Carlson, 2021)
Safety features for corridors, stairs and emergency exits (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Existence of disaster management plans (Pal <i>et al.</i> , 2023)
Ergonomic seating arrangement (table and chair) (Mirzaei <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Knowledge of risk reduction and resilience building (Seddighi <i>et al.</i> , 2022)
Availability of security measures (locks, surveillance cameras, etc.) (Septiani, 2017; Widowati <i>et al.</i> , 2019; Poursadeqiyani and Arefi, 2020; Erçek and Kiyas Birel, 2021; Hidayatulloh, Rozikan and Musta'anah, 2022; Pal <i>et al.</i> , 2023)	Knowledge of disaster prevention and mitigation (Dania <i>et al.</i> , 2022)
Budget allocation for disaster preparedness (Dania <i>et al.</i> , 2022)	Integration of information technology and educational material (Seddighi <i>et al.</i> , 2022)
Availability of temporary shelter (Dania <i>et al.</i> , 2022)	Availability of disaster education (Dania <i>et al.</i> , 2022; Seddighi <i>et al.</i> , 2022)
Safety architecture (Kurniawan <i>et al.</i> , 2020)	Training anti-bullying for School Personnel (Cochran, 1942; Hidayatulloh, Rozikan and Musta'anah, 2022)
Architecture care (Kurniawan <i>et al.</i> , 2020)	Knowledge of impacts of rapid-onset disasters (Dania <i>et al.</i> , 2022)
Building structure maintenance (Kurniawan <i>et al.</i> , 2020)	Knowledge of emergency technical operation and administration (Kurniawan <i>et al.</i> , 2020)
Mechanical and electrical maintenance (Kurniawan <i>et al.</i> , 2020)	
Safety Behavior	Social Support
Safety SOPs (Widowati <i>et al.</i> , 2019; Erçek and Kiyas Birel, 2021)	Safety forum for teachers, parents and government entities (Kim and Carlson, 2021; Mori <i>et al.</i> , 2021)
Emergency response simulation (Widowati <i>et al.</i> , 2019; Erçek and Kiyas Birel, 2021)	Safety school policy from government entities (Widowati <i>et al.</i> , 2019; Erçek and Kiyas Birel, 2021)
Safety drills (Widowati <i>et al.</i> , 2019; Erçek and Kiyas Birel, 2021)	Safety call for service (from official police, etc.) (Fisher <i>et al.</i> , 2023)
Mental health training / positive school climate (Widowati <i>et al.</i> , 2019; Erçek and Kiyas Birel, 2021)	Safety visions and orientations from stakeholders (Lazim <i>et al.</i> , 2022)
Training of handling hazardous material (Kim and Carlson, 2021; Pal <i>et al.</i> , 2023)	Safety professional capacity development (Lazim <i>et al.</i> , 2022; Pal <i>et al.</i> , 2023)

Advanced Table 1. Safety Dimensions and Indicators Mapping

Safety Behavior	Social Support
School disciplinary records (Fisher <i>et al.</i> , 2023)	Mental Health Services for Victims and Perpetrators (Hall, 2017)
Student self-reports of victimization or delinquency (Hidayatulloh, Rozikan and Musta'anah, 2022; Fisher <i>et al.</i> , 2023)	Anti-bullying communication (Hall, 2017)
Students participation of disaster management plans (Dania <i>et al.</i> , 2022; Pal <i>et al.</i> , 2023)	Alignment with the Department of Disaster Prevention and Mitigation (Dania <i>et al.</i> , 2022)
Awareness of first aid incidents in schools (Seddighi <i>et al.</i> , 2022)	Support from the local community (Dania <i>et al.</i> , 2022)
Disaster awareness in school (Dania <i>et al.</i> , 2022; Seddighi <i>et al.</i> , 2022)	Collaborative efforts between educational practitioners and local government to ensure a safe environment for students (Dania <i>et al.</i> , 2022)
Risk perception among students and teachers (Dania <i>et al.</i> , 2022; Seddighi <i>et al.</i> , 2022)	
Anti-bullying policies and practices (Cochran, 1942; Hidayatulloh, Rozikan and Musta'anah, 2022)	
Educator intervention in bullying (Hall, 2017; Hidayatulloh, 2022)	

on the title, article keywords and relevant abstracts. Then, the full text was read to independently assess the articles that met the authors' inclusion criteria. The differences in the assessment results were discussed together. The extraction of eligible articles was done using a standardized form. Next, the research results were mapped, and the report's results were compiled.

RESULT

Selection of Sources of Evidence

Searching the six databases yielded 546 articles, with the search query mentioned in the methods chapter. After checking for duplicate documents in several databases, 240 articles remained. The authors checked the articles for appropriateness to the education sector setting and safety analysis context, and 179 articles were eliminated. The authors then reviewed the abstracts of the remaining 61 articles and found 47 articles that did not meet the inclusion criteria. The remaining 14 were extracted and synthesized.

Characteristics of Sources of Evidence

We have reviewed 14 eligible articles based on the inclusion criteria from various countries. As an illustration of the location mapping of the various studies, 10 articles were from Asia (Indonesia, Iran, Malaysia, Thailand, and Turkey), three articles were from America (USA), one article was from Europe (Finland).

The selected papers were dominated by systematic literature review articles (72%), two articles were the results of instrument development research, one article with a qualitative approach and one other article was the result of research with a mixed method approach.

The extracted results of all screened articles, including author name, article title, year of publication, research location, research design, characteristics of research participants, instruments used, dimensions/aspects and indicators of safety assessment, main research findings, and research weaknesses, are provided in Attachment 1.

Synthesis of Result (Findings from General School Settings)

As explained in the previous background section, this scoping review aimed to gather information on the dimensions or aspects of safety assessment in boarding school. However, after the authors searched through six databases, we did not find any appropriate articles so we expanded the context to educational institutions in general. In the future, the results of the mapping of aspects or dimensions in this scoping review will be used as a basis in the preparation of safety assessment instruments in boarding schools in the region of Islamic countries.

Of the 14 screened studies, all were conducted in the general education environment at the elementary, secondary, and higher levels. The research units in the selected papers also vary, ranging from educational institutions, teachers, and

students (Mirzaei *et al.*, 2019; Masril, Kurniawan and Ismail, 2020; Poursadeqiyan and Arefi, 2020a; Mori *et al.*, 2021; Seddighi *et al.*, 2022), as well as stakeholders who have an interest in realizing safe schools (Hall, 2017; Widowati *et al.*, 2019; Dania *et al.*, 2022; Pal *et al.*, 2023).

Primary and secondary school students are the most common objects of research, due to their vulnerable age and lack of understanding of the importance of safety standards (Poursadeqiyan and Arefi, 2020; Erçek and Birel, 2021; Dania *et al.*, 2022; Hidayatulloh, 2022). Other studies are more generalized, not only in children but also high school and college students (Hall, 2017; Mirzaei *et al.*, 2019; Kim, Carlson and Nelson, 2021; Seddighi *et al.*, 2022; Pal *et al.*, 2023). There is one study that focuses on teachers (Erçek and Birel, 2021).

Mostly, the selected papers did not mention the names of tools or instruments utilized. They only mentioned questionnaires, observation sheets, interview guides, some Standard of Operational Procedures (SOP), accident reports, and work climate measurement results. However, some mention it explicitly, such as Mhealth (Widowati *et al.*, 2019), Olweus Bullying Questionnaire (Hall, 2017), School Safety Perception Scale (Erçek and Birel, 2021), Climate Resilience Model and School Safety Model (Dania *et al.*, 2022), and Building Safety Index (Masril, Kurniawan and Ismail, 2020).

The aspects or dimensions used in the assessment of safety in educational institutions that the authors compiled from the selected papers were mapped based on the focus of observation into four major groups, including structural and environmental aspects, knowledge aspects, behavioral aspects and social support aspects (Table 1). These four categories are determined by the qualitative thematic analysis method based on the results of the agreement between the authors.

From the results of the literature study of 14 articles, Table 1 explains the ranking of safety practices problems in boarding schools can be seen from the order of aspects/categories and indicators. the first number of indicators shows a higher ranking than the numbers after it. Likewise with the order of the categories. Physical aspects (structural and environmental) are most often mentioned, followed by knowledge, behavior and social support.

DISCUSSION

In this research, four primary dimensions related to boarding school safety have been determined: structural and environmental characteristics, safety behavior, safety knowledge, and social support. The next step of index development could be focusing on the scoring of accumulated safety indicators in each dimension provides a thorough framework for evaluating safety in boarding school settings.

In order to ensure a safety index, the physical surroundings of educational institutions is important to be considered. Several research indicates that poor infrastructure can result in hazardous situations, such as mishaps and exposure to poisonous materials (Mubita, 2021). It is discovered in this review that disaster preparedness, first aid availability, ventilation, and clean drinking water are all necessary components of creating a safe learning environment. Moore, Ouellette and Connors (2023) found a significant and positive correlation ($\beta = 0.015$, $p < 0.001$) between academic accomplishment and the school environment, suggesting that these metrics are related to both academic achievement and student well-being in addition to physical safety. Since there is a positive and substantial link ($\beta = 0.015$, $p < 0.001$) between students' academic achievement and the school environment, Moore, Ouellette and Connors (2023) showed that these metrics are also related to student well-being and academic accomplishment in addition to physical safety. Thus, establishing a safe physical environment promotes an atmosphere that is conducive to learning and development in addition to keeping people safe.

Developing a safety-conscious culture in schools starts with a generally solid understanding of safety. This component covers the distribution of essential information about disaster preparedness and response as well as the inclusion of safety-related subjects in the applied curriculum. Amiruddin *et al.* (2024) claim that teacher leadership in safety education can significantly influence students' safety behavior by enhancing knowledge and attitudes about safety. Safety education should be both standardized and entertaining, since children are more likely to remember and implement information that is presented in an engaging and hands-on way. The knowledge, attitude, and behavior model developed in safety education attests to the critical role that knowledge plays in forming safe behaviors.

Maintaining a safe learning environment requires tracking and assessing the safety behavior of both staff and students. The evaluation places a strong emphasis on certain safety precautions, including adhering to standard operating procedures (SOPs), practicing emergency situations, and getting mental health counseling. According to Yuan (Fang *et al.*, 2022), the demands of self-control can reduce students' freedom as adolescents or children, which can negatively impact their safety behaviors—especially when there is no support from teachers. This study highlights the importance of a supportive learning environment where teachers actively encourage students to act safely in addition to providing knowledge. In addition, safety behaviors that are proactively socialized by institutions through ongoing evaluation and feedback systems are more likely to foster a culture of safety that goes beyond isolated incidents.

A component of school safety that has many perspectives is social support, which strongly relies on the roles of many parties, including parents, teachers, and local law enforcement. Strong social support networks are necessary for upholding safety protocols and making sure that safety is ingrained in school culture. Savolainen (2023) asserts that strong community involvement and leadership are necessary for the creation of a complete safety framework. Schools that build relationships with the community and educate children, parents, and educators are better able to address issues related to emotional and physical safety. This is consistent with the idea that community members must work together to maintain safety in schools, not just in the institution itself (Mubita, 2021).

This scoping review has effectively recognized the four main aspects of safety evaluation in educational institutions; nevertheless, the study designs of the included studies differed greatly, ranging from qualitative interviews to quantitative surveys. Although this variety added richness to the review, it also made it difficult to synthesize findings reliably. The comparability of safety assessment research across different educational contexts should be improved by a more standardized approach.

Furthermore, a more uniform approach across similar conditions would increase the comparability of safety assessment research across educational contexts. This study found a substantial body of information lacking about the safety management of boarding school establishments in Indonesia and Malaysia, including madrasahs.

There are certain safety precautions that must be taken because these facilities are usually located in areas with diverse ethnic and religious backgrounds. Unlike traditional educational establishments, Islamic schools include religious instruction and have unique dorm and classroom designs that affect how safety procedures are carried out (Muazza *et al.*, 2018). Therefore, developing a bespoke safety index that considers the unique operational and cultural characteristics of boarding school is crucial. The results of the scoping review provide a baseline framework that may be adjusted to meet the requirements of boarding schools while preserving the applicability and cultural sensitivity of safety assessments.

These elements should be further investigated empirically and through expert interviews in order to develop a safety index specifically tailored for boarding schools. Learning environments that are more tailored to the individual needs of students and staff will be safer, healthier, and more supportive.

CONCLUSION

Aspects of safety dimensions in schools such as environmental and structural dimensions, safety behavior, safety knowledge, social support are very important to be implemented in all schools. The findings of this review highlight the lack of specific literature addressing safety in boarding school and the need for a more tailored safety index to address their unique contexts. This scoping review provides a foundational framework of safety dimensions relevant to educational institutions in general. While not specific to Islamic boarding schools, these findings can inform the initial development of a culturally appropriate safety index, which should be refined through further empirical research and expert validation in boarding school contexts. These future studies will help to ensure that safety assessments are both relevant and comprehensive, promoting a safer educational environment for students and staff in boarding school.

CONFLICT OF INTEREST

The authors did not have significant competing financial, professional, or personal interests with the previous studies that are the object of this scoping review.

AUTHORS' CONTRIBUTION

Based on the scoping review framework as described in the previous section, the contribution of each author can be explained as follows. SMP: defining the research question, developing the inclusion criteria, and developing research query. MSAH: searching the evidence via PubMed, CORE, DOAJ, ScienceDirect, Wiley and SAGE Journals. RD: selecting the evidence based on the inclusion criteria. NY: making data extraction. AR: summarizing the evidence. AAO: Reviewing data curation and writing original draft. DAA: Data visualization. NFAR: Validation and Editing.

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