

Effects of First Aid Training for Kindergarten Teachers: A Scoping Review

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ABSTRACT

Introduction: Injuries and medical emergencies are common in early childhood education due to the developmental vulnerabilities of children. Kindergarten teachers act as first responders, so first aid knowledge and skills are crucial for providing a rapid response, preventing complications, reducing the severity of injuries, and saving lives. **Objective:** To determine and summarize the available literature regarding the effects of first aid training programs for kindergarten teachers in early childhood education settings. **Methods:** Electronic databases such as PubMed, ScienceDirect, and Sage Journals were employed to browse the study between 2020-2025 that mentioned first aid training among preschool teachers. This study used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review (PRISMA-ScR). **Results:** The scoping review identified five relevant research articles. The intervention use education training such simulation-based and hands-on training, including role-play and mannequin-based practice significantly enhanced the knowledge and skills of preschool teachers towards first aid. **Conclusion:** First-aid training significantly improves kindergarten teachers' knowledge, confidence, and perceived preparedness, particularly when incorporating simulation and hands-on methods.

ABSTRAK

Latar Belakang: Cedera dan keadaan darurat medis sering terjadi di pendidikan anak usia dini karena kerentanan perkembangan anak. Guru taman kanak-kanak berperan sebagai penolong pertama, sehingga pengetahuan dan keterampilan pertolongan pertama sangat penting untuk memberikan respons cepat, mencegah komplikasi, mengurangi keparahan cedera, dan menyelamatkan nyawa. **Tujuan:** Untuk mengidentifikasi dan merangkum literatur yang tersedia tentang efek program pelatihan pertolongan pertama bagi guru taman kanak-kanak di lingkungan pendidikan anak usia dini. **Metode:** Basis data elektronik seperti PubMed, ScienceDirect, dan Sage Journals digunakan untuk mencari studi antara tahun 2020 dan 2025 yang menyebutkan pelatihan pertolongan pertama di kalangan guru prasekolah. Studi ini menggunakan Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR). **Hasil:** Tinjauan cakupan mengidentifikasi lima artikel penelitian yang relevan. Intervensi berupa pelatihan pendidikan seperti pelatihan berbasis simulasi dan praktik langsung, termasuk bermain peran dan praktik menggunakan manekin, secara signifikan meningkatkan pengetahuan dan keterampilan pertolongan pertama guru prasekolah. **Kesimpulan:** Pelatihan pertolongan pertama secara signifikan meningkatkan pengetahuan, kepercayaan diri, dan kesiapan yang dirasakan oleh guru taman kanak-kanak, terutama ketika menggabungkan metode simulasi dan praktik langsung.

1. Introduction

Unintentional injuries represent a major global public health problem among young children, particularly those attending early childhood education settings where developmental immaturity, curiosity, and limited risk awareness increase vulnerability to emergencies such as choking, falls, and sudden illness (World Health Organization [WHO], 2014). Because kindergarten teachers supervise children for extended periods, they are frequently the first adults required to recognize and respond to medical emergencies, making first-aid competence a critical determinant of child safety outcomes (Ammirati et al., 2014).

Despite this responsibility, evidence consistently demonstrates that many kindergarten teachers possess insufficient baseline knowledge and limited confidence in providing first aid prior to formal training, which may delay emergency response and increase the risk of injury-related complications (Issack et al., 2023). This gap in preparedness has prompted widespread implementation of first-aid training programs targeting early childhood educators across diverse educational and healthcare systems (Al-Qadire & Alkhalaileh, 2017).

Children have unique pediatric physiology such as smaller airways and faster metabolic rates, and it's crucial for teachers to recognize the silent symptoms such as signs of respiratory distress or rapid onset of anaphylaxis that differ from adult signs. First-aid training programs for teachers vary substantially in terms of instructional methods, duration, content coverage, and evaluation strategies. While some programs rely primarily on lecture-based instruction focusing on theoretical knowledge, others incorporate practical demonstrations, simulations, and multimedia-assisted learning to enhance skill acquisition (Binkley et al., 2019). However, the comparative effects of these training methods on teachers' knowledge, skills, attitudes, and preparedness remain fragmented across the literature (Peters et al., 2020).

Given the heterogeneity of training approaches and outcome measures, a scoping review methodology is appropriate to comprehensively map existing evidence, clarify key concepts, and identify research gaps without restricting inclusion based on study design or methodological quality (Tricco et al., 2018). Most existing studies use pre-and-post self-reported questionnaires and there is notable lack of evidence regarding actual skill performance assessed through the questionnaire. Therefore, this scoping review aims to explore the effects of first-aid training methods for kindergarten teachers and to synthesize evidence regarding their impact on knowledge, practical skills, confidence, and emergency preparedness.

2. Methods

This scoping review was conducted in accordance with the methodological framework proposed by Arksey and O'Malley and reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) to ensure transparency, reproducibility, and methodological rigor (Tricco et al., 2018).

Eligibility Criteria

Studies were eligible for inclusion if they:

- (1) focused on first-aid or emergency training for kindergarten or early childhood teachers
- (2) described or evaluated specific training methods, and
- (3) reported outcomes related to knowledge, skills, attitudes, confidence, or preparedness.

Studies were excluded if they targeted healthcare professionals exclusively, lacked a training intervention, or did not report relevant outcomes (Peters et al., 2020).

Information Sources and Search Strategy

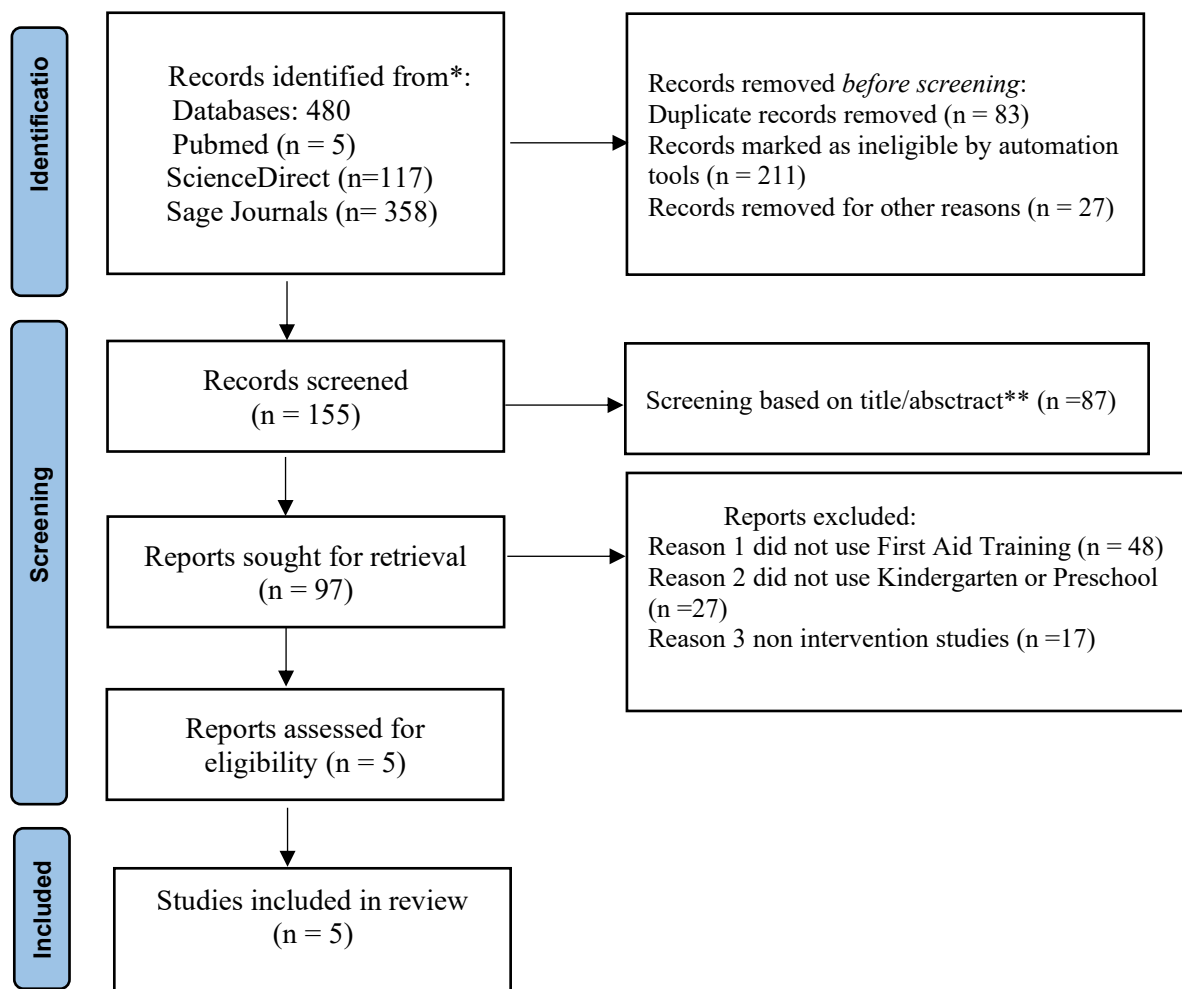
A comprehensive literature search was conducted in PubMed, SAGE Journals, and ScienceDirect, as these databases provide broad coverage of health sciences, education, and interdisciplinary research. Search terms included combinations of *first aid training*, *kindergarten teachers*, *early childhood educators*, *school emergencies*, and *training methods*. Only peer-reviewed articles published in English were included to ensure academic quality and accessibility (Issack et al., 2023).

Study Selection

Following duplicate removal, titles and abstracts were independently screened for relevance. Full-text articles were then assessed against inclusion criteria. The selection process was documented using a PRISMA-ScR flow diagram to enhance transparency (Tricco et al., 2018).

Data Charting and Synthesis

Data were extracted using a standardized charting form capturing author, year, country, study design, training modality, duration, outcome measures, and key findings. Extracted data were synthesized narratively to identify patterns, similarities, and gaps across studies, consistent with scoping review methodology (Peters et al., 2020).



Gambar 1: PRISMA (Strategi pencarian dan penyaringan)

3. Results and Discussion

Results

A total of 5 articles met the inclusion and exclusion criteria. Most studies are cross-sectional studies (n=3). Most publications originated from 2021-2023 with research studies were conducted in multiple countries. The sample size ranges from 120 to 648 respondents include kindergarten, primary and preschool parents.

Table 1. Review Result

No	Authors	Objective	Methods	Results
1	Tamur et al, 2023	To evaluate the orientation level, knowledge, and attitudes around first aid and BLS training of kindergarten and elementary school teachers and parents in the city of Taif, Makkah region	A cross-sectional study in Taif, Saudi Arabia for kindergarten and elementary school teachers and parents of students enrolled at these levels.	Most of the contributors unveiled a poor level of knowledge (over 75%).
2	Vermonden, Dehaerne, Toelen, and De Coninck, 2023	The importance of first-aid knowledge among teachers.	An online survey was distributed to primary school and kindergarten teachers. It included 14 hypothetical first-aid scenarios in a primary school context to assess objective knowledge, along with one item to assess subjective knowledge. A total of 361 primary school and kindergarten teachers completed the questionnaire.	Structural equation modeling showed that only previous first-aid training, recent experience with first aid, and subjective first-aid knowledge were linked to teachers' objective first-aid knowledge—particularly for basic first aid.
3	O'Connor et al, 2023	To train the teachers about first aid knowledge and skill	A cross-sectional study with online survey.	A total of 592 completed the survey but 5 were removed so, there were 587 in total. Most participants experienced minor incidents daily. Most teachers improved their skill after received first aid training
4	Salim, Gabrielli, Milanzi, 2023	To study effect of first aid training on preschool teachers for their knowledge, attitude, and practice	Uncontrolled quasi experiment design with quantitative research	A total of 120 preschool teachers finished the study. The first aid training can enhance the spectrum of managing of pediatric injuries.
5	Workneh, Mekonen, Ali, 2021	To investigate knowledge, attitude, and practice, of kindergarten and elementary school teachers towards first aid	A cross-sectional study with self-administrated questionnaire	41,4% of teachers has good knowledge, school type school level and working experience were factors associated with attitude.

Study Selection

The literature search identified several potentially relevant studies related to first aid training among teachers. After removing duplicate records and screening titles and abstracts, a number of articles were assessed through full-text review. Based on the predefined inclusion criteria, five studies were included in this scoping review, focusing on the

knowledge, attitudes, and preparedness of kindergarten or elementary school teachers regarding first aid (Arksey & O'Malley, 2005; Peters et al., 2020).

Characteristics of Included Studies

The studies included in this review were published between 2021 and 2023 and were conducted in different educational contexts. The research designs varied and included cross-sectional surveys, quasi-experimental studies, and analytical studies using structural equation modeling. The use of multiple study designs is common in scoping reviews because the aim is to capture the breadth of available evidence on a topic rather than evaluate a single type of study design (Munn et al., 2018).

Two studies employed cross-sectional survey designs to assess teachers' baseline knowledge and attitudes toward first aid. One study reported that 41.4% of teachers demonstrated good knowledge of first aid, while school type, level of education, and teaching experience were associated with teachers' attitudes toward emergency management (Ali et al., 2021). Similarly, another survey involving 592 teachers found that although many participants had previously received first aid training, a considerable proportion still reported limited confidence in handling emergency situations in schools (O'Connor et al., 2023).

Two other studies assessed the effectiveness of first aid training programs for teachers. These intervention-based studies demonstrated that structured training significantly improved teachers' knowledge and practical understanding of emergency care. In one study, more than 75% of participants showed increased knowledge and improved first aid practices after training (Oke et al., 2023). Another quasi-experimental study also reported that teachers who attended training programs demonstrated significant improvements in knowledge related to injury management and emergency response procedures (Salim et al., 2023). In addition, one study used structural equation modeling to examine factors influencing teachers' awareness of first aid. The results suggested that previous experience with first aid situations and teachers' subjective perceptions were important determinants of first aid awareness and preparedness (Veron et al., 2023).

Overall, the evidence indicates that first aid training programs contribute positively to improving teachers' knowledge and awareness, although variations remain in terms of confidence and practical readiness when dealing with real emergency situations

Discussion

This scoping review examined the existing literature on the effects of first aid training for kindergarten teachers, highlighting the importance of equipping educators with adequate knowledge and skills to manage health emergencies in early childhood education settings. The findings suggest that while teachers often possess basic awareness of first aid principles, their level of preparedness varies considerably depending on training exposure and professional experience (O'Connor et al., 2023; Veron et al., 2023).

One important finding from the included studies is that structured first aid training programs significantly improve teachers' knowledge of emergency response procedures. Teachers who participated in training interventions demonstrated higher levels of understanding related to injury management, choking response, and basic life support. These findings are consistent with previous studies indicating that training programs can effectively enhance first aid knowledge among non-medical professionals working in school environments (Banfai et al., 2017; Li et al., 2019).

The results also emphasize the critical role of teachers as first responders during school emergencies. In early childhood education settings, children frequently experience minor injuries, falls, or choking incidents due to their developmental stage and exploratory behavior. Teachers are therefore often the first individuals responsible for providing

immediate assistance before professional medical help becomes available (Peden et al., 2008; WHO, 2018).

Despite improvements in knowledge following training programs, several studies revealed that teachers still reported limited confidence in performing first aid in real situations (O'Connor et al., 2023). This gap between knowledge acquisition and practical confidence may be explained by the structure of many training programs, which often rely heavily on theoretical instruction rather than hands-on practice. Educational research has shown that simulation-based training and experiential learning approaches are more effective in developing practical competence and confidence in emergency response situations (Plant & Taylor, 2013; McKenna et al., 2015).

Another important observation from this review is the influence of professional and contextual factors on teachers' first aid awareness. Teachers with higher educational attainment, longer teaching experience, or prior exposure to first aid situations tended to demonstrate more positive attitudes and higher levels of preparedness. Similar findings have been reported in previous research, suggesting that professional experience and prior training significantly influence teachers' ability to respond effectively to school emergencies (Banfai et al., 2017).

4. Conclusion

First-aid training significantly improves kindergarten teachers' knowledge, confidence, and perceived preparedness, particularly when incorporating simulation and hands-on methods. Despite these positive outcomes, evidence regarding long-term skill retention and real-world performance remains limited. Standardized curricula, refresher training, and rigorous evaluation of practical competencies are recommended to optimize emergency preparedness in early childhood education.

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