

## Original Research

# Improving Teachers First Aid Skills for Managing School Injuries: A Quasi-Experimental Study in an Indonesian Elementary School

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### ABSTRACT

**Background** Injuries frequently occur within school environments, ranking as the second most common location for injury incidents due to unsafe conditions and limited first aid preparedness. Children aged 5–14 years exhibit a high prevalence of injuries, reaching 13% in school-related incidents. Teachers, as front-line responders, must possess adequate first aid knowledge and skills to manage common injuries—such as falls, bruises, nosebleeds, fainting, and seizures—before professional medical care is available.

**Objective** This study aimed to assess the effectiveness of a first aid training program in improving teachers' skills in managing school-related injuries.

**Methods** A quantitative approach with a quasi-experimental design (pretest–posttest without a control group) was conducted among 49 teachers at Al Islam 3 Gebang Elementary School, Surakarta. Total sampling was used. Skill levels were assessed before and after the training using standardized evaluation tools.

**Results** The Wilcoxon signed-rank test showed a statistically significant improvement in teachers' first aid skills after the training intervention ( $p = 0.01$ ;  $p < 0.05$ ).

**Conclusion** First aid training significantly enhanced teachers' skills in managing injuries among school children. Continued collaboration between schools and health professionals is recommended to maintain and further develop these essential competencies.

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## INTRODUCTION

Injuries may escalate to emergencies if not adequately addressed, potentially resulting in fatal outcomes. Additional consequences of injuries include disability rates, reduced productivity, and increased maintenance costs (Aliftitah & Oktavianisya, 2023). Injuries can occur to individuals in various settings, including the school environment. Schools are the second highest location for injuries due to unsafe school environment conditions, insufficient awareness and understanding of potential hazards, and inadequate provision of first aid in the event of an injury (Nastiti, 2020)

Emergencies can arise unexpectedly, affecting individuals in various environments and necessitating rapid intervention due to their potential to result in permanent disabilities or fatalities (Hizkia et al., 2022). Schools are particularly vulnerable to injuries, so educational institutions should have adequate knowledge and resources to address such incidents effectively. Besides, children spend much time at school, and their risk of sustaining injuries is significantly heightened. Acquiring the necessary knowledge to facilitate life-saving efforts is crucial, as immediate and appropriate treatment is vital in these scenarios. Understanding first aid principles is essential, as anyone may encounter themselves in a situation that demands such intervention (Kshatri et al., 2022).

Injuries may significantly affect children, leading to consequences such as school absenteeism, diminished concentration and focus on learning, limited participation in the learning process, and premature mortality (Oktaviani et al., 2024). Appropriate first aid measures during school emergencies should be underpinned by adequate knowledge. Knowledge can be obtained through education that employs effective methods to ensure optimal comprehension of the information. One viable approach to imparting this knowledge is training programs (Hizkia et al., 2022).

The 2018 Basic Health Research reported that the national injury prevalence rate is 9.2%. Prevalence by characteristics at age 5-14 years was the second highest incidence at 12.1%, with the highest prevalence associated with school status at 13%. The results of Riskesdas (2013) revealed that the most typical injuries in children were abrasions (40.9%), sprains (27.5%), and lacerations (23.2%). Additionally, another study identified common injury types in school-age children as scratches (31.2%), bruises (21.1%), and sprains (15.2%), with a higher incidence observed in boys compared to girls. Teachers should be acquainted with managing typical injuries in the school environment, including falls, bruises, swelling, nosebleeds, fainting, sharp objects, seizures, etc. Teachers play a crucial function in providing primary assistance to injured children, as their timely interventions can significantly mitigate the risks of further injury and potentially prevent fatalities before the child can be transported to a healthcare facility (Oktaviani et al., 2020).

Injuries can significantly affect children, leading to consequences such as absenteeism from school, difficulties in concentration and attention during learning activities, diminished engagement in the educational process, and even the tragic loss of potential years of life or death (Oktaviani et al., 2020). Individuals must possess adequate first-aid knowledge to address school emergencies effectively. This knowledge could be acquired through educational initiatives employing appropriate methodologies, ensuring that the information conveyed is received effectively. One viable approach to imparting knowledge is structured training programs.

Health education constitutes a fundamental component of health promotion, where training media serve as a vehicle for disseminating health-related messages and

understanding to various populations, including communities, groups, and individuals. Nurses play a pivotal role in providing education across diverse settings, including educational institutions. It is particularly significant as health education interventions conducted by nurses represent a crucial strategy for national education,, primarily related to health matters(Sari & Noorratri, 2023).

Proficiency in first aid skills and knowledge is essential for effectively managing potential accidents and injuries that may threaten life (Triyani & Ramdani, 2020). Teachers are equipped with the essential skills and knowledge for administering first aid. They can provide critical assistance to themselves, their students, and individuals within their vicinity who may sustain injuries (Saputra et al., 2019)

The preliminary study results at Al Islam 3 Gebang Elementary School in Surakarta indicated that training in injury management has been extended to sports educators. In contrast, it is crucial to recognize that all teaching staff should receive this training program, as injuries may arise at any time within the school environment. Based on this, researchers propose a training program to provide all teachers with the necessary skills to first aid students who experience injuries.

## METHOD

The present study employed an experimental research characterized by a pre-experimental framework, explicitly utilizing a *pre-post-test design without a control group*. The sampling used a total sampling technique. The sample comprised 49 respondents from Al Islam 3 Gebang Elementary School in Surakarta. The selected respondents were teachers who were present throughout the data collection process and expressed their willingness to participate, adhering to the inclusion criteria established by the researcher. The research instrument utilized a questionnaire to assess teachers' skills in managing injuries among schoolchildren. This questionnaire has been adapted from a previously validated instrument. The instructional material encompassed first-aid protocols for a range of medical emergencies. The instructional content included first aid procedures for various medical emergencies, such as fainting, muscle cramps, electric shock, nosebleeds, febrile convulsions, scalds, and falls.

*Informed consent* was obtained from participants before the commencement of data collection. The inclusion criteria for this study encompassed teachers from SDN Gebang 3 Surakarta who expressed a willingness to participate as respondents, were in good health, and attended the training sessions in their entirety. Data collection was conducted at two distinct time points: prior to the commencement of the training and after its conclusion. The data collection process was conducted at two intervals: before the training and after its completion, utilizing the first aid training observation sheet designed for assessing injuries in a school setting. Following the data collection, a statistical analysis was performed using SPSS software. Teacher skill variables were classified into low, medium, and high. Ethical clearance was conducted at the University of Kusuma Husada Surakarta with no. 2103/UKH.L.02/EC/IV/2024.

## RESULTS

### Characteristics of Respondents by Gender

Table 1. Frequency distribution of respondents' gender (n=49)

Gender	Total	
	Quantity	Present
Male	17	34.7
Female	32	65.3

Table 1 presents that male respondents accounted for 34.7% of the total participants, while female respondents constituted 65.3%.

### Characteristics of Respondents by Age

Table 2. Frequency distribution of respondents' Age (n=49)

	N	Minimum	Maksimum	Mean	Std. Deviation
Age	49	24	58	33.04	8.14

Table 2 illustrates that the respondents' ages ranged from a minimum of 24 to a maximum of 58, with the mean age calculated at 33.

### Teachers' Competencies in pre-and post-first Aid Training for Injuries to School Children

Table 3. Teacher Competencies in pre- and post-training (n=49)

Pre-test	Frequency	Percent	Valid percent	Cumulative percent
Low	0	0	0	0
Moderate	25	51.0	51.0	49.0
High	24	49.0	49.0	100.0
<b>Total</b>	49	100.0	100.0	
<b>Post-test</b>				
Low	0	0	0	
Moderate	13	26.5	26.5	26.5
High	36	73.5	73.5	100.0
<b>Total</b>	49	100.0	100.0	

According to the data presented in Table 3, 25 teachers (51%) had moderate skill levels before receiving training in first aid for school children with injuries, and 24 (49%) had high skill levels. Following the training, the distribution of skill levels altered, with 13 teachers (26.5%) having moderate skills and 36 teachers (73.5%) having high skills.

## The effect of training programs on teachers' competencies in administering first aid for school-aged children's injuries

Table 4. The analysis of teachers' skills training in first aid for children's injuries (n=49)

		Post-test- Pre-test
Z		-3.464 <sup>b</sup>
Asymp. Sig. (2-tailed)	Sig.	.001

Based on Table 4, it is comprehended that the results of data analysis using the Wilcoxon test demonstrated a value of ( $p = 0.001$ ) with a value of  $p < 0.05$ . From these results, the training program significantly enhances the first aid skills of teachers addressing injuries among school children at Al Islam 3 Gebang Elementary School in Surakarta.

## DISCUSSION

Based on the results of the Wilcoxon test, a statistically significant result ( $p=0.001$ ) was below the threshold of  $p<0.05$ . The analysis suggests that the training provided effectively enhances teachers' competencies in first aid for children in the circumstances of school injuries. Consequently, educators should acquire and apply first aid knowledge when addressing injuries that may appear within the school environment. The role of proficiency in developing an individual's actions is essential, as informed behavior based on informed knowledge is more effective than behavior without a solid foundation of knowledge. In addition to possessing this knowledge, educators should develop the requisite skills to enhance the educational process. The findings of this study align with the research conducted by (Nirmalasari & Winarti, 2020), which indicated that training significantly affects skill enhancement before and after the implementation of basic life support training. Training could enhance knowledge through a brief educational experience integrating theoretical knowledge with practical application (Nirmalasari & Winarti, 2020). Training is a learning concept that emphasizes skill development and constructs the foundation for effectively applying these skills. Therefore, continuous training is essential for retaining and updating knowledge and skills.

Skill is an individual's capacity that can be refined and developed through continuous practice, eventually leading to mastery in achieving physical and mental assignments. It encompasses the ability to perform something well, quickly, and precisely. Skills can indicate the specific actions undertaken or how those actions are executed. Higher education correlates with more excellent knowledge, facilitating an individual's ability to accept and assimilate new information readily. In addition, this enhanced knowledge also equips individuals to tackle new challenges effectively. Age significantly influences a person's skill set; as individuals age, they undergo physical and psychological changes that contribute to their overall development. With increased age comes greater maturity in thought processes and work-related behaviors. This development in attitudes is intrinsically linked to the progression of knowledge. Individuals with a solid acquaintance foundation tend to exhibit more favorable

attitudes, whereas those with limited proficiency may display negative attitudes. Furthermore, a person's ability to act or modify their attitude in response to a provided stimulus is contingent upon their comprehension of its meaning (Atallah & Fitriana, 2022)

According to (Sari & Noorratri, 2023) educational attainment significantly influences an individual's learning process. Individuals with higher levels of education tend to possess more excellent knowledge, which enhances their capacity to assimilate information. In this study, all participants were educators; the minimum education was a bachelor's degree, promoting their comprehension of the information presented. Furthermore, age is another determinant of knowledge acquisition; individuals typically develop a broader mindset and increase their knowledge and experience (Notoatmodjo, 2010). Implementing training programs within educational institutions is regarded as an effective strategy, as schools represent a concentrated environment with the potential to simultaneously enhance numerous individuals' knowledge and skills (Abelairas-Gómez et al., 2020). Teachers can manage injuries in this context due to their qualified skills. Additionally, the curriculum in the European region includes Basic Life Support training and teaching staff should undergo training before delivering this material.

The study's results (Kshatri et al., 2022) indicated that training significantly enhances teachers' knowledge, particularly highlighting a notable correlation between first aid training and the level of knowledge acquired. Knowledge of first aid is essential for teachers in effectively addressing accidents. Teachers should acquire first aid principles because most teachers rely on media and social media to obtain information regarding these principles. Additionally, numerous workshops are organized to enhance teachers' first-aid practices.

The attitude alteration process can be considered an extension of the evolution of knowledge. An individual's attitude tends to be more favorable when they possess a robust understanding of relevant information, whereas limited knowledge may contribute to negative attitudes. Furthermore, an individual can modify their behavior or attitudes in response to a stimulus when they comprehend the significance of that stimulus (Sabur, F. & Afriani, 2023).

## CONCLUSION

The results of this study indicated a value of ( $p=0.001$ ) with a  $p$  value  $<0.05$ . Consequently, it can be inferred that the training enhanced the teacher's skill. It is essential for all school personnel, particularly teachers, to receive training in first aid for injuries sustained by students. Teachers spend much time with students at school, so they should be equipped to respond quickly and effectively in the event of an injury, thereby mitigating the risk of further emergencies. This study found that teachers' competencies in first aid improved following training programs provided by researchers, which could enhance the reasonable management of injured students. Future research endeavors should consider incorporating a broader range of variables, including attitudes toward providing injury assistance and exploring various methodologies or media to optimize outcomes and enhance benefits. Additionally, further investigation is warranted to explore teachers' attitudes towards administering first aid to students post-training.

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