

Effect of Structured Educational Package on Primary School Teachers' knowledge and Practice regarding First Aid Management among School Children

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Abstract

Children spend the majority of their time at school, where they are exposed to a variety of small injuries, all of which have an impact on their current and future health. Before professional medical assistance is available, first aid is used to treat any accident or illness. The teacher is the most important person who can attend to minor injuries in the classroom by having a thorough understanding of first aid. **Aim** to evaluate the effect of structured educational package on primary school teachers' knowledge and practice regarding first aid management among school children. **Subjects and method: Design:** A quasi-experimental research design was utilized to achieve the aim of this study. **Setting:** the research was conducted in five primary schools in Beni- Suef City. **Subjects:** By applying the non-probability purposive sampling technique, 200 primary school teachers were selected for the study from the previously selected settings. **Tools:** A self-administered questionnaire was used in this study; it includes three parts: Primary school teachers' demographic data, primary school teachers' first aids knowledge, and primary school teachers' first aids reported practices. **Results:** The study results revealed that the mean post-test knowledge score regarding first aid management was significantly higher than that of the mean pretest knowledge score; the mean post-test reported practices score was significantly higher than the mean pretest practical knowledge score. There was a positive correlation ($P=0.005$) between primary school teachers' knowledge and their practice scores post- structured educational package implementation regarding first aid management. **Conclusion:** The study concluded that the first-aid structured educational package implementation for primary school teachers had a positive effect on improving their knowledge and practice. **Recommendation:** Implementation of the structured educational package is highly recommended for all primary school teachers to improve their first-aid knowledge and reported practices. Further research should be conducted to evaluate the impact of such a structured educational package on school health safety and child health.

Keywords: First aid management, Primary school teachers' knowledge, and practice, Structured educational package, School children.

Introduction:

First aid is the treatment of any injury or sudden illness before professional medical help can be provided. The aim is to prevent the condition from getting worse, ensuring fast recovery, and preserving precious human life. Most injuries are minor and can be treated without medical attention such as bruises, minor fractures, sprains, and strain. The knowledge of first aid, when properly applied, can bridge the gap between temporary or

permanent injury, rapid recovery, or long-term disability (Mohamad et al., 2018).

"First aid is the provision of initial care for an illness or injury. It is performed by a layperson on a sick or injured patient until definitive medical treatment is accessed. Certain self-limited illnesses or minor injuries may not require further medical care past the first aid intervention. It generally consists of a series of simple and, in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment.

First aid training has the potential to reduce morbidity and mortality from common injuries and illnesses, which represent a significant public health burden. In addition, training courses must prepare individuals to provide appropriate and efficacious treatment for a wide range of conditions (Van et al., 2018). School is an important institution for learning about students' health. School health services are commonly neglected due to a lack of awareness and education about common health problems and first aid care. The teachers have the responsibility to keep an eye on their students. They should make sure that they are comfortable and secured within the school building (Bhatia et al., 2019)

Children spend most of their time in school under the direct supervision of teachers. They are also exposed to various types of epidemiological factors in the school, which influence their present and future state of health. Hence, first aid should be known by school teachers to meet the urgent needs of these school children during minor injuries. The teacher is the key person in school who attend to such type of victims and is always in a position to save the life. A healthy safe environment is very important to avoid these hazards besides qualified teachers who can detect any health problem and can give first aid for commonly occurring emergencies in schools (Maloti, 2016).

Basic knowledge and understanding of first aid can be invaluable for individuals to be able to provide emergency care in the event of an accident, possibly saving lives and minimizing injury. It may on occasion obviate the need to visit a hospital or clinic, not only providing convenience for the individual but lessening the demand on medical facilities (University of Maryland Medical Center, 2020).

Provide Health education programs in schools is eligible to prevent health-related problems, which participate in children's and community's wellness. First aid health education programs in schools are essential. Performing first aid actions requires a person's active and responsible participation based on the ability of taking the right decisions. Health education in first aid supports such ability, providing

knowledge and skills, and enhancing people's ability to take corrective actions. The immediate response in a health emergency can limit undesirable outcomes or even save lives (Inman et al., 2020).

Teacher training is significant for effective school disaster management. When considering school disaster management, it is clear that schoolteachers play significant roles. It was pointed out that teacher training is an important issue, particularly in the protection of the health and safety of school children. Researches on teacher training for school disaster management are not many. Nevertheless, research on topics of teacher training for school disaster management contributes to safety in disaster-prone areas (Alexandropoulou, 2018).

The community nurse or any other health worker would not always be at the school when first aid treatment is needed, and also when children have accidents away from the school; consequently teachers and other staff should be properly taught to take care of the minor accidents that occur in and around the school. The responsibility of the school teacher is also to provide first aid care to children on the school campus. Hence, they should be trained adequately to deliver health care to injured children in an emergency. The primary purpose of the study was to make school teachers more competent in providing first aid care for minor injured children in primary school through a structured educational package. This may apply their knowledge and practice regarding the first aid management of selected minor injuries encountered by the children at primary school, which would further help in reducing the complications and advancement of the problem. Indirectly, it would also help in reducing the absenteeism rate (Sonavane, 2018).

Significance of the study:

In 2014, Torrents caused great damage inside schools, especially in the South of Delta Governorates of Asuit, Aswan, Sohag, and Kana. The disaster caused the closing of schools for a week and the death of seven students inside their schools because of torrents in different accidents (Badary, 2014). Egyptian

Afckac newspaper 2014 reported that an explosion in a preparatory school's laboratory caused 25 injured cases among students (**The Egyptian Coalition for the Rights of the Child, 2014**).

Children at the age of primary school are liable for accidents and lack knowledge and good judgment when emergencies occur or even simpler incidences. Training teachers on how to deal with accidents is of obvious importance since some simple steps of first aid can prevent dangerous consequences caused by not acting or acting wrongly. First aid can be given by teachers so that a pupil wouldn't need further medical help or to prevent deterioration of the pupil's health till he's taken to hospital or till medical help arrives (**First Aid Made Easy, 2020**).

Aim of the study:

The study aimed to evaluate the effect of a structured educational package on primary school teachers' knowledge and practice regarding first aid management among school children through:

- Assessing primary school teachers' knowledge level regarding first aid management after structured educational package.
- Assessing primary school teachers' practice level regarding first aid management after a structured educational package.
- Designing and implementing the structured educational package based on the patients' needs.
- Detering the effect of the structured educational package on teachers' knowledge and practice regarding first aid management.

Research hypothesis:

H1: Primary school teachers' mean post-test knowledge and reported practices scores regarding first aid management will be significantly higher than their mean pre-test knowledge and reported practices scores.

H2: Structured educational package will have a positive effect on teachers' knowledge and reported practices regarding first aid management.

Subjects and Method:

Research design:

A quasi-experimental one-group pre-test post-test research design was utilized to achieve the aim of this study. A quasi-experimental design is an empirical study as it estimates the causal impact of an intervention on its target population (**Maciejewski, 2020**).

Setting:

The research was conducted in primary schools in Beni- Suef City in November 2021. This study involved five primary schools; these included Abu Bakr El-Gadeda Primary School in Bulbul, Al-Shabab Street, Ezbet Bakr Abi Bakr Al-Siddiq School Ibn Al-Farid Street in Moqbel, Al-Iman Primary School for Boys, Al Basateen Primary School, and El-Gadeda hill school.

Subjects:

By applying the non-probability purposive sampling technique, 200 primary school teachers were selected for the study from the previously selected settings.

Sample size calculation:

The sample size was calculated using the results of a previous study in which 12% of teachers demonstrated a good knowledge regarding first aid management (**Kaur et al., 2017**) Then, as we were to investigate the prevalence of the teachers' good knowledge about first aid, considering a type I error of 0.05, an expected prevalence (P) of 0.12, and a d (i.e., a degree of precision) of 0.05, and the formula for estimating the proportion of a qualitative feature in the community (i.e. $n = \frac{Z^2 \cdot p \cdot q}{d^2}$ $\frac{1}{4} 1:962 0:12 0:88=0:552 \frac{1}{4} 163$), a sample of 163 teachers was estimated to be enough for this study. However, to improve

the representativeness of the sample, we recruited 200 teachers for this study.

Tools of data collection:

Tool: A self-administered questionnaire was used in this study; it was developed by the researchers in the Arabic language (Mohamad et al., 2018; Inman et al., 2020), it includes three parts:

Part (1): Primary school teachers' demographic data: It included demographic data of the primary school teachers such as age, gender, years of experience, residence, and previous training.

Part (2): Primary school teachers' first aids knowledge:

It was used as pre-post and follow-up tests for the studied primary school teachers. It consisted of thirty-five (35) multiple-choice questions (MCQs) questions divided into two parts:-:

It was included primary school teachers' knowledge about the first aids, It consisted of fifteen (15) multiple-choice questions (MCQs) that related to the following topics:-

- Definition of first aids.
- Purposes of first aids.
- First aids box and its contents.
- Basic principles for first aid.
- Most common injuries, signs, and symptoms, and basic first aids tips.

Scoring system:

The correct answer for each question was allowed one grade score, while the wrong answer was zero scores.

The total knowledge scores Abd El-Hay et al., (2015):-

- More than 70% (more than 24 grades) = Good knowledge
- From 50% to 70% (from 18 to 24 grades)= Average or fair knowledge

- Less than 50% (less than 18 grades)=Poor knowledge

Part (3): Primary school teachers' first aid reported practices:

It was developed by the researcher after reviewing the literature to assess the reported practices of primary school teachers regarding common first aids to all types of accidents before and after a structured educational package. It was included parts as follows:

- First aids for falls, consisted of 4 steps
- First aid for choking, consisted of 4 steps
- First aids for fracture, consisted of 4 steps
- The first aid for burn consisted of 4 steps

Scoring system:

If the step was done score = 1 and if the step was not done score= zero.

The total first aids for reported practices scores system Mohamad et al., (2018):-

- If primary school teachers' reported practices of 60% or more (10 grades or more), they had satisfactory practices.
- If primary school teachers' reported practices less than 60% (less than 10 grades), they had unsatisfactory practices

Validity and reliability:

Face validity of the tool for clarity, comprehensiveness, and relevance was assessed by a board of five expert professors; two expert professors in critical care nursing and three expert professors in community health nursing with more than ten years of experience in the field. A reliability test was done whereas Cronbach's Alpha equals 0.89.

Ethical considerations:

Official permission was obtained through an issued letter from the Dean of

Faculty of Nursing, Beni-Suef University to conduct this study. An informed consent form was obtained. The objective of the study was explained to school director & teachers, and the researcher informed them that the study was voluntary, they were allowed to refuse to participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, they were assured that their information would be confidential and used for research purposes only.

A pilot study

A pilot study was conducted on 10% of the primary school teachers (20 primary school teachers) to test the clarity and the feasibility of the research process and the needed time for data collection. No modifications were required. The sample of the pilot study was included in the total sample.

Procedures of the study:

This study was conducted through four consecutive phases: assessment, planning, implementation, and evaluation. Data collection was done pre and post-structured educational packages.

I-Assessment phase:

The researchers started with a pilot test, and then validated the tool through the opinions of experts in nursing. Then the data was collected from teachers under the study to identify their knowledge and practice regarding first aid management at schools.

II-Planning phase:

Based on the findings from the assessment phase, the researchers created structured educational package content and media (such as a structured educational package booklet, posters, and visual materials such as videos and photos) for the study's school teachers.

III-Implementation phase:

Implementation of the structured educational package was done with the primary school teachers after an explanation of the aim of the study and their participation acceptance. Primary school teachers were divided into twenty groups; each group included ten teachers to facilitate training in structured educational package application. The subject contents have been sequenced through 4 sessions (2 sessions for theoretical part and 2 sessions for practical part). The structured educational package took one session/week. Every session took about 25-30 minutes followed by 15 minutes for discussion.

The structured educational package included knowledge regarding first aids management as follows:

- Definition of first aids.
- Purposes of first aids.
- First aids box and its contents.
- Basic principles for first aid.
- Most common injuries, signs, and symptoms, and basic first aids tips.

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The collection of data and application of the structured educational package lasted for six months, starting in October 2021 and ending in March 2022. Data were collected three days/week from 9 am to 12 am according to the school working hours and the presence of the targeted school teachers. Individual sessions, group discussions, demonstrations, and re-demonstrations are used as teaching methods. Audio-visual aids such as videos,

role-plays, and the introduction of a booklet was used to facilitate the process of the structured educational package to serve the aim for which it was designed. All primary school teachers were provided with a booklet about first aid management practice as well as a copy of all teaching materials on a CD at the end of data collection.

IV-Evaluation phase:

The evaluation phase emphasized estimating the effect of the structured educational package on primary school teachers' knowledge and practice regarding first aid management. The post-tests were conducted for studied teachers after four weeks of the implementation phase using the same pretest tools.

Statistical analysis:

Data were revised, coded, computed, and analyzed using a statistical package for social sciences (SPSS) version 23. Frequency distribution, percentages, mean and standard deviation were calculated, and Chi-square and Paired sample T-tests were used to describe the level of statistical significance which was considered at $p < 0.05$.

Results:

Table (1) revealed that (31%) of the primary school teachers aged from 31-40 years and 61% of them were females. Regarding the years of experience, it was noticed that (49%) of the teachers, their experience in teaching is 16 years and above. The majority of primary school teachers (77%) lived in urban areas, while (23%) lived in rural areas.

Figure 1: Illustrated that (13%) only of the primary school teachers reported that they received training in first aid management.

Table (2) portrayed the effect of the structured educational package on primary school teachers' knowledge regarding first aids management. It was noticed that the structured

educational package has a positive effect on improving the post-knowledge of primary school teachers, with a highly statistically significant difference ($P < 0.001$).

Figure 2: Demonstrated the total level of knowledge of the studied primary school teachers. It was observed that (93%) of studied primary school teachers had poor knowledge before structured educational package implementation compared to 94% of them after the structured educational package implementation had good knowledge.

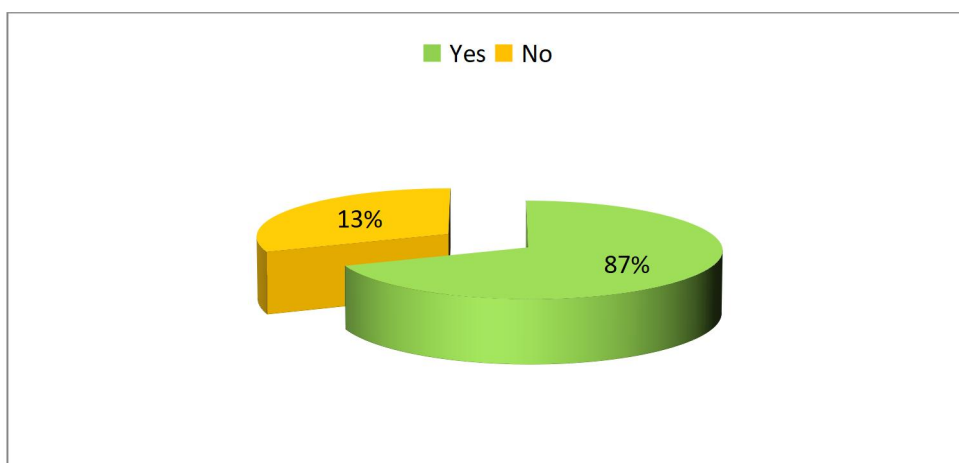
Concerning the effect of the structured educational package on first aid management on practices of types of the first aids among the studied primary school teachers, table 3 showed that the structured educational package had a statistical significant effect on improving first aid reported practices among the studied primary school teachers in dealing with fall, choking, fracture, and burn after the structured educational package ($P = 0.000$).

Concerning the level of practical knowledge among the studied primary school teachers, it was noticed from **Figure 3** that 88% of them had unsatisfactory reported practices regarding first aid pre-structured educational package compared with 86% of them post structured educational package had satisfactory reported practices regarding first aids with a highly statistically significant effect on improving practices of studied primary school teachers ($P = 0.000$).

Table (4) showed the correlation between studied primary school teachers' knowledge and practices about first aids management before and after structured educational package. This table showed that before and after the structured educational package has a positive highly significant relation was detected between the total knowledge and the total practices evidenced by ($P = 0.005$), There was a statistically significant strong positive correlation between total practices and total knowledge before and after structured educational package.

Table 1: Frequency and percentage distribution of primary school teachers regarding their demographic data (n = 200)

Demographic data	No	(%)
Age		
21- < 31	40	20
31- < 41	62	31
41- < 51	48	24
51 years and < 60	50	25
Gender		
Male	78	39
Female	122	61
Years of experience		
<-10 years	62	31
11-15 years	40	20
16 years and above	98	49
Residence		
Urban	154	77
Rural	46	23

**Figure 1: Percentage distribution of primary school teachers regarding their previous training in first aid management (n = 200)****Table (2): Frequency and percentage distribution of primary school teachers regarding their knowledge about first aid management pre and post structured educational package implementation (n=200)**

Teacher's knowledge	Pre- structured educational package (No/%)	Post structured educational package (No/%)	P-value
Definition of first aids.	40 (20)	200 (100)	<0.001*
Purposes of first aids.	50 (25)	182 (96)	<0.001*
First aids box and its contents.	30 (15)	180 (90)	<0.001*
Basic principles for first aids.	20 (10)	172 (86)	<0.001*
Most common injuries, signs, and symptoms, and basic first aids tips.	60 (30)	184 (92)	<0.001*

* Statistically significance p<0.05

** Statistically significance p<0.001

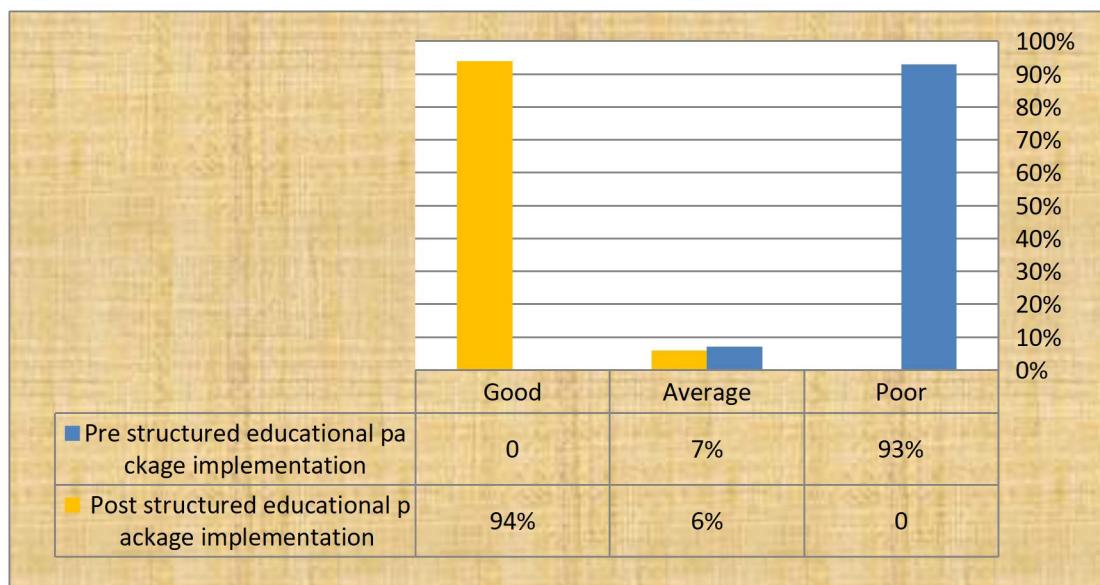


Figure 2: Percentage distribution of knowledge levels of primary school teachers regarding first aids management pre and post structured educational package implementation (n=200)

Table (3): The mean differences between before and after structured educational packages among the studied primary school teachers regarding their reported practice about first aid management (n=200)

Item	Maximum score	Before the structured educational package Mean ± SD	after the structured educational package Mean ± SD	t-test P-value
Falls	4	1.08±0.76	3.16±0.28	20.806 (0.000)*
Choking	4	1.28±0.72	3.24±0.72	12.907 (0.000)*
Fracture	4	1.36±0.21	3.88±0.02	20.640 (0.000)*
Burn	4	1.70±0.24	3.04±0.28	22.625 (0.000)*
The total mean score of first aid Practices	16	6.120±2.71	13.3±3.33	20 (0.000)*

(*) Statistically Significant at p< 0.05 Paired t-test

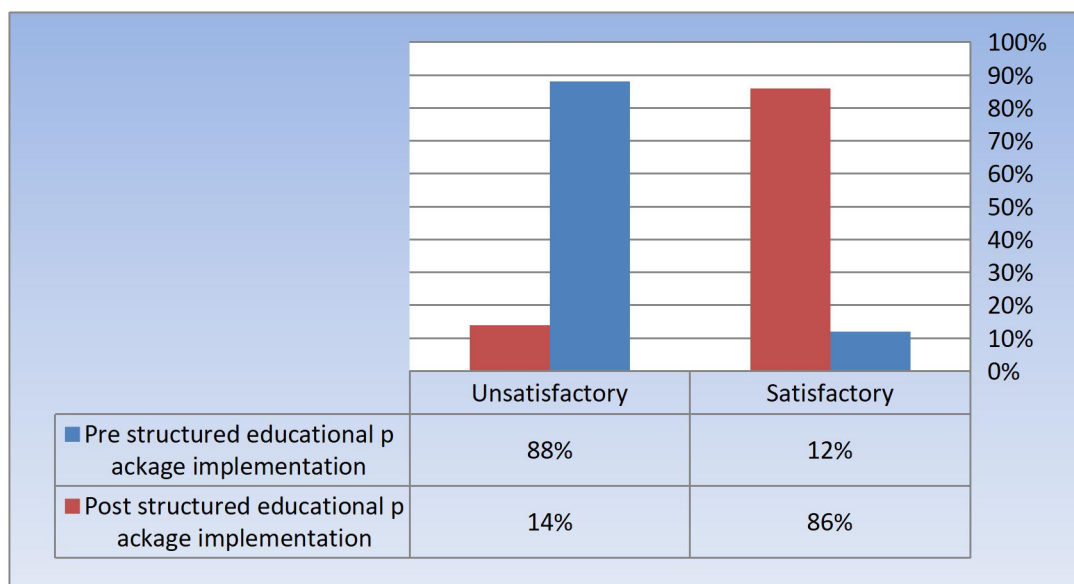


Figure 3: Percentage distribution of levels of reported practice of primary school teachers regarding first aids management pre and post structured educational package implementation (n=200)

Table (4): Correlation coefficient between the studied primary school teachers' knowledge and their reported practice about first aids management among school students pre and post structured educational package

Items	Practice			
	Pre- structured educational package		Post structured educational package	
	R	P	R	P
- Total knowledge of pre-structured educational package	0.035	0.813(N.S)	---	---
- Total knowledge post structured educational package	---	---	0.244	0.005

** Correlation is significant at the 0.001 level

Discussion:

Teachers are the main caregivers and the first line of protection for school children. Their role complements that of parents. During school hours, school teachers are the first respondents in cases of disasters or emergencies. They must be able to deal

properly with health emergencies both in normal children and in children with special health care needs (Al-Samghan et al., 2019). So, the primary aim of this study was to evaluate the effect of a structured educational package on primary school teachers' knowledge and practice regarding first aid management among school children.

Concerning previous training regarding first aids management, it was found that the majority of the primary school teachers were not trained in first aid management. These findings are similar to the result in a study conducted by **Abernethy et al, (2017)** entitled "Immediate care of school sports injury. Injury Prevention" in the USA reported that few schools had performed first aid training for their teachers, whereas in many other schools none of the staff members had updated the first aid training. In addition, **Younis and El-Abassy 2015** conducted a study on primary teachers' first aid management of children's school day accidents indicating that the majority of schoolteachers did not participate in any training classes. As a result, conducting a structured educational package for keeping schoolteachers informed and trained was critical. Furthermore, this program must be carried out regularly by trained health experts. Basic first aid training for schoolchildren is required for all schoolteachers.

A study in the United States, conducted by **Frederick et al., (2018)** studied " An evaluation of the effectiveness of the injury minimization program for schools " and reported that less than ten percent of schools some teachers passed first-aid training. Similarly, A study in Saudi Arabia done by **Al-Samghan et al., (2018)** who studied "Primary school teachers' knowledge about first aid" also reported that only one-fifth had a history of attending a course on first aid. A study in India by **Masih et al., (2014)** and reported that only less than one-fifth of teachers attended a specific training program about first aid.

The present study declared that the most of studied primary school teachers had poor knowledge before structured educational package implementation. Meanwhile, after implementation of the structured educational package, most of them had good knowledge with highly statistically significant differences pre and post-implementation. These findings could be explained by a shortage of first-aid

management training program, and they highlight the necessity of first-aid training for elementary school teachers. Unfortunately, numerous studies have revealed that primary school teachers lack basic first-aid knowledge. In a similar view, **Ali et al., (2018)** reported that a first-aid educational training program for newly graduated nursery school teachers in Zagazig city improved nursery school teachers' knowledge and skills in first aid and dealing with wounds, fainting, burns, epistaxis, epileptic fits, and fractures. This gain was statistically significant.

In addition, **Baser et al., (2017)** conducted a study on Turkish teachers to assess first-aid competence among primary school instructors. They claimed that the majority of the teachers lacked first-aid knowledge. In a similar line, **Li et al., (2019)** investigated the effects of pediatric first aid training on preschool instructors. Their findings showed that the training greatly improves first-aid knowledge among those who attended the course.

The findings of the current study revealed that most primary school teachers had unsatisfactory practices regarding first aid pre-structured educational package compared with almost all of them post structured educational package had satisfactory practices regarding first aid with a highly statistically significant effect on improving practices. Also, the structured educational package had a statistically significant effect on improving first aid practical knowledge among the studied primary school teachers in dealing with fall, choking, fracture, and burn after the structured educational package. From the researchers' point of view, Life-threatening emergencies can happen at any moment and in any school.

As a result, teachers should be skilled in first aid methods to save lives during disasters and emergencies by recognizing life-threatening emergencies. Also, it reflected that structured educational package implementation has a positive effect on improving teachers' practice. These findings emphasize the value of

hands-on training. As a result, it appears that there is a pressing need to improve school health services by involving teachers and educators, partnering with them, and providing training program.

Furthermore, **Abdella, et al., (2018)** did a study to evaluate a pediatric first-aid intervention program for kindergarten teachers and found that almost all teachers had inadequate abilities before the program. In comparison, with a statistically significant difference, more than half of them exhibited satisfactory skills immediately after and during the program's follow-up.

The results of the current study revealed that a positive highly significant correlation between studied primary school teachers' knowledge and practices about first aids management before and after the structured educational package was found. From the researchers' point of view, it reflected that the structured educational package succeeded in achieving significant improvements among primary school teachers.

These findings are supported by the results obtained from a similar study conducted by **Hegazy et al., (2019)** who studied "Impact of a Disaster Educational Program on Knowledge and Practices of Teachers among Primary Governmental Schools" and concluded that there are significant deficiencies among the majority of schoolteachers regarding first aid management. Moreover, there was a significant improvement after the program implementation of the knowledge and skills of school teachers regarding first aid, which proved statistically.

A similar, study from other parts of the world conducted by **Ali et al., (2019)** also showed that a correlation was found between the majority of primary school teachers with improved in their knowledge and continued

practice regarding first aid management for the emergency condition on the school campus.

Conclusion:

Based on the results and hypotheses of the present study, the study findings concluded that the results support the research hypothesis in implementing the first-aid structured educational package for primary school teachers had a positive effect on improving their knowledge and reported practices.

Recommendation:

Based on the current study results, the following recommendations are proposed:

- Implementation of the structured educational package is highly recommended for all primary school teachers to improve their first-aid knowledge and practice.
- Using booklet and illustrated pamphlets for teachers to improve their information and practice regarding first-aid management.
- Further research should be conducted to evaluate the impact of such a structured educational package on school health safety and child health and required a larger sample of teachers in different settings to be generalized.

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