

# Preparing Teacher to be a Lifesaver: A Preexperimental Study

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## ABSTRACT

**Background:** Injuries and accidents are essential issues in public health, where the school teachers are considered the first caregivers in schools. **Objective:** The purpose of this study was to assess the effectiveness of an educational program on first aid (FA) knowledge, cardiopulmonary resuscitation (CPR) skills, and teacher self-confidence among school teachers. **Methods:** One-group pretest–posttest preexperimental design was conducted. Three schools were enrolled using simple random sampling, and 40 teachers were participated. The Wilcoxon signed-ranks test was performed to compare the pre- and posttests' mean scores. **Results:** The mean posttest scores of FA knowledge, CPR skills, and self-confidence were significantly higher than the mean pretest scores ( $P < 0.01$ ). **Conclusion:** The educational program was effective in improving FA knowledge, CPR skills, and teachers' self-confidence.

**KEYWORDS:** Effectiveness, First aid, Resuscitation, Self-confidence, Teachers

## INTRODUCTION

Injuries and sudden illnesses are essential issues in public health.<sup>[1]</sup> These injuries are initially treated by nonhealth-care providers due to the absence of health-care providers at the scene.<sup>[2]</sup> The International Federation of Red Cross defined first aid (FA) as the immediate assistance provided to a sick or injured person by the first responder/provider until the professional help arrives.<sup>[3]</sup>

Injuries may occur at school. Students are vulnerable to unintentional playground injuries and fall in their schools. In school, children in armed conflict areas are affected by violence, abuse, gas bombs, gunshots, and exploitation. The World Health Organization (WHO) reported that in Palestine, children are at risk to get harmed, injured, and die in their school life. Some Palestinian students are also have to walk through up to four military checkpoints just to reach their schools.<sup>[4]</sup>

A previous study recommended that teachers should have the knowledge, self-confidence, willingness, and skills to deal appropriately with health emergencies when a victim

needs such critical and timely care.<sup>[5]</sup> Consequently, training in FA and cardiopulmonary resuscitation (CPR) can be useful to decrease morbidity and mortality of children and increase survival rates, improve the prognosis of acute illnesses, and assist in symptom resolution.<sup>[6]</sup>

## Objectives

The purpose of this study was to examine the effectiveness of an education program on FA and CPR among school teachers in Hebron City, Palestine.

## METHODS

### Study design

A one-group pretest–posttest preexperimental design was used. Teachers employed in governmental schools

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in Hebron, Palestine, were enrolled. The sample size was 27 subjects as calculated according to Cohen's formula. Additional 13 subjects were included to have an adequate sample size in case of subject attrition. Three schools were selected to achieve the required sample size. Then, 40 teachers were randomly recruited from the selected schools.

### Data collection instruments

The 38-item, self-administered School Staff FA Knowledge Test (SSFAKT) was used to assess the teachers' FA knowledge.<sup>[7]</sup> The SSFAKT items are rated as "yes," "no," and "I don't know." Each item is scored 1 for a correct answer and 0 for a wrong or "I don't know" answers. The total score is 38. The Cronbach's alpha reliability of the SSFAKT was 0.79. The original version of the CPR checklist from the American Heart Association was used to measure the CPR skills.<sup>[8]</sup> A horizontal line visual analog scale (VAS) was used to measure the subjects' confidence in FA and CPR. The VAS has the following descriptors at the edges: "0" for "not confident" and "10" for "totally confident."<sup>[9]</sup> The study instruments were piloted on 10 teachers before the main study. Completion of the SSFAKT and VAS scales generally took 20 minutes, and the CPR observation checklist took 15 minutes.

### Intervention

The training program was designed to cover two main areas: knowledge of general FA and CPR skills. The sequence of the educational program was as follows: on the 1<sup>st</sup> day, teachers' CPR skills were pretested before the general FA knowledge because some questions in the SSFAKT can be used by teachers during CPR skills procedures. On the 2<sup>nd</sup> day, teachers received FA knowledge through lectures and group discussions. In addition, CPR skills were demonstrated on a SimMan manikin. On the 3<sup>rd</sup> day, the CPR skills and FA knowledge were posttested, respectively.

### Ethical considerations

Ethical approval was obtained from the Ethics Committee, IRB number (2019-2018/365/03). In addition, official letters were sent to the Directorate of Education/South Hebron and to the principals of each school to have their permission to conduct the study. The informed consent form was distributed on the first day of each subject.

### Data analysis

Data were analyzed using SPSS version 26 (Armonk, NY: IBM Corp). Descriptive statistics were calculated, and the Wilcoxon signed-rank test was used to compare the differences between the pretest and posttest mean scores.

## RESULTS

The mean subjects' age and work experience were  $38.9 \pm 10.3$  and  $11.7 \pm 9.7$  years, respectively. Of the 40 teachers, 29 (72.5%) were female, the vast majority (85%) held bachelor's degree, and in scientific specialties 75%.

Of 40 teachers, 75% reported that they were ready to provide FA and CPR procedures, but the majority of them (97.5%) declared that they had inadequate FA-related information. In addition, 30 (75%) teachers reported that they faced situations that required FA in the school context. The source for obtaining FA and CPR knowledge was mainly the Internet 16 (40%).

The mean scores for FA knowledge and CPR skills were higher in the posttests than in the pretests ( $P < 0.01$ ) [Table 1]. The subject's self-confidence mean score to provide FA and CPR was significantly higher in the posttest than in the pretest ( $P \leq 0.01$ ) [Table 2].

## DISCUSSION

In the present study, subjects showed readiness to provide FA in the schools' environment, because they frequently faced different incidents that required an immediate intervention for their students whether inside or outside the school boundaries. However, they admitted that they are not adequately prepared to provide such critical interventions. Several studies have shown that teachers frequently face numerous injuries in the school environment and that they have insufficient information and inadequate preparation regarding FA.<sup>[10]</sup>

It was found that the posttest FA knowledge was higher than the pretest. This means that the educational program has met its intended aims of improving teachers' FA knowledge, including how to deal with bleeding, fractures, burns, and procedures. These results are in harmony with previous studies.<sup>[10,11]</sup> The improvement in FA knowledge was attributed to several reasons: First, teachers felt responsible for dealing with injuries and illnesses specifically in the school context and generally in public areas. Second, teachers believed that they could improve prognosis through early intervention.

CPR skills were enhanced after the educational program. The effective acquisition of CPR skills in this study could be attributed to the performance of CPR through face-to-face demonstration, group learning, the research team, and the continuous immediate feedback given to the subjects for each step of the procedure. These findings were in harmony with the findings of previous studies.<sup>[11,12]</sup>

**Table 1: The Wilcoxon signed-ranks test of pre-and posttests of the first aid knowledge and cardiopulmonary resuscitation skills**

FA knowledge score	Range	Mean $\pm$ SD	Mean of change	Z	P
Pretest FA knowledge total score	0-38	17.30 $\pm$ 6.16	10.90	-5.47	<0.01
Posttest FA knowledge total score	0-38	28.20 $\pm$ 5.05			
Pretest CPR skills total score	0-10	1.50 $\pm$ 1.39	7.17	-5.53	<0.01
Posttest CPR skills total score	0-10	8.67 $\pm$ 1.60			

SD: Standard deviation, CPR: Cardiopulmonary resuscitation, FA: First aid

**Table 2: Effects of an educational program on the school teachers' self-confidence**

Self-confidence score	Range	Mean $\pm$ SD		Mean of change	Z	P
		Pretest	Posttest			
Self-confidence total score	0-10	2.58 $\pm$ 1.43	8.45 $\pm$ 1.30	5.87	-5.53	<0.01

SD: Standard deviation

It was found that teachers' self-confidence in performing FA and CPR was greater in the posttest than in the pretest. These findings are in line with previous studies.<sup>[12,13]</sup> The reason for the increase in subjects' self-confidence could be referred to as positive changes in subjects' behavior and self-awareness after education.

## CONCLUSION

The intervention improved teachers' FA knowledge, CPR skills, and self-confidence in performing FA and CPR. The researchers recommend urgent courses in FA and CPR in different settings to improve teachers' FA knowledge, CPR skills, and self-confidence to save students' lives.

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## Conflicts of interest

There are no conflicts of interest.

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