

## Effect of brief training program on first aid knowledge and practice among students aged 13-15 years: a pre-post-test study

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### ABSTRACT

School health services are almost neglected due to minimized awareness concerning common health problems and first aid management. This study aims at evaluating the effect of a brief training program on improving knowledge and practices targeting first aid among students aged 13–15 years. With the use of the pretest-posttest design, this quasi-experimental study has been employed. One hundred and ten school students (13–15 years old) in three randomly selected schools have been allocated to a 4-session experimental condition. The dependent variables of this study are knowledge and practice evaluated at the baseline (pretest) and post-intervention. The analysis has yielded that respondents have sufficient knowledge after receiving the training program targeting first aid compared to the baseline. Additionally, the findings indicate that respondents have sufficient practice with first-aid post-intervention compared to the pretest. This study has also provided additional evidence that a 4-session training program is predictive of positive outcomes in improving knowledge and practice targeting future school students. Besides, this study has empirically supported the effectiveness and feasibility of the training program in improving knowledge and practice.

### Key words:

training program; first aid; knowledge

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## INTRODUCTION

The school period experienced by the children has traditionally been regarded as one of the most vulnerable ages to injuries.<sup>1</sup> Almost every day, the child encounters a simple or severe injury, resulting in a variety of accidents such as fractures, bruising, loss of consciousness, and even asphyxia.<sup>1</sup> As a result, first aid is considered critical when caring for and transporting a child to medical care.

The school has numerous characteristics such as less risk awareness and more physical development. Children in schools have relatively narrow airways as a result of their characteristics; small body mass exposed to various types of risks and a higher risk of harm.<sup>2</sup> They generally have small bruises, but they may also experience significant injuries such as bleeding, fractures, or fainting, so first aid is meaningful as clinical treatment.<sup>2</sup> Many self-limited health conditions or minor injuries do not require treatment after using first aid.<sup>3</sup> School seems to be an essential institution for health care practices in emergencies. Healthcare facilities in schools have been very nearly ignored due to the absence of awareness about health problems and first aid management.<sup>4</sup> First aid knowledge and practices enable teachers and students to be more alert and aware of surrounding risks on the first hand. On the other hand, first aid training promotes a sense of safety and makes sure that the child is no longer vulnerable to accidents and injuries, along with being able to manage incidents. First aid training is crucial to building elements of safe healthcare practices among teachers, families, and students.

Globally, at least 875000 school students aged below 18 years die due to unintentional injuries and more than 95% of these deaths occur in countries with low and middle-income levels, as more serious

injuries have been reported at schools.<sup>6</sup> According to the World Health Report, the burden of the disease due to school injuries has increased from about 12% in 1990 to 15% in 2000 and about 20% in 2020. First aid training provides primary health care practices in the event of illness or injury by a person who is not an expert, but the instructor is subjected to training programs to increase the number of qualified people including school students. Hereafter, they can play the most important role in the domain of first aid and support basic life and public health. Recent shreds of evidence suggest the importance of providing school-aged children with first aid training to begin at the basic stage by applying the latest training and educational devices.<sup>7</sup> Several studies have reported the need for necessary knowledge and training for students about a safe school environment during injuries to support basic life measures, which is part of the life-threatening series.<sup>7-12</sup> Besides, existing pieces of research have recognized the critical role played by nurses to improve school children's knowledge and practices regarding first aid through applying the training program focusing on health management of injuries and reflecting the nurse's active role in serving the communities through training on safe school conditions.

As previously noted, an increasing amount of literature recognizes the importance of training programs to improve knowledge and practices concerning first aid among school children. To date, few recent studies have investigated the effects of training programs targeting knowledge and practices together among school-age children. More importantly, there has been limited empirical research undertaken in the Arab countries, especially in Jordan. Therefore, this study evaluates the training program's effectiveness among students aged 13–15 years by comparing the first aid

knowledge and practices at the baseline and post-intervention assessments in Al-Karak city, Jordan.

## METHODS

### *Study Design*

1-condition quasi-experimental research (intervention group) and two-time points: A pretest (baseline) and a post-test (after intervention) have been conducted among students aged 13–15 years in Al-Karak city, Jordan from September to November 2019.

### *Participants*

The inclusion criteria related to the participants are as follows: Being 13–15 years old and capable of reading and writing Arabic. Students with mental illness, and those who had previously participated in the intervention research, are excluded. A total of 110 students aged 13–15 years (59 males and 51 females) participated in this study. Table (1) illustrates the demographic characteristics of participants.

### *Measure*

The nature of the study necessitates the study questionnaires to comprise three sections.

#### **1. Socio-demographic Characteristics.**

This part consists of a self-administered questionnaire for the students and their parent's general socio-demographic information including child age, child gender, educational grade level, occupation, and educational level of the parents.

**2. Children's Knowledge.** This part is used to evaluate the group's knowledge of selected first aid pre and post-program. It consists of 47 questions; 1) first aid definition, 2) causes, signs, and symptoms, 3) first aid fainting and bleeding, 4) wound, 5) fracture, 6) simple burn, 7) epistaxis, and 8) asphyxia. The questionnaire's total score ranges from (0) to (47). In this study, the internal consistency for knowledge is .66.

**3. Children's Practice.** This part is used to evaluate practices about the following first aid: epistaxis, fractures, wounds, bleeding, simple burns, fainting, and asphyxia. There are 41 items on this checklist. The complete answer is rated one, while the incomplete answer is rated zero. In this study, Cronbach's alpha for practice is .92.

### *Intervention*

The brief training program contents are developed based on previous literature reviews 7, 9,12,16. The current study has four sessions of the training program, as session (1) consists of a background related to the first aid, definition, aim, content of bag and number for ambulance, bleeding, definition, cause, signs & symptoms, and the first aid for bleeding and epistaxis. Session (2) consists of the definitions, signs, symptoms, causes, and implementation of first aid for simple burns and wounds. Session (3) consists of the definition, causes, signs, symptoms, and implementation of first aid for fainting and asphyxia, while session 4 consists of the definition, signs, symptoms, causes, and implementation of first aid for simple fracture. The materials and equipment, such as PowerPoint, posters, video clips, and booklets, along with the schedule for each session are also prepared.

Before the data collection, the required preliminary visits are conducted and the selected school directors are also contacted. The cooperation from the director of the school and the feasibility of conducting the brief training program is also assured. The provision of a suitable place in each school to conduct the intervention is officially requested. The directors of the selected schools are informed through a written introductory letter with a brief description of the study's objective. A full explanation is given to all the children regarding the study's description, benefits, duration, procedure, confidentiality, and subject's rights. The

children and their parents verbally agreed to participate in the study. The informed consent is carefully read and reviewed with each child to ensure that they understand the form and that any questions raised by the child could be addressed. In the first session, the researcher introduced herself to the children and explained the objectives of the current study. The related subjects have received training program sessions as a four-day event. Each session is 90 min long and each group consists of seven to eleven subjects. The first evaluation (pretest) is conducted before the implementation of the training program, whereas the second evaluation (post-test) is immediately done at the last session of the program.

### ***Ethical Considerations***

The Research Ethics Committee approved the study proposal of Mutah University in August 2019. Official permission is also obtained from the directors of the selected schools. In addition, written informed consent is obtained from each participant before they take part in this study.

### ***Data Analysis***

The data were analyzed using V. 24 of the Statistical Package for Social Science (SPSS). Mean (*M*) and standard deviation (*SD*) are also used to describe the

continuous data. Frequencies and percentages are applied to describe the categorical data. Besides, the paired *t*-test is performed to compare dependent variables between two points (pretest and post-test).

## **RESULTS**

### ***Descriptive Results***

Table (1) illustrates the children's sociodemographic characteristics. About half of the students are aged 14 -15 years. Among the children, 53.6% are male and 46.36% are female. In terms of educational grade level, 50.91% of children are in the eighth grade and 49.09% are in the ninth grade. The majority (60.91%) of the children have lived in an urban area. For parents' educational level, approximately half of the parents (51.82%) have a Bachelor's degree, as most parents (60.91%) are employed.

Table (2) shows the changes in knowledge and practice across the two times (pretest and post-test). There is a significant difference between the pretest and post-test ( $t = -8.81, p < .001$ ). Concerning practice, the scores have significantly increased between the baseline and post-intervention ( $t = -12.93, p < .001$ ).

**Table 1.** Socio-Demographic Characteristics of Participants

<b>Socio-demographic characteristics</b>	<b><i>n</i></b>	<b>%</b>
Child Gender		
Male	59	53.64
Female	51	46.36
Child Age (yr.)		
13-14	57	51.82
14-15	53	48.18
Education Grade		
Eighth	56	50.91
Ninth	54	49.09

<b>Socio-demographic characteristics</b>	<b><i>n</i></b>	<b><i>%</i></b>
Residence		
Rural Area	43	39.09
Urban Area	67	60.91
Parents Educational Level		
Illiterate	7	6.36
Can Read and Write	9	8.18
Primary School Graduate	16	14.55
Secondary School Graduate	21	19.09
Bachelor	57	51.82
Parents Employment Status		
Employed	43	39.09
Unemployed	67	60.91

**Table 2.** Comparison of First Aid Knowledge and Practice Across the Two Times (Pre and Post-Intervention)

<b>Dependent variables</b>	<b><i>t</i>-value</b>	<b><i>p</i>-value</b>
Knowledge		
Pre-test	-8.81	< .001*
Post-test		
Practice		
Pre-test	-12.93	< .001*
Post-test		

Note: *p* values < .05, *t* = *t* value from paired independent sample test

## DISCUSSION

The influence of training programs related to first aid on children's knowledge and practices at preparatory schools has been identified. Concerning socio-demographic characteristics of participants, the findings indicate that around half of the students whose age group is between 14 and 15 years are from rural areas. This finding is in line with Kumar et al. 13 reporting that approximately half of the students are older than the age of 14 and are from rural areas. In terms of gender, it is noticed that more than three-quarters of the students are males; this result is consistent with Kumar et al. 13 demonstrating that 53.64 percent of the children are males. According to Ali et al. 15, concerning the effectiveness of the instructional program on the knowledge of graduated preparatory school children related to the selected

injury and emergencies for preparatory school children, most of the children have inadequate knowledge level and practices .

The preparatory school is considered the main target for the largest population in Jordan. Injuries are a major cause of high morbidity and mortality rates in childhood due to reduced awareness and a lack of prior experience. In some communities in the world in general and Jordan in particular, health services in school are predominantly neglected 15, resulting in a decrease in first-aid knowledge and practices. Fortunately, prompt application of first aid practices immediately following a bleeding fracture or injury may reduce the risk that may cause. The training program has the potential to improve patient outcomes, knowledge, and practices of children in preparatory schools concerning the selected first aid. This study's findings also agree

with Joseph et al. 16 reporting statistically significant differences in practices among preparatory school children after the training program compared to baseline assessment. Furthermore, the current study results are in the line with intervention studies conducted by (Bandyopadhyay et al., 9; Masih et al., 14) indicating a statistically significant difference in the mean scores of knowledge and practice after the training program among school children concerning the designated first aid intervention.

## **LIMITATIONS OF THE STUDY AND RECOMMENDATIONS**

Due to the nature of the study, there are several limitations. The first limitation of this study is related to the small sample size, which makes the generalization of the findings difficult, and thus there is an impact on the internal and external validity of the study results. Second, this study is conducted only among the children in Al-Karak City. Therefore, the findings of this study may not be generalized to other populations in other settings in Jordan. Future experimental studies should be extended to include other Jordanian areas. Third, this study also lacks a comparison between males and females. Future intervention research may use the stratified sampling technique based on the children's gender (male vs. female). Fourth, this study has only focused on two dependent variables; knowledge and practice. Future intervention research may involve additional dependent variables such as attitude. Lastly, this study lacks a follow-up assessment. Further intervention studies may consider a follow-up evaluation period, such as a 3-month and 6-months follow-up to obtain information on the sustainability the effectiveness of the program.

## **CONCLUSION**

In a nutshell, the study aims to evaluate the effectiveness of the brief training programs on first aid knowledge and practices among students aged 13–15 years in Al-Karak city, Jordan. This study has followed a quasi-experimental design (pretest-posttest). The participants in the intervention group have received four sessions of the brief training program, mainly focusing on first aid for bleeding, asphyxia, fainting, simple burn, wound, and fractures. For the effectiveness of the program on knowledge and practice, the findings indicated that the scores for the participants undergoing the training program were statistically higher after the intervention. It can be summarized from the intervention group study that the training program has a positive impact on improving the scores. The findings of this study have also revealed the benefits of an educational program as a type of supportive management for students aged 13-15 years old. Besides, the brief training program can serve as a vital basis for support contributing to improving health among schoolchildren. Overall, it can be concluded that the 4-session program is effective in improving first-aid knowledge and practice.

## **DECLARATION**

No conflict of interest.

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