

Research Article: The Impact of First Aid Training Program on School Health Staff Knowledge, Attitude and Practice at National Guard Girl Schools in Riyadh-Saudi Arabia

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Abstract

Aim of the study was to evaluate the impact of the first aid training program on school health staff knowledge, attitude, and practice at the National Guard girl schools, Riyadh-Saudi Arabia.

Materials and Methods: Quasi-experimental design was used. A purposive sample was conducted to enroll the study participants, the total number was 103 school health staff. A structured self-administered questionnaire was designed.

Results: The findings pointed out the mean age of the participants was (38.32 + 5.08). Sixty percent of the participants had less than 5 years of experience as school health staff and only 11.7% of them had received prior first aid training. There was a statistically significant difference between the total mean scores of the participants' knowledge and practice in pre/post-test. There was a substantial shift in participants' positive attitudes towards the training program in the post-test compared to the pretest.

Conclusion: Based on the results of the present investigation, there was an improvement in school health staff (advisors) knowledge, practices, and attitude towards first aid after application of the program.

Recommendation: A national initiative is highly recommended to make all schools in Saudi Arabia a safer environment through the provision of a national first aid program for school health advisors (staff).

Keywords: first aid; training program; health advisor

Introduction

Childhood injury is a significant public health issue that requires crucial attention. Across the world, injury and violence are the main contributors of mortality among children under the age of 18 years that accounted for around 950,000 deaths in children per year and where the different types of unintentional injuries represent nearly 90% of these cases. Although children can never be entirely protected from injury, several research has shown that a significant percentage of unintentional injuries are preventable. (Centers for Disease Control and Prevention [CDC]-Childhood Injury Report, 2019; World Health Organization (WHO),2006-2015). In addition, Centers for Disease Control and Prevention [CDC]-Childhood Injury Report, 2019; Epidemiology of accidental injuries in children, 2014) stated that the unintentional injury is projected to be 9.2 million children annually with an

initial emergency department visit around 2.8 million children. According to a systematic review including 10 studies from all over the world, there are intentional (i.e., violent or self-inflicted) and unintentional (i.e., accidental injuries) that claim more than 5.8 million lives or 10% of global mortalities annually, making them one of the leading causes of morbidity and mortality among children aged 10-19 years (Singletary, et al., 2015; Bakarman and Bashir, 2014; World Health Organization, 2013).

On the other hand, Bakarman and Bashir, (2014); Centers for Disease Control and Prevention, (2012) stated that injuries, disproportionately affect younger people, millions of non-fatal events result in lifelong physical and psychological disabilities, and decrease years of life span due to premature mortality, impacting not only those injured but also their families and economies as a whole. Therefore, children are considered a vulnerable

population that needs help and support in crises. Based on Tannvik, Bakke, and Wisborg, (2012); the International Federation of Red Cross and Red Crescent Societies [IFRCS], (2011) reported that the percentage of first aid given to trauma casualties worldwide range from 10.7% to 65%, but incorrect first aid is delivered in up to 83.7% of the cases. Furthermore, The World Bank, (2019) reported that children (age 0-14) make up about 25% of the world population today, and represent up to 42% & 30 % of low-income countries (LIC) and middle-income countries (LMIC) respectively and they are exposed to injury due to accidents, where in this injury is the leading cause of death in 1–14-year-olds in several countries and one in five injuries happen in school, but most child injuries can be prevented.

Overall, injuries are still a major cause of death, representing approximately 40% of all child deaths. The weight of injury in children is heavier among the poor with the burden greatest on children from low-income families. More than 95% of all deaths-related injuries in children occur in low-income and middle-income countries within all countries. Conversely, the child injury and death rate are much lower among children from developed countries Khan, Bhatti, Zia, and Farooq, (2013); Tannvik, Bakke, and Wisborg, (2012).

According to Faris, Alzeyadi, and Athbi, (2019); Dasgupta, Bandyopadhyay, and Das, (2014); Khan, Bhatti, Zia, and Farooq, (2013) reported that first aid training programs are essential for the school health staff or advisors as well as the students themselves who take the responsibility to deliver the immediate support to the school children or any person who suffer a sudden illness or injury with care provided to save a life, prevent the condition from worsening, and promote recovery. Furthermore, first aid training program includes initial intervention in an emergency condition before professional medical help is available for performing the basic first aid while awaiting an ambulance, as well as providing supportive measures for the minor conditions, such as applying a plaster to the wound or injury site (Singletary, et al., (2015); Bakarman and Bashir, (2014); International Federation of Red Cross and Red Crescent Societies [IFRCS], 2011).

Significance of the study

Generally, first aid can be performed by the layperson or non-expert, with many people trained in providing basic levels of first aid, and others willing to do so from acquiring knowledge. In addition, first aid is an extension of the concept of psychological support which covers mental health condition and support the people undergoing emotional suffering from exposing or seeing a traumatic event or injury (Mobarak, Afifi, and Qulali, (2015); Dasgupta, Bandyopadhyay, and Das, (2014); World Health Organization, (2010). Hence, a variety of circumstances in which laws recommended a first place to look for mandated first aid training should be in schools because the students invest the majority of their life in school where they may have distinctive types of minor accidents, such as bruises and scratches, and major accidents such as bleeding, and fractures which may have an effect on their present and future condition of well-being. In addition, school-age children's properties do not realize enough the environmental hazards surrounding them and children become easy prey to fall into those risks without intention (Behairy and Al-Batanony, 2016; Alharbi 2016; Mobarak, Afifi and Qulali, 2015; Dasgupta, Bandyopadhyay, and Das, 2014).

On the other hand, in Saudi Arabia, there are a few research studies regarding first aid. Meanwhile, there are no researches about first aid training program carried out in the National Guard girl schools, Riyadh, Saudi Arabia among school health staff or advisors to evaluate their knowledge, attitude, and practice towards this area of research. Hence, this study was conducted in light of King Saud bin Abdul Aziz University for Health Sciences (KSAU-HS) strategic goal to create and facilitate university-wide involvement in services that promote community health and engage in social responsibility.

Therefore, this project is targeting to improve knowledge, attitude, and practice (KAP) of school health staff / advisors through first aid training program at the National Guard girl schools, Riyadh-Saudi Arabia. Consequently, the project outcome will provide the Saudi community in general and the National Guard girl schools in specific, with trained school health staff / advisors who are equipped with the knowledge, and skills

regarding the first aid interventions that are needed within the premises of the school environment. Based on that, this project was carried out to prepare the school health staff or advisors at the National Guard girl schools for starting the practice of the fundamental skills of the first aid during emergency events to save students' lives and enrich the quality of life thereby creating a safe school environment. In this study, the researchers provided first aid training program, which helped the school health staff or advisors to know how to perform the basic skills of the first aid as an immediate help through (5'S) which involved "Support, Safety, Secure, save a life, Survive" particularly in the initial phase of the accident or any emergency situation. Hence, training of school health advisors regarding the proper first aid management delivered at a right time can save a student's life and reduce the morbidity and mortality as well as minimize the occurrence of functional limitation and disability.

Aim of the study was to assess the impact of first aid training program on school health staff knowledge, attitude, and practice at the National Guard girl schools, Riyadh- Saudi Arabia.

Material and Methods

Research design: A quasi-experimental study with one group with pre and post-test research design was conducted to achieve the objectives of the current study. A community-based survey was conducted to collect the baseline information on first aid management. This community survey was an important supplement for surveillance of the school health advisors' knowledge, attitude, and practices (KAP) regarding first aid particularly relevant in emergencies where the target population information is lacking. According to the baseline data from this survey, the first aid training program's required information was developed by specific methodological expertise.

Setting: The current study was conducted at the National Guard girls' schools, in Riyadh the capital city that is affiliated with the office of education, Ministry of education, Saudi Arabia, where the study participants were representative from 37 schools that involved in the study.

Sample: The total number of the study sample was 103 school health staff (advisors) who are an ongoing advisory group composed primarily of individuals selected from segments of school teachers, they are appointed by the school district-Ministry of education for monitoring the students' health condition, maintaining the safety of the school environment as well as providing first aid intervention for the students to save their lives in an emergency situation. In Saudi Arabia. A purposive sample was applied to involve the school health advisors at the National Guard girls' schools. The inclusion criteria of the study sample included were females, the school health advisors who are hired at the National Guard girl schools, and willing to participate in the study. Meanwhile, the exclusion criteria included were the school health advisors who attended the first aid training program recently at least three months prior to the current study.

Data Collection Tools: After an extensive review of the relevant literature, a structured questionnaire was constructed in the Arabic language by the research investigators. A group of experts from the community health nursing and medical-surgical nursing specialty examined the content validity and any required modifications were carried out accordingly. A structured self-administered questionnaire included four tools:

Tool (I): Socio-demographic characteristics- that includes age, qualification, and years of experience as school health advisors, and previous attendance in any first aid training program and duration of the training program if any.

Tool (II): Knowledge Regarding First Aid Questionnaire – that consists of questions to assess the level of knowledge regarding the first aid in different emergency among school health advisors. This questionnaire included two parts:

(II.1) General Knowledge Questionnaire – that contains questions regarding definition of first aid, the purpose to learn first aid skills, the characteristics of the first aid rescuer, basic steps taken during provision of

first aid, first aid materials kit, emergency call numbers and how first aid rescuer protects herself for the duration of the first aid, the principles to be taken during emergency situations, and participants' source of information about first aid.

(II.2) Specific Knowledge Questionnaire – that comprises of questions regarding definition, causes, signs and symptoms associated with different types of emergency cases, and the basic skills of the first aid that can be delivered to the following emergencies situations: fainting, seizure, heat stroke, choking, burns, epistaxis, wounds, fractures, and eye injury. Participants' response were scored as follows: (1) = correct answer, (0) = incorrect answer. The total score of knowledge items were summed up and converted to percentage, which are as follows: (Good Knowledge = > 70percentage); (Fair Knowledge = 50% -70%), and (Poor Knowledge = < 50%) similar with prior research done by El magrabi, Aly, and Khalaf, (2017); Abdelrahim, Mohamed, Ahmed, Zakria, (2015).

Tool (III): Observational Checklists-that includes nine main types of emergency cases, which may occur in the school environment such as fainting, seizure, heatstroke, choking, burns, epistaxis, wounds, fractures, and eye injury. The observational checklists were utilized to observe the school health advisors' performance regarding the first aid management procedures. The evaluation of the participants' skills performance was scored as 2 for "done correctly" and 1 for "not done correctly". Total scores for each checklist were calculated separately by summing up the items and converted into a percentage as $\geq 60\%$ as "adequate performance", and $< 60\%$ as "inadequate performance" identical with prior research done by El magrabi, Aly, and Khalaf, (2017); Ahmed, (2016).

Tool (IV): Attitude Questionnaire – that consists of eight questions to assess school health advisors' attitude toward first aid in pre-and post-training programs. These questions reflect the readiness of the participants to change and how they perceived the benefits of the first aid program before and after training. The participants' response options rated on percentile scale from 100 % - 0.0 %. A higher score ($\geq 70\%$) indicates that the participants have a positive attitude; (50% - <70 %) indicates a neutral attitude and a lower score ($< 50\%$) indicates the participants have a negative attitude toward the first aid parallel with a prior research done by Al-Tameemi and Khudair, (2016).

Validity of the content material of the first aid program observational checklist

All checklists were revised by a panel of four experts from the community health nursing and medical-surgical nursing at CON-R for clarity, relevance, comprehensiveness, and applicability.

Pilot study

It was carried out on eleven school health advisors who represented 10% of the total study sample to test the clarity of the tools and to estimate the time required to fill in the questionnaire. This piloted sample was excluded from the total sample. Required modification was done in the questionnaire accordingly.

Ethical consideration

The research committee and Institutional Review Board approved the research proposal. All study participants were fully informed regarding the purpose of the study, voluntary participation and clarified that there are no potential risks associated with their participation and they have the right to withdraw from the research at any time without penalty. Confidentiality and anonymity were assured and there are no identifiers or personal information collected from the participants.

The educational program

The researchers based on the relevant literature had developed the educational program. This program was designed to improve knowledge, attitude and practice (KAP) of school health advisors through the first aid training program.

I-Assessment phase: The researchers developed the training program materials based on the pre-test assessment, which denoted knowledge deficit and unsatisfactory practices among school health advisors regarding first aid.

II-Planning phase: This phase constituted the project-scheduling plan for conducting the training program. This schedule plan included the number of the teaching sessions, venue, audiovisual aids, handouts, preparing of the equipment and supplies needed for the practical training, etc. The study sample was divided into 10 groups in a variety of numbers ranging between 10-11 school health advisors in each group according to the numbers of study sample size. In addition, every group were further divided into subgroups according to the number of researchers who carried out the practical sessions. The location in which the program was conducted at the office of education for the National Guard girl schools, in well-prepared rooms for demonstration of the first aid procedures.

Teaching Time: was planned according to the coordination between the principle investigator and the coordinator at the office of education for the National Guard girl schools.

Teaching methods and materials: The researchers used simple teaching methods such as lectures, power-point presentations, group discussions, demonstrations, and return demonstrations. Additionally, other teaching media was used such as brochures, handouts, and showing videos for the facilitation of the learning process among the study participants.

III- Implementation phase: This training program was conducted for six months according to the scheduled plan; every group takes three sessions to complete the program content according to the research plan. In the fieldwork, the first aid program content was built upon the assessment phase to have an effective learning process that may help them to increase their knowledge and practice towards first aid management. The content of the training program was divided into three sessions:

a. The first session, the researchers introduced themselves to study participants and explained the purpose of the study. Pre-test (T1) was done before the implementation of the training program to assess the school health advisors' knowledge, attitude and practice. Subsequently, the theory classes that covered all general and specific knowledge regarding the first aid were laid out, followed by the practical classes that included demonstration and re-demonstration of the basic skills of the first aid for different emergency situations like; fainting, seizure, heatstroke, choking, burns, epistaxis, wounds, fractures, and eye injury.

b. The second session, in which demonstrations of all the procedures that are involved in the first aid training program context were carried out. These demonstrations were performed by the teaching assistants of the College of Nursing, Riyadh and then followed by re-demonstration of the procedures by the school health advisors. Post-test (T2) was done immediately after complete the implementation of the practical sessions to assess the level of improvement in knowledge, attitude and practice of the study participants.

c. The third session is called "Refreshment Session" in which re-demonstration of all procedures by the school health advisors after 6 months from the program to evaluate the level of knowledge retention among the school health advisors. Post-test (T3) was done after 6 months to follow up the progress of the school health advisors in their knowledge, attitude and practice.

These program sessions gave the opportunity for the school health advisors to process and integrate knowledge into practice, and allow them to become more competent and confident in their abilities to perform these skills.

IV- Evaluation stage: Time of evaluation was included: pre-test (T1) which was conducted before beginning of the first aid training program; post-test (T2) which was carried out after completing the first aid training program by 3 months; and post-test (T3) which was conducted after 6 months to follow up the progress of the school health advisors' knowledge, practice and attitude towards first aid training program.

Data analysis

Data entry and analysis were performed by using SPSS (Statistical Package for Social Science), version 22. The descriptive statistical analysis represents the frequency, mean, and standard deviation for describing data. Paired-samples T test was used to measure knowledge, practice, attitude of the study participants before immediately and 6 months after completing the program, and analyze the differences. P-value was statistically significant when $p < .05$.

Results

Table (1) presents the sociodemographic characteristics of the study participants. As inferred from this table, more than two-thirds of the study participants, 77.7% belong to the age group between 25 to less than 35 years

Table (1) Socio-demographic characteristics of school health advisors in the study participants

Variables	Study Participants (n=103)	
	n	%
Age/Year		
25-	80	77.7
35-	23	22.3
45 +	0	0.0
Qualifications		
Bachelor Degree	88	85.4
Diploma Degree	15	14.6
Years of experience as school health advisor		
< 5 yrs.	62	60.0
> 5 yrs.	41	39.8
M±SD	2.67±1.45	
Have you received first aid training previously?		
Yes	20	19.4
No	83	80.6
If you received trained previously, when was that training?		
<1-yr.	0	0.0
1-2yr.	12	11.7
3-4yrs	8	7.8
>5 yrs.	0	0.0
Duration of the last first aid training program / day		
1 day	0	0.0
1-2 days	8	7.8
3-4days or more	12	11.7

Figure (1) exhibits the first hypothesis that stated, “The study participants who received the first aid training program may exhibit a significant improvement of their knowledge levels to manage in emergency situations during the school day in the post-program intervention compared to pre-program intervention”. In figure (1), the findings showed that the study participants have an improvement in their “general knowledge” about first aid. In pre-test T1, more than three-quarters of the study participants (82.5%) had poor general knowledge compared to post-test (T2 & T3) the study participants had a good level of knowledge (71.8% & 82.5%) respectively. Similarly, the findings showed that the study participants have an

with a mean age and SD (28.32 ± 5.08), and the majority of participants (85.4%) had a bachelor degree. The results revealed that 60% of the study participants had less than 5 years of experience as school health advisors with a mean \pm SD (2.67 ± 1.45). The majority of the study participants (80.6%) had not received any training program previously regarding first aid, while the minority of them (19.4%) received the first aid training program previously. Only (11.7%) of the study participants had received a first aid training program previously from the last one to two years and lasted for 3-4 or more days.

improvement in their “specific knowledge” about first aid. In pre-test (T1), more than two-quarters of the study participants (77.7%) had poor specific knowledge compared to post-test (T2 & T3) wherein the study participants had good specific knowledge (71.8% & 83.5%) respectively. Moreover, the findings showed that the study participants have an improvement in their “total knowledge” about first aid. In pre-test T1, more than two-quarters of the study participants (77.7%) had poor knowledge compared to the post-test (T2 & T3) the study participants had good specific knowledge (71.8% & 82.5%) respectively.

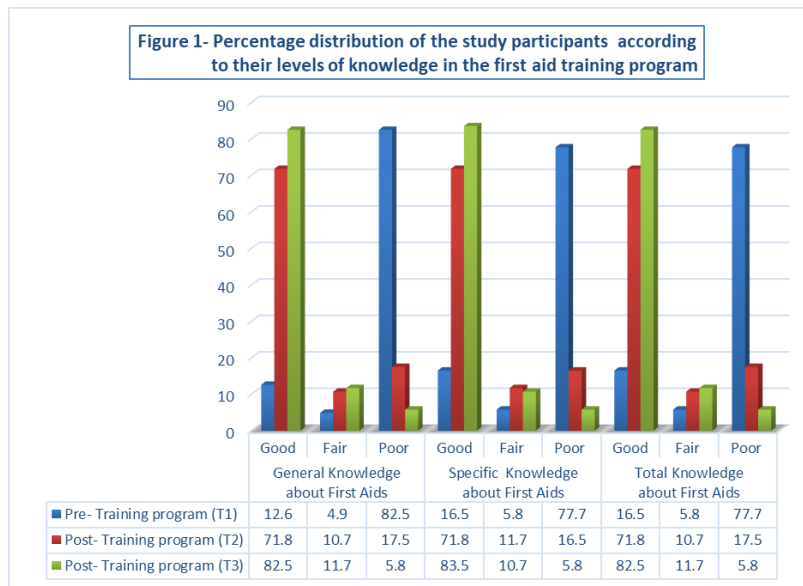


Table (2) exemplifies the comparison of total mean scores difference between knowledge of the school health advisors in pre and post-test regarding the first aid training program. The results illustrated that there were highly statistically significant differences between mean scores of general, specific, and total knowledge in the pretest (T1) and posttest (T2) at p-value (.000) each. In addition, this table presents that there were statistically significant differences between mean scores of general, specific, and total knowledge in the pretest (T1) and posttest (T3) at p-value (.015), (.044), and (.036) respectively.

Table (2) Comparison of total mean scores difference between knowledge of the study participants in pre and post-test regarding the first aid training program

Type of knowledge	Time of Program Evaluation	Paired Differences					t	df	Sig. (2 tailed)
		Mean	SD	Std Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
General knowledge regarding first aid	Pre -Training Program (T1)	.73	.447	.04	.64	.82	16.5	102	.000
	Post -Training Program (T2)								**
	Pre -Training Program (T1)	.13	.517	.05	.23	.025	2.4	102	.015
	Post -Training Program (T3)								*
Specific knowledge regarding first aid	Pre -Training Program (T1)	1.4	3.72	.37	13.71	15.1	39.3	102	.000
	Post -Training Program (T2)								**
	Pre -Training Program (T1)	.48	6.34	.63	1.72	.77	.76	102	.044
	Post -Training Program (T3)								*
Total knowledge regarding first aid management	Pre-Training Program (T1)	1.52	3.88	.38	14.41	15.9	39.5	102	.000
	Post -Training Program (T2)								**
	Pre -Training Program (T1)	.60	6.76	.67	1.92	.81	.90	102	.036
	Post -Training Program (T3)								*

$p < .05$

$** p < .001$

Figure (2) exhibits the second hypothesis that stated, “The study participants who received training program may exhibit a significant improvement in their skills performance regarding the first aid management in emergency situations during the school day in the post-program intervention compared to pre-program intervention”. On the topic of heatstroke procedure, the finding shows that there was an improvement in the study participants’ adequate performance in posttest T2 & T3 (88.3% & 97.1%) respectively, verifying contrast to their adequate performance during the pretest T1 (22.3%). For both procedures, eye irrigation and choking, there were improvements in their adequate performance in posttest T2 (94.2% & 90.3%) respectively and posttest T3 (92.2% & 91.3%) respectively compared to adequate performance in the pretest T1 (15.5% & 16.5%) correspondingly. In addition, this figure revealed that adequate performance of the study participants had increased dramatically in posttest (T2) 85.4% compared to pretest (T1) 6.8% regarding burn procedure, while this

adequate performance had a slight decline to 71.8% in 6-month posttest (T3) after application of the training program. As for the adequate performance for fracture procedure, it sharply increased from 12.6% in the pretest T1 to (91.3% & 94.2%) in post-test T2 and T3 respectively. Furthermore, for wound care and seizure skill procedures, there was an improvement in their adequate performance in posttest T2 (96.1% & 95.1%) respectively as well as with posttest T3 (94.2% & 97.6%) respectively as compared to their adequate performance in pretest T1 (10.7% & 11.7%) respectively. Additionally, improvement in their adequate performance in epistaxis and fainting procedures were also detected in posttest T2 (98.1% & 94.2%) respectively and posttest T3 (89.3% & 91.3%) correspondingly as compared to their adequate performance in the pretest T1 (10.7% & 11.7%) respectively.

Figure 2- Percentage distribution of the study participants according to their skills performance in the first aid training program

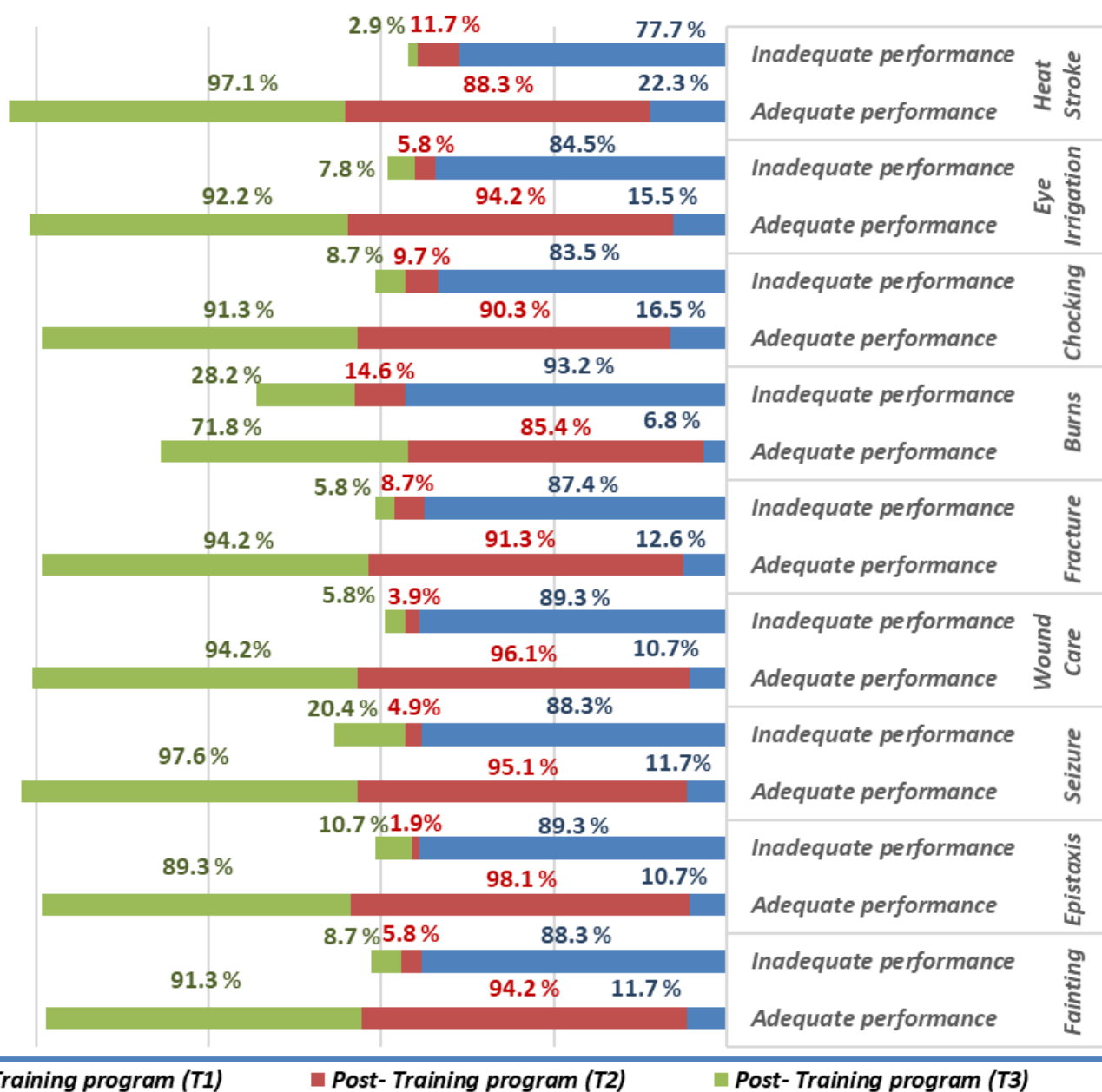


Table (3) illustrates the comparison of total mean scores difference between skills performance of the school health advisors in pre-and post-test regarding the first aid training program. There was a highly statistically significant difference between mean scores of performances of school health advisors related to first aid management of all procedures in the pretest (T1) compared to posttest (T2) since $p\text{-value} = (.000)$. Moreover, this table demonstrated that there were highly statistically significant differences between mean scores of epistaxis and seizure skills performance of the school health advisors in the three phases of assessment (T1, T2 & T3) where $p\text{-value} = (< .001)$. Furthermore, this table demonstrated that there were statistically significant differences between mean scores of first aid skills performance of fracture and fainting in the pretest (T1) compared to posttest (T3) as $p\text{-value} = (.036)$ each, in addition to heatstroke and choking management as $p\text{-value} = (.019)$ each within the same period of assessment.

Table (3) Comparison of total mean scores difference between skills performance of the study participants in pre and post-test regarding the first aid training program

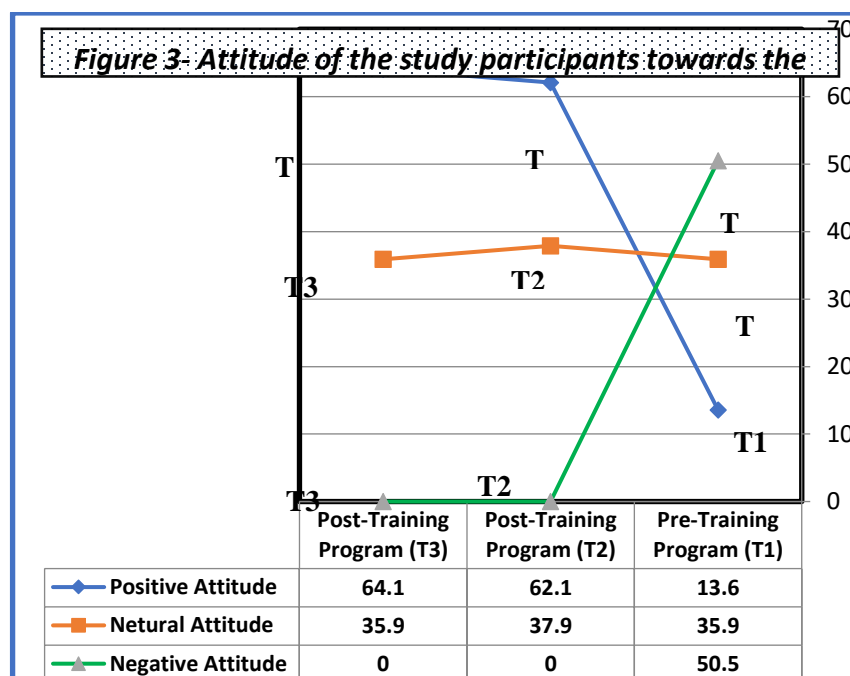
Pair 1 Performance	Time of Program Evaluation	Paired Differences					t	df	Sig. (2- tailed)
		Mea n	SD	Std. Erro r Mea	95% Confidence Interval of the Difference				
					Lower	Upper			
First aid management for wound care	e -Training Program (T1) st -Training Program (T2)	.85	.41	.04	.93	.7750	21.3 5	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.01	.31	.03	.041	.08	.63	102	.053*
First aid management for fracture	e -Training Program (T1) st -Training Program (T2)	.79	.44	.04	.87	.70	18.3 4	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.03	.33	.03	.093	.035	.90	102	.036*
First aid management for epistaxis	e -Training Program (T1) st -Training Program (T2)	1.85	.45	.045	1.94	1.77	41.6 6	102	.000**
	st -Training Program (T1) st -Training Program (T3)	1.07	.43	.04	.98	1.15	25.4 3	102	.000**
First aid management for fainting	e -Training Program (T1) st -Training Program (T2)	.83	.43	.04	.91	.7412	19.4 8	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.03	.33	.03	.035	.093	.90	102	.036*
First aid management for seizure	e -Training Program (T1) st -Training Program (T2)	.83	.42	.04	.92	.73	20.0 6	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.16	.48	.05	.061	.2491	3.28	102	.001**
First aid management for heat stroke	e -Training Program (T1) st -Training Program (T2)	.66	.53	.05	.76	.56	12.5 4	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.09	.37	.04	.16	.01	2.38	102	.019*
First aid management for choking	e -Training Program (T1) st -Training Program (T2)	.73	.44	.04	.82	.65	16.9 4	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.01	.383	.04	.08	.07	.26	102	.019*
First aid management for burns	e -Training Program (T1) st -Training Program (T2)	.79	.456	.05	.88	.70	17.4 6	102	.000**
	st -Training Program (T1) st -Training Program (T3)	.134	.560	.06	.02	.25	2.46	102	.016*
First aid management	e -Training Program (T1) st -Training Program (T2)	.79	.411	.04	.87	.71	19.37	102	.000**

* $p < .05$

** $p < .001$

Figure (3) displays the third hypothesis that stated, "The study participants who received training program may exhibit a positive attitude towards the first aid management in emergency situations during the school day in the post-program intervention compared to pre-program intervention". The results displayed that half of the study participants had a negative attitude toward the first aid program before starting the training program as shown in the pretest result

(50.5%). After conducting the training program, there was a substantial shift in participants' attitude from negative to positive in posttest T2 (62.1%) and posttest T3 (64.1%) compared to pretest T1 (13.6%); none of the participants had a negative attitude after the program.



Discussion

Across the world, the school health services still required more support from the health care delivery system. In many Arab countries, school health advisors are accessible instead of professional school nurses due to a shortage of nurses (Abdella, Abu-Elenen, Elkazaz, and Moussa, 2015; Al-Robaiaay, 2013). According to a systematic review including several studies from all over the world, there is an apparent lack of knowledge and practice among the school health advisors or staff regarding first aid management in the emergency situations during the school day as a result of a limited training program which in turn leads them to exposure to traumatic events and challenges (Alharbi, 2016; Ahmed, 2016; Abdelrahim, Mohamed, Ahmed, Zakria, 2015).

Therefore, this study aimed to reduce these challenges through an educational training program for first aid that provide basic knowledge and practice for school health advisors regarding first aid management in an emerging situation within the school premises that could lead in minimizing complications and further impairment or disability.

The result of the present study revealed a remarkable improvement in the study participants' knowledge in the post-test T2 and post-test T3 compared to pre-test T1. This result was consistent with El-magrabi, Aly, and Khalaf (2017; Abdella, Abu-Elenen, Elkazaz, Moussa, 2015; Mobarak, Afifi, and Qulali, (2015) who reported that there was inadequate knowledge about pediatric first aid among staff in the preschools' setting in the pretest and it was improved in the posttest, and there was a statistically significant difference between knowledge scores about first aid in pre and post-test p-value (.000). Furthermore, Al-Robaiaay, (2013) showed that more than three-quarters of the teachers had poor first aid knowledge before the implementation of the educational program compared to the post intervention program findings which revealed a significant improvement in both knowledge and performance.

Regarding skills performance, there was an obvious improvement in skill performance of the study participants in the post-test T2 & T3 compared to pre-test T1, and there was statistically significant difference between a

study participant's skills performance regarding the first aid in pre T1 and post-test T2 & T3. Aligned with the result of Abdella, Abu-Elenen, Elkazaz, and Moussa (2015) who stated that before the program, most of the teachers' knowledge and practice were unsatisfactory compared to the results in the post-test and follow up sessions which were satisfactory with statistically significant difference. In addition, the current result is supported by El magrabi, Aly, & Khalaf, (2017); Behairy and Al-Batanony, (2016); Hirca, (2012) who exemplified that study participants have poor knowledge and incorrect situational practice in pretest compared to post-test and follow up test after an educational program where the results revealed a significant improvement in their level of knowledge and practice; in addition, there was a statistically significant difference in the pre and post & follow-up tests.

The results of the current study exhibited the research hypotheses that the implementation of an educational training program significantly improved knowledge and practice of the school health advisors regarding the first aid management in emergency situations during the school day in the post-training program compared to the pre-training program. This result is consistent with Al-Yahya I, et al., (2019); Abd El-Hay et al. (2015) who stated that the positive effect of a training program about first aid and basic life support on the management of educational risk injuries among students in industrial secondary schools and found that there was a significant improvement in the level of knowledge among students post-program. According to Behairy and Al-Batanony (2016); Touré, Benoist, Faye, Kane, and Kaadioui, (2011) who reported that the educational program has a positive effect; the results of these studies indicated that most of the teachers had inadequate knowledge and performance pre intervention program, and was improved significantly after conducting the training program.

Regarding the attitude of the studied participants, the findings had remarkable positive influence on participants' attitude. Before starting the program, the majority of participants had a negative attitude toward the first aid management and only a small percentage of 13.6% expressed a positive attitude. After conducting the training program, there was a significant shift in participants' attitudes from negative to positive in posttest T2 & T3

compared to pretest T1. Furthermore, this positive attitude remained steady even after six months of conducting the program which indicates that the program established a continuous positive impact and not only on a short-term basis but similarly for an extended duration as supported by literature. This result was supported by Bakarman and Bashir (2014); Li, Jiang, Jin, Qiu, and Shen, (2012) who stated that the trained staff had more positive attitude significantly in comparison to the untrained staff ($p = 0.01$), and the personnel who are working in private schools had more positive attitude than those who were working in governmental schools. Likewise, Al-Tameemi and Khudair, (2016) exhibited that the majority of the studied group had a positive attitude toward first aid after conducting a training program (93.4%).

Overall, the results of the current study revealed that the first aid training program has a positive impact on the knowledge, practice, and attitude of the study participants. These results were aligned with Thomas and Therese (2015); Masih, Sharma, and Kumar, (2014) who revealed that the impact of the training program on primary school teachers' knowledge which revealed that all the study participants (100%) had inadequate knowledge in the pretest training program, compared with 22% after conducting the program.

Conclusion and Recommendation

There was a significant improvement in knowledge, practice, and attitude towards first aid program among school health advisors after application of the training sessions at National Guard girl school, Riyadh, Saudi Arabia. To maximize the benefits and to generalize the results of this project; we highly recommend having a national initiative to make all schools in Saudi Arabia a safer environment for students through the provision of a comprehensive program that includes teaching basic concepts and practical sessions of first aid for school health advisors.

The current competency level among school health advisors is inadequate thus, immediate measures need to be considered at the national level to promote a nationwide proposal of first aid training followed by a follow-up training in all schools in Saudi Arabia. With the current lack of school nurses within the Kingdom of Saudi Arabia, adopting this national initiative is a major necessity that could save students' lives.

Conflicts of interest disclosure: The authors declare that there is no conflict of interest.

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