



Journal Homepage: - www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI: 10.21474/IJAR01/3438
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/3438>



RESEARCH ARTICLE

THE EFFECT OF A STRUCTURED FIRST AID EDUCATIONAL TRAINING COURSE AMONG SECONDARY SCHOOL STUDENTS IN MAKKAH CITY, AN INTERVENTION STUDY.

Muhammad A. Mirza¹, Hassan Bukhari¹, Enas H. AlFalogy², Najwa S. Mohammed³, Abdulrhman M. Basfar³, Sanaa R. Kelantan³, Weam A. Dowayd³, Alaa M. Al-Talhi³, Abdulaziz I. Marhoomi³, Mohammad D. Alsahafi³ and Hossam H. Saleem³.

1. Assistant Professor General Surgery Department, Faculty of Medicine, Umm Al-Qura University Makkah, Saudi Arabia.
2. Family medicine department, Faculty of Medicine, Umm Al-Qura University Makkah, Saudi Arabia.
3. MBBS, Faculty of Medicine, Umm Al-Qura University Makkah, Saudi Arabia.

Manuscript Info

Manuscript History

Received: 10 December 2016
 Final Accepted: 16 January 2017
 Published: February 2017

Key words:-

first aid, Knowledge, students, secondary school.

Abstract

Background: Students' knowledge about first aid is considered a lifesaving and a preventive measure from injuries. As injuries are considered a threat to school students mainly in secondary schools, therefore first aid is vital for them to be able to deal appropriately with such injuries. Aim of the study was to assess the effect of a structured training course on students' knowledge and behavior regarding first aid in secondary schools.

Methods: Quasi-experimental pre-post study design including 220 participants selected by multi-stage sampling from all five educational sectors of Makkah, students' knowledge and behavior regarding first aid are assessed prior and after training which includes theoretical as well as practical parts.

Results: After the intervention, behavior score was improved significantly from 9.5% to 95.0% while knowledge score was improved significantly from 72.3% to 83.6%. 22.7% of the participants have received previous training. Mean knowledge and behavior score increased significantly from $69\% \pm 15\%$ to $75\% \pm 15\%$ and from 46 ± 12 to $79\% \pm 11\%$ respectively. There was positive correlation between knowledge and behavior.

Conclusion: First Aid Courses provided by Medical School Student result in a significant improvement in overall knowledge and behavior scores of the secondary school student. Repeated courses tend to have a significant improvement.

Copy Right, IJAR, 2017,. All rights reserved.

Introduction:-

Injuries between school students are from the most dangerous health problems worldwide today as it can cause significant lifelong disability or even death. So first aid is very important in such injuries. Laypersons are central factor for saving lives in emergency conditions. But, one chief barrier and primary concern of laypersons about providing first aid to injured persons is the apprehension to make mistakes. In Austria 68% stated that they could not

Corresponding Author:- Muhammad A. Mirza.

Address:- Assistant Professor General Surgery Department, Faculty of Medicine, Umm Al-Qura University Makkah, Saudi Arabia.

provide first aid because they feared to carry out something in the wrong way(1). Numerous studies have revealed a clear association between the level of first aid education and the excellence of first aid measures and actions provided (2, 3). This emphasizes the value of first aid training for the public. It is well-known that the school location can be one of the most common locations to witness an emergency (2), Early and appropriate management of such emergencies and injuries can reduce complications and mortality (4). Appropriately administered first aid indicates the discrepancy between life and death, quick versus delayed recovery and short-term versus long term disability (5) so this study was conducted on the grounds of evaluating the outcomes of giving a first-aid course to secondary school students 16 - 18 years old as they are a part of an age group that represent the majority of our population. It is well known that it's the school's responsibility to look after the students and try to avoid these emergencies and to deal with injuries that need appropriate first aid (6), but training the students to do so themselves is much more beneficial and helpful and seemed to be applicable (2, 7). (Burns,wounds,chocking,fractures, convulsions and fainting)are the topics which our training course had a focus on (6). According to a study was conducted in Riyadh, Saudi Arabia, 2012 aiming to evaluate peoples' opinions about receiving a practical first aid training course, their result showed that 50% of those who where interested to learn were between the ages of 15-19 years old.

Thus our main aim was to assess and evaluate students' knowledge and behavior before and after receiving the training, and to identify and correct those common mistakes they perform, that might lead to unwanted complications.

Methods:-

A pre-postquasi-experimental intervention study was conducted on secondary school students from all five educational sectors of Makkah, a total of 14 governmental schools were selected. 6 schools were assigned for male students and 8 were assigned for female students. The final sample size was 220 student (104 male=47.27% and 116 female =52.72%)recruited by is multistage random sample. After that they obtain a written consent from their parents.

Aself-administered questionnaire was developed divided into 3 sections. The first section included socio-demographic background of each student and another two questions were added to assess their general background on first aid training. The second section included questions to assess the knowledge of first aid skills in the most important topics such as burns,wounds,chocking, fractures and convulsions. While the third section included case scenario based questions to assess their behavior towards different emergency cases based on the above-mentionedtopics. 9 questions for the knowledge section were assigned and 19 questions to assess the behavior, 5 of which were labeled as common mistakes questions. The scoring system was as follows: each correct answer was coded as 1 and false answers were coded as 0. Each section was given an individual scoring system in order to pass the training course. The overall passing score was 60% for each section (60% for knowledge and 60% for behavior). Any score that was 60% or above was labeled as good and any score that was less than 60% was labeled as poor.

The study was conducted through the following phases: preparation, assessment, implementation, and evaluation.

- **Preparation phase:** This phase involved:
 - Obtaining an approval from the ethical committee of the college of medicine at Umm Al-Qura University and alsothe ministry of education's approval to address the schools of Makkah was obtained.
 - Each school was visited to provide the students with a written consent for the parents attached to the site map, and a form of the pre-intervention questionnaire.
- **Assessment phase:** This phase involved:
 - Collection of the consents and the questionnaires. The questionnaires were solved under the teacher's supervision.
 - An SMS text message was sent to all included students with the day, place and time for the training course, the setting of the training took place in the skills lab of the college of medicine at Umm Al-Qura University.
- **Implementation phase:** This phase involved:
 - A group of 37 Male and female Undergraduate Well-Trained 6th year Medical students from Umm Al-Qura University have provided free an intensive first aid course for Our Sample, Delivered in one day

made up of two parts Theoretical part presented as a slide show and Role playing practical part focused on Burns, Wound, Fracture , Fainting and Convulsion .

- The students were divided into two groups, each group came in a different occasion to compensate with the number of instructors available and the capacity of the educational classes, and to insure adequate delivery of the information to the students.
- Each group was given a one-day training course consisting of two parts, a theoretical part that was provided as PowerPoint slide show as well as practical part, which was explained by giving case scenarios of different emergency situations.
- The training course was given by 6th year medical students who were provided with the same course adapted from the American Heart Association guidelines of 2010.
- Our scientific material was developed according to the same guidelines of 2010. The topics included were burns,wounds,chocking,fractures, convulsions and fainting.

▪ **Evaluationphase:** This phase involved:

- A post-intervention questionnaire was provided immediately after the training has been completed to evaluate their knowledge and behavior post intervention.
- The students were E-mailed with a certificate of attendance.

Statistical Analysis:-

Data entry and statistical analysis was done using SPSS 20.0 statistical software package. Data was presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations for quantitative variables. To assess the differences in percentage on qualitative variables Chi- Square test was used with P value less than 5 %. Correlation between knowledge and behavior was done using spearman's correlation test.

Results:-

The questionnaire was given to 220 students who completed the questionnaires and got the consent from their parent and were fit to attend the course. Among those, 104 (47.3) were boys and 116 (52.7) were girls. There age 16-18 years. 50 students had attended a first aid course before. 16 were boys and 34 were girls. Total knowledge percentage has increased from 73.3% to 83.6%. (Figure1). There was a significant difference between male and female (P value <0.05) in pre and post knowledge score. Good knowledge increased by 25.9% in females as it changed from 65.5% to 91.4% post intervention. However in males good knowledge surprisingly decreased by 4.8% from 79.8% to 75% after the intervention.

The mean knowledge score increased significantly from $69\% \pm 15$ into $75\% \pm 15$ post intervention. The total behavior after the intervention shows statistically significant change as total behavior percentage increased by 85.5% and increased from 9.50% to 95.0% as demonstrated in (Figure2).

The mean behavior score increased significantly from $46\% \pm 12$ to $79\% \pm 11$. There was no significant difference between male and female in pre and post behavior score.

(Table1) shows the most significant result regarding the knowledge and behavior throughout pre and post intervention assessment.

However, there was a significant weak positive correlation between knowledge and behavior pre-intervention ($r=0.132$; $P<0.05$). The knowledge and behavior post-intervention changed into significant moderate positive correlation ($r=0.350$; $P<0.01$).

(Table2) demonstrates the wrong answers that be chosen by students which represent the common mistake in our society.

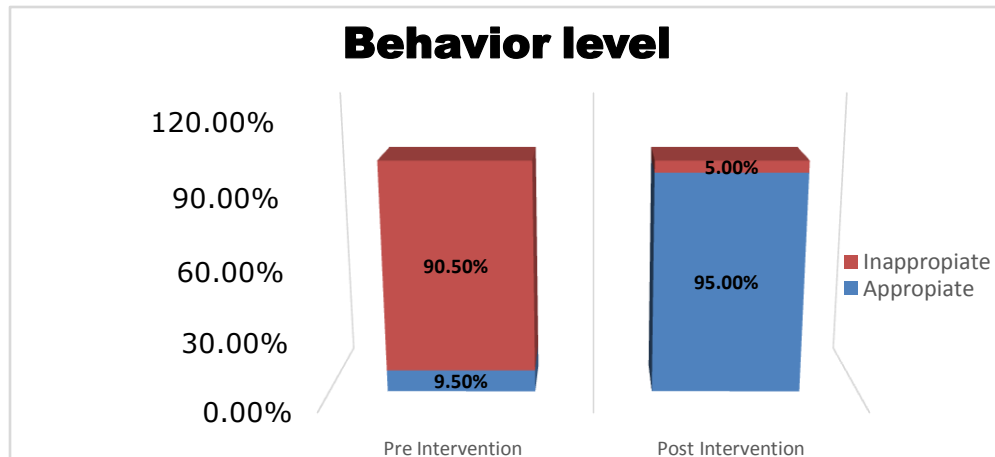


Figure1.Percentage of good and poor knowledge pre and post intervention.

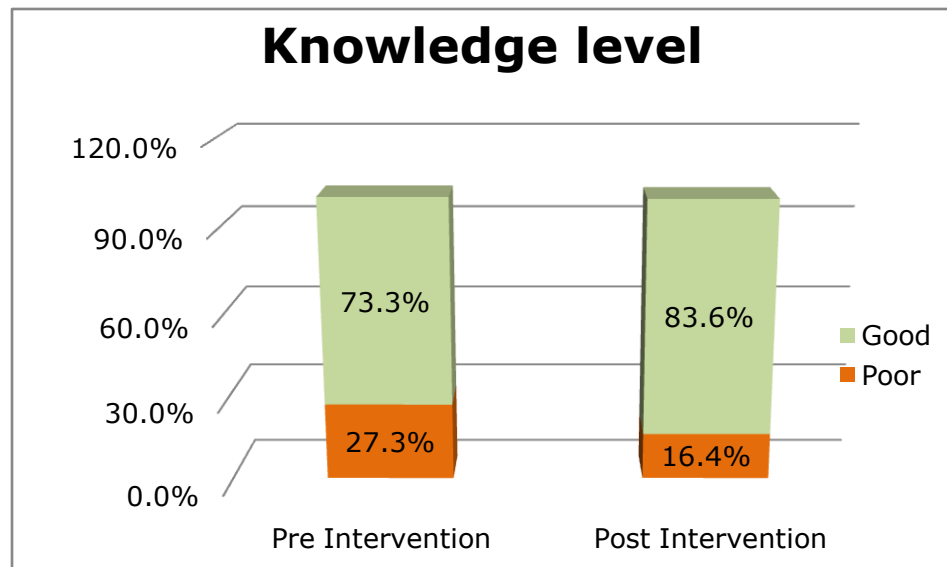


Figure 2:- Percentage of appropriate and inappropriate behavior pre and post intervention.

Table 1:- Knowledge and behavior assessment

noitnevretni erP ON %	noitnevretmitsop ON %	eulav P
ruvabeB		
103 46.8 %	165 75 %	0.000
138 62.7 %	194 88.2 %	0.000
85 38.6 %	164 74.5 %	0.000
147 66.8 %	212 96.4 %	0.000
68 30.9 %	152 69.1 %	0.000
70 31.8 %	176 80.0 %	0.000
105 47.7 %	139 63.2 %	0.005
200 90.9 %	214 97.3 %	0.016
152 69.1 %	209 95.0 %	0.000
84 38.2 %	206 93.6 %	0.000
Knowledge		
172 78.2 %	211 95.9 %	0.000
34 15.5 %	119 54.1 %	0.000
152 69.1 %	207 94.1 %	0.000
156 70.9 %	186 84.5 %	0.003
177 80.2 %	105 47.7 %	0.000

Ensure safety of the surrounding environment is first step to do in case of a fracture injury
Applying cold packs over the fractured part is the appropriate action in case of a fracture injury
Stopping the bleeding is the ideal action to take if the fractured part was showing through the skin
Applying continuous pressure over the wound site in case of a bleeding wound
Leaving a sharp object that has penetrated the skin in place and calling an ambulance is the appropriate action to take
Covering the injured person with a dry blanket is the next step to do after putting out the flames
Sitting down on the nearest safe place is the appropriate action to take if you felt like losing your consciousness
Asking someone who is choking while eating food to cough forcefully is the appropriate action to take
Placing the child's abdomen on your forearm while his head is facing downwards and tapping gently on the back is the appropriate action to do in a choking child
Ensuring the safety of the surrounding environment in case of a convulsing patient is the appropriate action to take
The number of ambulance in Saudi Arabia is 997
Lose of consciousness inability to response for less than a minute then return to normal
Standing behind the person, press in their abdomen is the action to help person with obstructed airway
The ability to response is not a sign of convulsion
After the convulsion is over what is the best action to check their pulse and put them on their side

Table 2:- Percentage of common mistakes

Common mistakes	Pre intervention No %	Post intervention No %	P value
Trying to open the patient's mouth during convulsions	169 76.8%	38 17.3%	0.000
Putting the patient's head back and pressing over the tip of the nose during nose bleeds	114 51.8%	9 4.1%	0.000
Using toothpaste over the area of burned skin from hot boiling water	103 46.8%	4 1.8%	0.000
Using honey over the area of burned skin immediately after the accident	86 39.1%	4 1.8%	0.000
Using coffee beans to stop the bleeding nose if it continues	70 31.8%	3 1.4%	0.000

Discussion:-

The Aim of the current study was to assess the effect of a structured training course on students 'knowledge and behavior regarding first aid in secondary schools

The present study findings demonstrated that unexpected percentage of students with Good level of knowledge 73.3% pre-intervention, which increased significantly up to 83.6% post – intervention in both gender. Our results were consistent with, a study conducted in Karachi which showed that only 8.3% medical students had poor knowledge while 63.2% had good knowledge and 28.3% moderate knowledge (8, 9).

The foregoing present study finding is also in agreement with the results of Abd El -Ghany A., etal. (2014) Who reported that 76.5% had already good knowledge about first aid while 23.5% from them didn't have appropriate information about it. The value of medical knowledge in the health education should be noticed because improvement in knowledge is the an essential step in the way of correct practice and behavior modifications (10).

However, in the same Direction with the current study, a study was conducted in Egypt 2014, overall their population only 1 % had satisfactory knowledge at the pre-test phase, compared to 100% school students in the post-and follow up phase.

In addition to other studies conducted about first aid have shown higher result of poor knowledge than good knowledge, even in those was conducted on medical student or medical staff, Like in a Peruvian study that showed out of 52.5% medical students have had prior medical emergencies training, 60.4% had poor knowledge about first aid. A study conducted in Mangalore, India reported 17.8% medical student had poor knowledge, while in a Dutch study 81% junior doctors had poor knowledge about first aid.

This might be attributed to 22.7% of our students have attended to a first aid program before the current intervention as knowledge was improved from 84.0% pre intervention to 90% post intervention in previously trained group and shows statistically significant improvement in their behavior as well .

The foregoing present study finding is also in agreement with the results of Khan F. etal. (2010)(11) as reported that students having received previous training scored better than those who had no previous training but still the mean score itself is quite low emphasizing the need for update courses so as to remain one self-updated with latest improvements.

According to the present study results, After the intervention, percentage of students with appropriate behavior was improved significantly from 9.5% to 95.0%. at the same time as The mean behavior score increase significantly from 46 % \pm 12 pre intervention to 79 % \pm 11 post intervention.

Which is Consistent with Ann K., etal (2010)(12) who showed that there was significant increase in mean scores of first aid practice after training, most likely due to an improvement in knowledge after intervention.

As regards to correlation between knowledge and practice among studied students. The study results showed that there were statistically significant positive correlation between total knowledge and behavior right through the study. This may be accredited to the improved knowledge among students raise their awareness and drive to perform first aid properly. This result was in agreement with Kano M., etal. (2005) (13) who revealed that the first aid training significantly increased knowledge and practice as well.

Additionally, Muneeswari B. (2014) (14)revealed that there was statistically significant positive correlation between knowledge performance of the students

Recommendations:-

Based on results of the current study the recommendations are; It is necessary that first aid must be an essential part of the curricula in secondary school, Schools should develop process and procedures for first aid for students within secondary school, First aid and training program should be fundamental part of high school programs so that to ensure that students could obtain enough knowledge and have the ability to help the people in emergency circumstances, First aid should be accessible to students at school to reduce the morbidity and mortality of injuries

and accidents, And regular and frequent training courses are crucial for students in to recognize the practical aspects of first aid.

We would also hope to implement a mandatory training course to be included within the educational curriculum of secondary school students by the Ministry of Education based on the promising results of our study. Continuous education is recommended to maintain the gain and for continuous improvement.

Limitations of the study:-

Transportation was an issue for some students to Umm al-Qura University where the first aid teaching was done especially for females.

Acknowledgment:-

This research was supported by the medical student as for the budget and by the medical college for halls for presentations and training.

We would like to thank our colleagues who did the data collection part of this research:

Abdulaziz A.Neazy, Abdulrahmman H.Alshareef, Abrar A.Alshareef, Alaa A. Muri, Ameera S.Almatrfi, Amr M.Abduljawad, Areej Y.Kateb, Aseel H.Almagrabi, Asim A.Kably, Baraah B.Damanhour, Faisal O. Alrefaie, Faisal S.Mandourah, Ghufraan H.Kheshaifaty, Ghufraan M.Maji, Haneen S. al Sufyani, Hashim H.AINadwi, Hesham A. Bahadur, Hind A. Almaghrabi, Kawther T.Barnawi, Mai S.Alqasimi, Moayid O.Fallatah, Mohamed K. Alzahrani, Muhammad A.Alghamdi, Nawaf H. Fatani, Rana I.Farran, Roaa N.Filfilan, Saife A.Selati, Sawsan A. Jan Khan, And Wafa'a J.Alharbi.

We deeply appreciate and thanks Dr. Fatimah Hhamzah Abunaji, resident in Surgery at king Faisal specialist hospital in Jeddah for Sheet coding And reviewing Data entry

References:-

1. Van de Velde S, Heselmans A, Roex A, Vandekerckhove P, Ramaekers D, Aertgeerts B. Effectiveness of nonresuscitative first aid training in laypersons: a systematic review. *Annals of emergency medicine*. 2009;54(3):447-57. e5.
2. Wafik W, Tork H. Effectiveness of a first-aid intervention program applied by undergraduate nursing students to preparatory school children. *Nursing & health sciences*. 2014;16(1):112-8.
3. Kalaiyarasan G. A Study on First Aid Awareness among Higher Secondary School Students in Sivagangai District. *International Journal of Multidisciplinary Approach & Studies*. 2015;2(1).
4. Singer AJ, Gulla J, Thode Jr HC, Cronin KA. Pediatric first aid knowledge among parents. *Pediatric emergency care*. 2004;20(12):808-11.
5. Lingard H. The effect of first aid training on Australian construction workers' occupational health and safety motivation and risk control behavior. *Journal of Safety Research*. 2002;33(2):209-30.
6. Bashir SM, Bakarman MA. Are Our Children in Safe Hands? Evaluating the preparedness of primary school staff in Jeddah, Saudi Arabia in responding to health related emergencies. *Life Science Journal*. 2014;11(11).
7. Meissner TM, Kloppe C, Hanefeld C. Basic life support skills of high school students before and after cardiopulmonary resuscitation training: a longitudinal investigation. *Scandinavian journal of trauma, resuscitation and emergency medicine*. 2012;20(1):1.
8. Mobarak AS, Afifi RM, Qulali A. First Aid Knowledge and Attitude of Secondary School Students in Saudi Arabia. *Health*. 2015;7(10):1366.
9. Joseph N, Kumar G, Babu YR, Nelliyanil M, Bhaskaran U. Knowledge of first aid skills among students of a medical college in Mangalore city of South India. *Annals of medical and health sciences research*. 2014;4(2):162-6.
10. Aya Abd el Ghany AA, Asmaa Amen, Leena Sayed, Mostafa El Nady, Nourhan Yasser and Sohaila Atef. Knowledge about First Aid Measures to Skin Injuries among Suez Canal University Dorms Students. *American Journal of Research Communication*. 2014;2(8).
11. Khan A, Shaikh S, Shuaib F, Sattar A, Samani SA, Shabbir Q, et al. Knowledge attitude and practices of undergraduate students regarding first aid measures. *Journal of the Pakistan Medical Association*. 2010;60(1):68.

12. Carruth AK, Pryor S, Cormier C, Bateman A, Matzke B, Gilmore K. Evaluation of a School-Based Train-the-Trainer Intervention Program to Teach First Aid and Risk Reduction Among High School Students. *Journal of school health*. 2010;80(9):453-60.
13. Kano M, Siegel JM, Bourque LB. First-Aid Training and Capabilities of the Lay Public: A Potential Alternative Source of Emergency Medical Assistance Following a Natural Disaster. *Disasters*. 2005;29(1):58-74.
14. Muneeswari B. A study to assess the effectiveness of planned health teaching programme using child-to-child approach on knowledge of selected first aid measures among school children in selected schools at Dharapuram in Tamil Nadu, India. *Global journal of medicine and public health*. 2014;3(1):18.