Research Article

Assessing The Level of First-Aid Knowledge Among Undergraduate Medical Students in King Saud University

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ABSTRACT

Objective: 1. To assess the level of first-aid knowledge among undergraduate medical students in King Saud University.
2. To compare the level of first-aid knowledge between students across the five years of medical training in King Saud University.
3. To assess the difference in first-aid knowledge between trained and untrained students
Methods: A cross-sectional study was conducted on a sample of 200 students across the five years of the College of Medicine, King Saud University. Using the simple random technique with the help of a questionnaire, the data were processed using SPSS (version 21).
Results: The mean score of correct answers was 11.4 (47%). First-aid trained students had higher mean scores than untrained students, while fifth-year students scored better than any other year.
Conclusion: Overall, students' level of first-aid knowledge was moderate. Inadequate first-aid knowledge among medical students might be related to the lack of first-aid training courses implemented in the curriculum throughout the five years of medical college and to the students' lack of interest in participating electively in extracurricular first-aid training programs.

Keywords: *First aid; Medical students; First-aid training, Medical school, Saudi Arabia*
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INTRODUCTION

First aid comprises a variety of easy, yet vital, life-saving skills and techniques performed on an injured person in any life-threatening condition, prior to them receiving professional health care. It is defined as the assessments and interventions that can be performed by a bystander (or by the victim her/himself) with minimal or no medical equipment. A first-aid provider is someone with formal training in first aid, who is not necessarily a healthcare worker [1].

Providing first aid where applicable can help to decrease the victim's chance of mortality and prevent the condition from deteriorating [2]. First aid also includes the promotion of recovery in minor incidents. Since incidents requiring first aid can occur anywhere, first-aid equipment should be available in work places, schools, and at public gatherings to allow healthcare providers to intervene more easily.

The importance of first-aid knowledge is becoming increasingly apparent to medical students as they encounter many medical situations in their daily lives outside the hospital that require first-aid intervention to limit the extent of the

injury or to improve victim status prior to medical intervention. This increase in medical emergencies is due to the fact that more hospitals have established statistics centers that keep track of the number of emergency cases that are seen, it is important to ensure that healthcare providers are well trained in dealing with such events [3, 4].

A well-trained medical student should be able to assess the situation and provide care to the victim. Unfortunately, the first-aid knowledge and skills of students of the College of Medicine, King Saud University are deficient, due to the lack of emergency courses in the curriculum, and this could affect the way in which medical students deal with first-aid situations [5].

Many studies have been performed, worldwide, to assess the level of medical students' knowledge in providing first-aid care. In the Saudi Arabian context, for example, a study was conducted at King Faisal University, Al-Ahsa, to assess first-aid knowledge amongst medical students [6]. However, Afifi's study is outdated and was conducted in another region of Saudi Arabia, with different resources in terms of first-aid courses and providing centers. Therefore, the aim of the present study was to assess first-aid knowledge among undergraduate medical students in the College of Medicine, King Saud University.

METHODS

This quantitative observational cross-sectional study was conducted from November 2014 to April 2015, in the College of Medicine, King Saud University, Riyadh, Saudi Arabia. Ethical approval for the study was obtained from the Institutional Review Board, College of Medicine, King Saud University. The target population included male and female medical students from the five different years of study, ranging in age from 18-25 years. Postgraduate medical students, interns, and students older than 25 or younger than 18 years old were excluded from the study sample. The necessary sample size was estimated to be 200 students, according to the formula $N = (Z^2 P (1-P))/e^2$. Permission was obtained from the Student Affairs department to access student lists for the five different medical years. A simple-random sampling method was then used to select 40 students (20 men, 20 women) from each medical year.

A pre-tested self-administered close-ended questionnaire [7, 8] with yes, no, and I don't know answers was used in the present study. It consisted of two sections: one section testing general knowledge of first aid and a second section testing knowledge about handling a variety of emergency situations, including trauma, fractures, burns, seizures, bites, and bleeding. All the participants signed a written consent form in which it was indicated that the information obtained would be confidential and used solely for educational purposes. Two different survey forms were used in this study, a paper-based survey form and an online survey, both of which included the same content. The online survey was necessary in order to overcome the challenges of survey distribution and students' responses, particularly for first- and second-year female students who study in a different building. A pilot study was conducted with 20 students to evaluate the questionnaire efficacy before collecting the actual data.

The data collected were subjected to statistical analysis using the Statistical Package for the Social Sciences (IBM SPSS, Statistics version 21 software). We used the mean percentage of correct answers to measure the level of knowledge among our student sample. In order to measure the differences in knowledge level across the five different years, we compared the mean scores of each year using the ANOVA test with a p-value of .05. A t-test was then applied to compare the mean scores between trained and untrained students and between male and female students at a 95% confidence interval.

RESULTS

As shown in Table 1, a total of 200 students (100 (50%) male and 100 (50%) female) completed the questionnaire, with 40 (20%) students from each year. Among the sample, 101 (50.5%) students had previously participated in first-aid courses, while 194 (97%) students felt it necessary to learn first-aid skills.

Table 1. Distribution of students by year, gender, and first-aid course participation

Year	n	%

First	40	20.0
Second	40	20.0
Third	40	20.0
Fourth	40	20.0
Fifth	40	20.0
Total	200	100
Gender	n	%
Male	100	50.0
Female	100	50.0
Total	200	100
Have you participated in any first-aid courses?	n	%
Yes	101	50.5
No	99	49.5
Total	200	100
Do you find it necessary to learn first-aid skills?	n	%
Yes	194	97.0
No	6	3.0
Total	200	100

Table 2 shows the distributions of students' answers regarding first-aid knowledge. Most students (mean percentage = 68 %) answered the general knowledge first-aid questions correctly. However, the majority of students either failed to answer (do not know) or answered incorrectly questions about the respiratory system, circulatory system, seizures, burns, fractures, and bites (mean percentage = 54%, 54%, 55%, 56%, 56.5%, 63%, respectively). A minor difference, with a mean percentage of 50.5% for false/do not know, was recorded for questions regarding bleeding.

Table 2. Percentage of students' answers regarding first-aid knowledge

Section	Incorrect/do not know		Correct	
	n	%	n	%
General Knowledge about first aid	191	32.0	409	68.0
Respiratory System	323	54.0	277	46.0
Circulatory System	323	54.0	277	46.0
Bleeding	303	50.5	297	49.5
Seizure	329	55.0	271	45.0
Burns	335	56.0	265	44.0
Fractures	339	56.5	261	43.5
Bites	380	63.0	220	37.0
Total	2523	52.6	2277	47.4

Table 3 shows the mean scores of students in each medical year in relation to first-aid knowledge. Fifth-year students showed a statistically significant higher level of knowledge (p ≤ .05) than the other years. Fourth-year students showed a statistically significant higher level of knowledge (p ≤ .05) than first- and second-year students. There was no significant difference between the mean scores of first-, second-, and third-year students.

Table 3. Comparison between the mean scores of students in different medical years in relation to first-aid knowledge

Year	Mean	Standard Deviation	F value	P value
First	$9.72^{*\dagger}$	3.90		
Second	$9.60^{*\dagger}$	3.44		
Third	10.76^{*}	2.84	18.29	≤ 0.001
Fourth	12.05^{*}	3.10		
Fifth	14.87	2.69		

Note: $p \leq .05$, * Significant versus fifth year, † significant versus fourth year

Table 4 shows the mean scores in first-aid knowledge questions of trained students (those who had previously taken at least one first-aid course) and untrained students (those who had not previously taken any first-aid courses). There was a statistically significant difference in the level of knowledge between the two groups ($p \leq .05$), in favor of the trained group.

Table 4. Comparison between the mean score of trained and untrained students regarding first-aid knowledge

Students	Number (Total = 200)	Mean Score	Standard Deviation	T test value	P value
Trained	101	12.53^{*}	3.79	4.59	≤ 0.001
Untrained	99	10.21^{*}	3.33		

Note: $p \leq .05$

There was no statistically significant difference between male and female students regarding their knowledge of first aid. The mean score of female students was 11.53 with a standard deviation of 3.78, while the mean score of male students was 11.24 with a standard deviation of 3.74.

DISCUSSION

In the present study, we measured the level of first-aid knowledge among undergraduate medical students in a medical college in Saudi Arabia. A questionnaire was administered comprising 24 questions on first aid: participants answered an overall mean number of 47% of questions correctly, while no student answered all questions correctly. We view this as reflecting a low to moderate level of first-aid knowledge among the sample, and feel that most students lack sufficient background in first-aid applications. A similar finding has been reported amongst the students of King Faisal University in Al-Ahsa College of Medicine, with two-thirds of students feeling they had a minimum knowledge of first aid, and the majority thinking they should consider taking first-aid training courses [6]. We believe a better level of knowledge could be achieved by implementing compulsory first-aid courses within the curriculum of the Medical College in King Saud University.

Most of the students in our sample (mean percentage = 68 %) answered questions regarding general knowledge of first aid correctly. However, the majority of students either failed to answer (do not know) or answered incorrectly for questions about the respiratory system, circulatory system, seizures, burns, fractures, and bites (mean percentage = 54%, 54%, 55%, 56%, 56.5%, 63%, respectively). In our view, these results indicate that students were more familiar with the theoretical aspects of first aid, as tested in the first section of the questionnaire, but lacked specific knowledge to answer questions about possible first-aid scenarios, with more than half of such questions answered incorrectly.

Our results are comparable to those of many previous studies. In a study conducted in Iraq, for example, students of Mosul University demonstrated poor knowledge of first aid [7], while another study, in Karachi, concluded that trained

students had a better knowledge of first aid than untrained students [2]. A cross-sectional Tanzanian study, conducted in 2012, discussed the inadequate first-aid knowledge among students of four medical colleges and concluded that the lack of such knowledge was indicative of the fact that only a few had received first-aid training [9].

In addition to measuring the general level of first-aid knowledge among undergraduate medical students, we also measured the mean scores of each medical year, separately. We found that there was a statistically significant difference in the mean score of 5th year students compared to the other years (at 14.9/24), which might be attributed to many causes. First, approximately two-thirds of the fifth-year sample had previously attended a first-aid course, compared to a lower number of students in the other years. This may have helped the fifth-year students to respond more accurately to the different sections of the questionnaire. We also considered that some courses from the latter years of the medical school include information on first aid (for example, toxicology, primary care, surgery, medicine), which may also have helped fifth-year students to demonstrate a higher level of knowledge.

Trained students are obviously better at dealing with first-aid situations than untrained students, since they have gone through specialized first-aid training courses. This makes them eager to emphasize their knowledge of first aid by taking additional courses in the medical college, and finally, gives them an advantage over untrained individuals. Although trained students had a mean score of 12.5, which was statistically significant compared to untrained students, this score was below our expectations. This may be due to inadequate or overly focused first-aid training courses that do not familiarize students with the wider aspects of first-aid applications.

Comparing male and female students, no statistically significant difference was found between them regarding their first-aid knowledge, with an approximately similar number of trained students in both genders. The results indicate that male and female medical students had equal chances and similar opportunities to participate in first-aid courses.

Regarding the limitations of the study, there were no reliable data to determine if the level of knowledge tested was high or low. Therefore, we have provided our own interpretation of the results and compared our results with those of other studies.

CONCLUSION / RECOMMENDATIONS

In conclusion, the present study has demonstrated that the overall knowledge of undergraduate medical students in the College of Medicine, King Saud University was 47%, which is relatively inadequate and needs to be addressed, taking into account the frequent but devastating emergency situations that we encounter in our lives. We believe that first-year medical students' inadequate first-aid knowledge is related to the lack of first-aid training courses implemented in the curriculum throughout the five years of medical college as well as to the students' lack of interest in participating electively in extracurricular first-aid training programs.

Implementing mandatory first-aid programs and courses is becoming a necessity not only in medical colleges but also in other colleges and even at school level. Raising the awareness of first aid among the general populace through campaigns, brochures, and advertisements might be a helpful contribution to minimize the possible harm, to help decrease the mortality and morbidity rates, and to promote recovery in minor incidents.

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