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Awareness of First Aid Among Undergraduate Students in Ajman, UAE

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Abstract :
Background: *Thousands of lives are lost each year in situations where first aid could have made the difference, which include around 2,500 who asphyxiate from a blocked airway and 29,000 who die from heart attacks. Intervention of first aid would have made a dramatic difference, in the case of choking, or by recognizing life-threatening signs in the case of heart attack, and caring for someone injured until medical help arrives. Equipped with this knowledge of first aid we can all be the difference between a life lost and a life saved*
Aim/Objective: *The aim of this study was to assess the awareness of first aid amongst undergraduate students of Ajman University and Science and Technology (AUST).*
Materials and Methods: *A cross sectional study was carried out at AUST. A questionnaire with 17 objective questions on various emergencies was distributed to be filled voluntarily among the female undergraduate students of 8 different colleges of AUST. Data collected from these questionnaires was entered/tabulated in Microsoft Excel and the statistical analysis was done using SPSS version 22.*
Results: *The overall mean correct response was 6.7± 2.6 out of 15. Mean score was highest for the students who belonged to College of Dentistry 8.3 ± 2.4. Significant difference was seen amongst students who had taken first aid course previously when compared to those who had not.*
Conclusion: *The level of knowledge and awareness of first aid is not satisfactory among AUST students, which emphasizes the need for compulsory first aid training program with practical activities*
Keywords: *Awareness, First aid, Undergraduate, Emergency, First response*

I. Introduction

First aid is the initial, immediate, temporary care given to an injured or sick person in life threatening situations and taking effective action to keep the injured or ill person alive and in the best possible condition until emergency medical services and treatment can be obtained. A first aider needs to be able to assess and take control of the situation, keep calm and organized and does not replace the role of paramedic nurse or physician[1]. Being of assistance at the first point of care is a necessity in our fast paced, eventful everyday life. Thousands of lives are lost each year in situations where first aid could have made the difference, which include around 2,500 who asphyxiate from a blocked airway and 29,000 who die from heart attacks. Intervention of first aid would have made a dramatic difference, in the case of choking, or by recognizing life-threatening signs in the case of heart attack, and caring for someone injured until medical help arrives. Equipped with this knowledge of first aid we can all be the difference between a life lost and a life saved[2]. Among the most critical and visible health problems in UAE today, are catastrophic accidents and illness and the resultant disabilities. A cross sectional study carried out in Dubai in the year 2010 found that the numbers of road traffic injuries are increasing steadily over the years with a 38% increase from the year 2002 to 2008 among UAE inhabitants.

The associated mortality showed an overall increase of 54% during the same period. The study also found that the age distribution of road traffic injuries fell under showed two age groups 18 to 26 years and 63 to 71 years[3]. These figures show that there is a need for training of young adults of the UAE in first aid and CPR. A study conducted in Germany showed that majority of bystanders had little or no first aid training and concluded that there was a direct relationship between the level of first aid training and quality of first aid measures taken by the bystanders[4]. Observational studies reported that in more than half of the cases bystanders were at the accident site before the arrival of medical care. If these bystanders are able and willing to provide any help like control the bleeding, perform rescue breathing can potentially save lives and reduce delays in seeking medical assistance[5]. In a study conducted among public school teachers in Midwestern United States, showed one third had no training in first aid and 87% of them strongly agreed that emergency care training should be included in their preparatory programs[6]. First aid provided by the by-standers has the potential to

reduce morbidity and mortality from common injuries[7]. In order to accomplish greater response in first aid of common injuries and illnesses, a broader circulation of first aid knowledge to the public is mandatory[8].Elemental training courses of first aid must develop individuals to provide relevant and efficacious management for a wide range of conditions[9].UK National survey highlighted some crucial first aid managements and disturbing absence of knowledge in first aid subject. This is notably worrying as almost 4,000 people annually die in UK accidents at home[10]. Poor results were also revealed in researches such as United Arab Emirates based study which showed that only 10 % of the public knew first aid management[11] and a study done in Shanghai amongst preschool staff members where only 3.7% obtained passing scores in first aid knowledge[12]. These findings were similar to a Turkey based study, which concluded that majority of the teachers lacked knowledge in first aid treatments[13]and an Ireland based study where physical training teachers had poor knowledge to treat emergencies[14]. However, an American based study revealed that roughly half of its participating parents knew 60% of the questions related to first aid[15].Knowledge in first aid and management of medical emergencies was seen to be low even in medical students. Studies done among Peruvian and Dutch medical students showed that 60.4%[16] and 81% had poor knowledge in first aid[17] respectively.

This was in contrast to a study done in Karachi and India, which revealed that 91.5%[18] and 82.2%[19] of medical students had adequate first aid knowledge respectively. The readiness of students to learn first aid management was similar in two separate studies done in Karachi[18] and South India[19] study where 94.4% medical students wanted training to be part of their syllabus and 84% felt training should be part of pre-university courses. United Arab Emirates based study had proved that introduction of first aid into medical curriculum provided students with efficient knowledge and practical skills in it[20] .Study in South India suggests that first aid course should be taught with practical training so that greater number of first aid trainers are liable at a time of any medical adversity[19]. A detailed search of available literature revealed only one published research conducted in UAE; regarding first aid and basic life support skills training of 1st year medical students[20]. There is a lack of published data to assess the knowledge of undergraduate students from different fields. The aim and objectives of this study is to assess the level of knowledge and awareness of undergraduate students in providing first aid care, to identify which of the emergency situations is there a lack of knowledge of first aid and to assess the student's opinion regarding the need for further first aid training in the university.

II. Materials And Methods

This cross sectional study was conducted at Ajman University of Science and Technology (AUST), Ajman, UAE. Ethical approval was obtained from REC College of Dentistry, AUST. Informed consent was obtained from the participants. A questionnaire comprising of 17 objective questions, based on various commonly encountered emergency situations was distributed to be filled voluntarily among the female students of 8 different colleges of the AUST(College of Dentistry, College of Pharmacy, College of Mass Communication (Media), College of Engineering, College of Business Administration, College of Law, College of Education and College of Information Technology).The questionnaire included the demographic data of the participants and whether or not they have taken first aid course, followed by questions, which were aimed to assess the knowledgeof first aid amongst the undergraduate students of AUST. Estimated sample size was 500 with 95% confidence level and margin of error 5%. A response rate of 95% was obtained. The data collected from these questionnaires was entered in Microsoft Excel and the statistical analysis was done using SPSS version 22. Frequency tables and uni-variate analysis was done.

III. RESULTS

Majority of the students belonged to College of Dentistry (16.6%), followed by 15.4% from College of Mass Communication (Media) and 15.4% from College of Engineering. 14.7% students from College of Pharmacy participated along with 12.2% from College of Business Administration. 11.8% from College of Law, followed by 10.9% from College of Education and 2.9% from College of Information Technology (IT).Majority of the participants were aged between 20-25 years (49.9%), belonged to first year (31.2%), and had not taken first aid (72.0 %).

In response to specific situations, 10.5% knew that one has to give cool water or drink to manage a muscle cramp while 89.5% did not. 28.6% said they would move the furniture or objects away if a known epileptic were experiencing a seizure while 71.4% answered incorrectly. 70.7% of the participants responded correctly that they would separate the person from the electric source with a wooden stick who's getting an electric shock. (Table 1)

14.3 % of IT students when compared to 5.4% from law knew how to manage for a student who's suffering from muscle cramp. The dental students performed well overall with 86.1% correctly responding to management of electric shock, 82.3% to choking and 75.9% to arm bleeding. (Fig. 1)

46.5% who had formal first aid training knew how to manage nosebleed when compared to 24.9% who had not taken first aid course previously. Correct answers of trained students were higher overall than the untrained students ($p < 0.05$). (Table 2)

The knowledge of first aid was better in dental students when compared to pharmacy students for the different scenarios presented as seen from the results obtained (Table 3). 75.9% of students knew to apply pressure over the wound to stop bleeding when compare to 58.6% of pharmacy students.

As seen in Table 4, engineering students responded better than other students from nonmedical colleges (79.5% electric shock, 61.6% choking, 46.6% fainting).

The medical college performed better overall when compared to nonmedical colleges. (Table 5). 63.8% students from the medical colleges responded correctly when compared to 34.4% from nonmedical colleges for the first aid management of a chemical splash. In addition 67.8% medical students knew how to provide first aid care for a bleeding arm opposed to 40.5% of nonmedical students. Highest mean score was obtained by the Dental College (8.3 ± 2.4) and the lowest mean score was obtained by the College of Education (5.4 ± 2.1). (Table 6). There was a significant difference of the overall knowledge score among the different colleges. ($p = 0.000$) Average mean difference ranging from 1 to 2 scores was seen amongst the different colleges which showed statistical significance in the overall knowledge of first aid. (Table 7) The most commonly encountered emergency situations by the participants were bleeding (15.0%), burns (12.0 %) and dizziness/fainting (9.0 %). (Fig. 2) 38.3% of the participating students felt competent in managing the first aid situations encountered by them while 52.4% felt incompetent. 88.2% of them felt the need to take the first aid course as opposed to 8.6%. The popular options to improve and promote awareness and knowledge of first aid, among the students, was to make first aid compulsory (54.1%), introduce a practical training course for first aid (49.3%), 12.0% selected other methods like webinars and 9.5% wanted posters and brochures. (Fig 3)

IV. Discussion

This study focused on assessing the knowledge and awareness of undergraduate female students of AUST. Out of the 475 participants 60% of the sample got more than half of the questionnaire wrong. Similar results were seen in studies conducted in UK[10] Shanghai[12] and Turkey[13] and Singapore[21] .In the present study, none of the participants had complete knowledge on first aid. Similar results were seen in studies conducted in other parts of the world[12,13,14,15,16,17,18,19]. This could be because of general lack of awareness about the topic and different schools of thoughts related to first aid measures. Surveys show lack of first aid knowledge in general public of both UAE[11] and UK[10] and this lack of knowledge was evident even in the medical and non-medical student of this study. Similarly Karachi[18] and Dutch[17] study showed inadequate knowledge among non-medical students and medical students respectively. Lack of knowledge could be attributed to lack of training or differences in methods of teaching as well as decreased retention of matter of first aid course after certain period. In contrast to this study, study done in Karachi that compared first aid knowledge amongst different fields of study showed that business students had slightly better knowledge than engineering students'[18] . Later study also revealed overall better results among different colleges when compared to this present study[18.] On comparing results from different colleges in AUST, students from medical colleges performed well than nonmedical colleges (53.2% vs. 40.16%) similar results were seen in a Karachi[18] based study (51% vs. 33%). Although the knowledge of trained students (mean correct responses 7.5 ± 2.9) was found to be better than those of untrained students (mean correct responses 6.3 ± 2.4) yet the overall mean of correct responses was less than 60% which is not satisfactory. This coincides with the results of the study conducted in Karachi[22].

The two Karachi based study also showed that first aid training increased knowledge amongst students[18,22]. In fact, studies done previously in Peru[16] and South India[19] reveal unsatisfactory knowledge even in medical students who were trained in first aid emphasizing on general lack of first aid knowledge. Decreased retention after certain period of obtaining course, different styles of learning and teaching leading to inefficient understanding might all be responsible for this. A study conducted by Jiang YB et al[23]. showed that the trained students had better theoretical knowledge than untrained. A New Zealand based study concluded that the knowledge of trained students was better than those of untrained students but was still unsatisfactory[24], as also seen in our study where 52% who were trained answered correctly as opposed to 34% who were untrained. Different scenarios were presented in questionnaire and majority of sample participants knew correct first aid response to electric shock (70.7%) when compared to 82.4% and 15.1% in study done in Shanghai[12] and South India[19] respectively. Only 10.1% of participants had correctly answered about first aid related to muscle cramps in this study. 56% of medical and 49% of paramedical students at a university in Riyadh[25] as opposed to 48.1% of dental students and41.4 % of pharmacy students in this study chose to look for safety at scene. This shows that medical and paramedical students in Riyadh had comparatively better knowledge in this aspect. With respect to choking, around 60% of the participants chose the correct response when compared to 13.2%[19], 43.6%[22] ,20.9%[16] and 53.4%[25.]in studies done in South India[19], Karachi[22] ,Peru[16] and Riyadh[25]respectively. Only 28.6% knew correct first aid management of seizures in this study. This was much lower than studies done

Italy[26], Cameroon[27] and Canada[28] . With respect to seizures, positive effect of first aid course was clearly evident when only 22.2% compared to 45% knew correct first aid response in this study. In the present study, 28.6% (Table 2) gave the correct response on how to care for a person when having a seizure as opposed to 61% of students from the Chandigarh study[29].Knowledge of first aid management in students who had taken first aid course following choking by a foreign body was good in this study (70.5%) (Table 3) when compared to 43.6% in the Karachi[22] based studyand 53.4% in the Peruvian[16] study. 46.5% knew the correct first aid management of nose bleed which is better than the results obtained from studies conducted in Karachi[18] and UK[30].Studies suggest syncope is a common medical emergency seen by dentists[31,32,33,34] and majority of dental students (68.4%) in this study knew correct first aid management. However, with respect to avulsion dental students, chose reimplantation rather than standard universal measure of controlling bleeding first. With respect to first aid of broken limb, studies done at Shanghai[12] and Peru[10] had better results than this study. In contrast both Karachi based studies showed lesser knowledge related to this aspect[18,22]. 39.6% of all students from various fields of study knew correct response for heat stroke compared to only 11.8% of medical students in a study in South India[19]. With respect to heat stroke, students of college of education had answered 38.5% when compared to 42.1% of staff members of school of Shanghai[13]. Students from college of education responded similarly to staff members in Shanghai[13]for question related to chemical splash. Only around 53.8% of students of college of education knew correct first aid response for asthma. Turkish based study also revealed insufficient knowledge of school teachers with regards to asthma[35]. Results of this study were similar to study done in Karachi which showed trained students were better aware about first aid management of asthma[22].Poor knowledge of first aid amongst school teachers have already been revealed in some studies[12,13,35]. Study done amongst school staff members in Shanghai[13,]and teachers in Turkey[13,35] displayed poor theoretical knowledge related to various aspects of first aid. Considering importance of first aid knowledge amongst teachers, this study revealed alarming lack of knowledge in students of Education College. This suggests that apart from training in teaching skills, first aid training should be made mandatory for students aiming to pursue teaching.

The commonly witnessed emergencies by the students in our study (Figure 2) were similar to students in a Karachi[18] based study. Majority of students (91%) in this study wanted first aid training. Many students (54.1%) realized that first aid course should be made compulsory with 49.3% suggesting that practical training should also be introduced (Figure3). This percentage is comparable to the one stated in the study conducted in Singapore[21], where 85.5% of respondents said that first aid course will be useful and a New Zealand study[36]. Even online training courses can satisfactorily increase the first aid knowledge as also concluded by an Australian study[37]. Overall knowledge of first aid among students in this study was poor in comparison to student's awareness level in other studies. Hence, if a compulsory formal first aid session is introduced into the curriculum then this will provide students with sound knowledge and practical skills as proven by a United Arab Emirates based study[20]. Considering importance of first aid as a subject and its lack of awareness in all colleges, first aid course should be made as part of curriculum. First aid course should also be complemented with practical training and multimedia intervention for increased retention. There should be also periodic reinforcements to enhance retention.

Figures and Tables

Scenario Presented	Percentage of correct response	Percentage of wrong responses
Muscle Cramp	10.5%	89.5%
Arm Bleed	49.1%	50.9%
Nose Bleed	30.5%	69.5%
Chemical Splash	43.6%	56.4%
Electric Shock	70.7%	29.3%
Seizure	28.6%	71.4%
Diabetic Shock	49.5%	50.5%
Avulsion	48.8%	51.2%
Choking	59.8%	40.2%
Fainting	44.6%	55.4%
Broken Limb	51.8%	48.2%
Heart Attack	46.3%	53.7%
Asthma	57.5%	42.5%
Response In Unsafe Situation	40.4%	59.6%
Heat stroke	38.3%	61.7%

Table 1. Percentage of correct and wrong responses for each scenario presented.

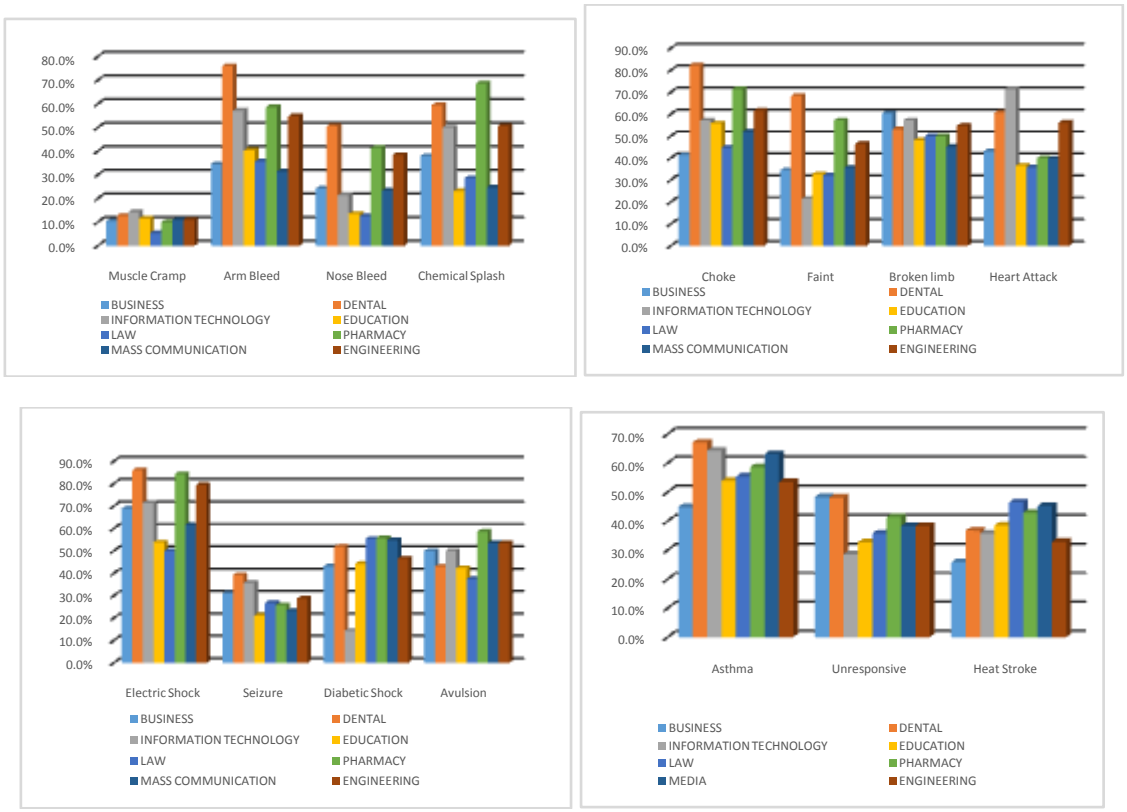

Figure 1. Graphs showing correct responses for each college for the scenarios presented.

Scenario Presented	Taken First Aid Course	Not Taken First Aid Course	P value ($p < 0.05$)
Muscle Cramp	13.2%	9.6%	0.268
Arm Bleed	51.9%	47.7%	0.408
Nose Bleed*	46.5%	24.9%	0.000
Chemical Splash*	53.5%	40.1%	0.009
Electric Shock	76.0%	69.0%	0.138
Seizure*	45.0%	22.2%	0.000
Diabetic Shock	46.5%	50.9%	0.398
Avulsion	48.1%	49.4%	0.793
Choking*	70.5%	55.8%	0.004
Fainting*	55.8%	40.4%	0.003
Broken Limb	48.1%	53.5%	0.291
Heart Attack	48.8%	45.3%	0.495
Asthma	63.6%	55.8%	0.130
Response In Unsafe Situation	44.2%	38.6%	0.270
Heat stroke	43.4%	36.3%	0.154

Table 2. Comparison between participants who took first aid and who did not take first aid course

Scenario Presented	Dentistry	Pharmacy
Muscle Cramp	12.7%	10.0%
Arm Bleed	75.9%	58.6%
Nose Bleed	50.6%	41.4%
Chemical Splash	59.5%	68.6%
Electric Shock	86.1%	84.3%
Seizure	39.2%	25.7%
Diabetic Shock	51.9%	55.7%
Avulsion	43.0%	58.6%
Choking	82.3%	71.4%
Fainting	68.4%	57.1%
Broken Limb	53.2%	50.0%
Heart Attack	60.8%	40.0%
Asthma	67.1%	58.6%
Response In Unsafe Situation	48.1%	41.4%
Heat stroke	36.7%	42.9%

Table 3. Percentage of correct responses obtained by students from College of Dentistry and College of Pharmacy.

Scenario Presented	Business	IT	Media	Law	Education	Engineering	Percentage of Correct Responses Overall
Muscle Cramp	10.3%	14.3%	11.0%	5.4%	11.5%	11.0%	10.5%
Arm Bleed	34.5%	57.1%	31.5%	35.7%	40.4%	54.8%	49.1%
Nose Bleed	24.1%	21.4%	23.3%	12.5%	13.5%	38.4%	30.5%
Chemical Splash	37.9%	50.0%	24.7%	28.6%	23.1%	50.7%	43.6%
Electric Shock	69.0%	71.4%	61.6%	50.0%	53.8%	79.5%	70.7%
Seizure	31.0%	35.7%	23.3%	26.8%	21.2%	28.8%	28.6%
Diabetic Shock	43.1%	14.3%	54.8%	55.4%	44.2%	46.6%	49.5%
Avulsion	50.0%	50.0%	53.4%	37.5%	42.3%	53.4%	48.8%
Choking	41.4%	57.1%	52.1%	44.6%	55.8%	61.6%	59.8%
Fainting	34.5%	21.4%	35.6%	32.1%	32.7%	46.6%	44.6%
Broken Limb	60.3%	57.1%	45.2%	50.0%	48.1%	54.8%	51.8%
Heart Attack	43.1%	71.4%	39.7%	35.7%	36.5%	56.2%	46.3%
Asthma	44.8%	64.3%	63.0%	55.4%	53.8%	53.4%	57.5%
Response In Unsafe Situation	48.3%	28.6	38.4%	35.7%	32.7%	38.4%	40.4%
Heat stroke	25.9%	35.7%	32.9%	46.4%	38.5%	45.2%	38.3%

Table 4. Percentage of correct responses among the nonmedical colleges for the scenarios presented.

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Scenario Presented	Percentage of Correct Responses by Medical Colleges	Percentage of Correct Responses by Non Medical Colleges
Muscle Cramp	11.4%	10.1%
Arm Bleed	67.8%	40.5%
Nose Bleed	46.3%	23.3%
Chemical Splash	63.8%	34.4.%
Electric Shock	85.2%	64.1%
Seizure	32.9%	26.7%
Diabetic Shock	53.7%	47.5%
Avulsion	50.3%	48.2%
Choking	77.2%	51.8%
Fainting	63.1%	36.2%
Broken Limb	51.7%	51.8%
Heart Attack	51.0%	44.2%
Asthma	63.1%	54.9%
Response In Unsafe Situation	45.0%	38.3%
Heat stroke	39.6%	37.7%

Table 5. Percentage of correct responses by the medical and nonmedical colleges for the scenarios presented

Faculty	Mean Score
Business	5.9
Information Technology	6.5
Education	5.4
Law	5.5
Media	6.0
Engineering	7.0
Dentistry	8.3
Pharmacy	7.6

Table 6. **Mean score for all colleges**

Faculty		Mean Difference	Standard Error	p value
Business	Dental	-2.3*	0.4	0.000
	Pharmacy	-1.6*	0.4	0.004
Dental	Business	2.3*	0.4	0.000
	Education	2.8*	0.4	0.000
	Law	2.8*	0.4	0.000
	Media	2.3*	0.3	0.000
	Engineering	1.2*	0.3	0.029
Education	Dental	-2.8*	0.4	0.000
	Pharmacy	-2.1*	0.4	0.000
	Engineering	-1.5*	0.4	0.010
Law	Dental	-2.8*	0.4	0.000
	Pharmacy	-2.1*	0.4	0.000
	Engineering	-1.5*	0.4	0.010
Pharmacy	Business	1.6*	0.4	0.004
	Education	2.1*	0.4	0.000
	Law	2.1*	0.4	0.000
	Media	1.6*	0.4	0.002
Media	Dental	-2.3*	0.3	0.000
	Pharmacy	-1.6*	0.4	0.002
Engineering	Dental	-1.2*	0.3	0.029
	Education	1.5*	0.4	0.010
	Law	1.5*	0.4	0.010

Table 7. Mean difference of scores among various colleges. (Significant statistically)

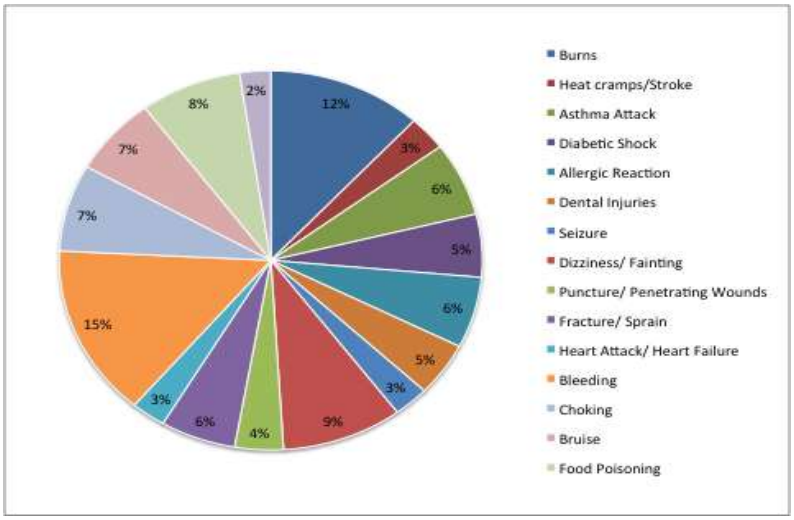

Figure 2. Pie chart showing percentage of commonly encountered first aid situations.

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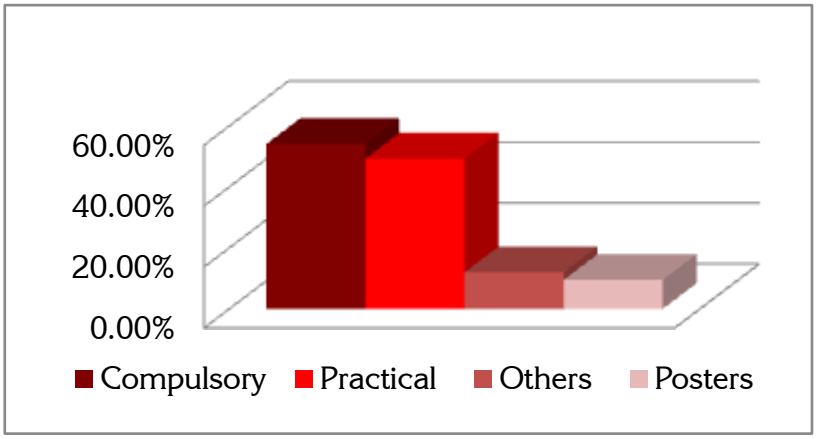

Figure 3. Preferred methods for improvement of First Aid response among participants.

V. Conclusion

In conclusion, the students in various streams of study at AUST had inadequate first aid knowledge. Majority recognized the need for a compulsory formal first aid training program at college level, in order to decrease the early mortality and morbidity of accidents and emergencies. This should be complemented with practical training or activities in order to increase students' experiences and confidence level in practical procedures. This training should be refreshed at periodic intervals, as in the present study level of knowledge in first aid did not differ between students with previous training and those without. More such studies should be conducted to evaluate the knowledge and awareness of first aid among the general population.

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