Assessment of First Aid Emergency Knowledge Among Medical Students from First Year to Final Year-A Comparative Study

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ABSTRACT

Objectives: To assess the level of first aid knowledge among undergraduate medical students in Army Medical College, Rawalpindi. The research aimed to compare the level of medical knowledge across five years of medical training and to evaluate the effect of demographic details on the degree of first aid awareness.

Study Design: The study design is cross-sectional.

Place and Duration of Study: Study was conducted in Army Medical College, Rawalpindi Pakistan, from Nov 2021 to Apr 2022

Methodology: A preformed questionnaire was used and was divided into two groups: The first group contained two parts: i) Personal information and ii) Question about previous attendance of the first aid course. The second group contained 14 questions aimed at assessing major aspects of first-aid. The results for every year were compared. Data was entered an SPSS version 25.

Results: In the study there was a marked increase in the level of first aid knowledge from first year to final year. The study also showed that those living at home had better scores than those availing university accommodation. Demographic background or receiving training in first-aid had an insignificant effect on it.

Conclusion: The study discovered that the academic year had a substantial impact on knowledge levels. From first year to final year, there was a significant increase in first-aid knowledge. Every year, medical students' first-aid education should be reinforced in order to improve their skills.

Keywords: Academic year, First aid knowledge, Housing status, Medical student.

INTRODUCTION

Accidents and injuries are commonly observed incidents that cannot be omitted from someone's life. These injuries are usually handled by inexperienced bystanders at the accident site. These injuries can result in serious medical complications, if first aid is not administered properly and timely.[1] The primary goals of first aid are to preserve life, relieve pain as much as possible, prevent further medical complications and stabilize the patients.[2,3] Furthermore, anyone can be exposed to injury in various situations, whether at work or at home. It follows that the ability of providing immediate and accurate first aid care at accident site is vital.[4] A large group of medical students show poor understanding of first-aid practices especially in their early academic years. Correspondingly, this reveals the lack of sufficient published researches or reports discussing the topic.[5] Globally, more than 8,75000 children under the age of 18 die due to injury every year. The rate of child injury death is 3.4 times higher in low income and middle income countries than in higher income countries.[6]

The National First Aid Science Advisory Board defined first aid as making an assessment and implementing interventions that can be performed by a bystander(or by the victim) with minimal or no medical equipment.[7] Many factors had been shown to be associated with better knowledge, including taking a first aid course during school, having a driver license, or having a higher level of education.[8] Hence it should not be surprising to note even junior doctors at certain hospital cannot perform the first aid skills satisfactorily.[9] Knowledge of first aid among medical students has always been a neglected subject. The significance of training health care professionals in first aid and basic life support (FA-BLS) is now acknowledged worldwide.[10] There is not sufficient published data regarding knowledge of first aid among medical students or doctors in Pakistan to date according to our knowledge.[11] Pakistan is identified as a high-risk country in terms of injury-related mortality for children and adolescents. Unintentional injuries rank third in importance behind cancer and heart disease and are the leading cause of death in children. It

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follows that the ability of providing immediate and accurate first-aid care at the accident site is vital. Based on the gathered information, we found that assessment of first-aid knowledge among medical students is not all-encompassing and all-inclusive. Furthermore, a large group of medical students show poor understanding of first-aid principles and practices, especially in their early academic years. Correspondingly, this reveals the lack of sufficient published research or reports discussing the topic.

METHODOLOGY

A Comparative Cross-sectional study was conducted in Army Medical College, Rawalpindi Pakistan, from November 2021 to April 2022. A Sample Size of 251 MBBS students was calculated by means of an online sample size calculator.

Inclusion Criteria: The contemporary students of Army Medical College who had good mental health were included.

Exclusion Criteria: All those who did not give consent were excluded.

Non-probability convenient sampling technique was used. A preformed questionnaire was used. It consisted of two parts ;the first part aimed at asking questions regarding the demographic details .It was further divided into two groups: (Group-1) personal information, (Group 2) asked questions about whether the students had taken any first aid course. The second part contained 14 questions related to hypoglycaemia, shock management, burn management, fracture, nosebleeds, drug overdose, external bleed, CPR cycle and priority of examination. The questions aimed at assessing all major aspects of first-aid. The results of all years were compared.

We allocated 1 score to each correct answer of the part 2 of the questionnaire and zero score to the wrong answer. The questions were integrated as a whole such that each correct answer added to the whole score of knowledge and the wrong answers subtracted a point. Thus, a maximum score of 14 and a minimum of 0 could be achieved. The scores were further divided into 3 levels of knowledge as, Weak level (0-4), Intermediate level (5-9) and Good level (10-14).

RESULTS

In the study, a total of 251 medical students were selected out of which 178(70.9%) were females and 73(29.1%) were males. Most of the students had not attended a first aid course previously. Accounting for only 57(22.7%) of the students who had attended a first

aid course. 167(66.55%) were availing university accommodation and 84(33.5%) were living at home. About 136(54.2%) students had doctors among the close relatives as shown by the Table-I & II. The demographic data showed a significant relationship between hou-sing status and first aid knowledge such that those living at home had a better understanding than those availing university accommodation which can be attributed to the greater exposure they had at home than the hostels. The result of previous attendance of first aid course was found to be insignificant demonstrating the need of repeated assessments over the course of entire year to ensure maximum understanding. Having doctor in close relatives had insignificant effect on level of knowledge.

Table-I: Demographic Detail of Students

	Frequencies	Percentages
Gender		
Female	178	70.9%
Male	73	29.1%
Previous Attendance of First Aid Course		
Yes	57	22.7%
No	194	77.3%
Housing Conditions		
Living at home	84	33.5%
University accommodation	167	66.5%
Having Doctor Among Close Relatives		
Yes	136	54.2%
No	115	45.8%
p-**value of Independent Variable**		
Factors	Chi square value	
Gender	0.160	
Financial conditions	0.267	
Previous attendance of first aid course	0.824	
Housing status	0.000	
Having a doctor in close relatives	0.158	

Table-II: Comparison between the mean scores of students in different medical years in relation to knowledge.

Year of Study	Mean	Standard Deviation
First year	1.4800	0.54361
Second year	1.7600	0.62466
Third year	2.2157	0.70182
Fourth year	2.4600	0.67643
Final year	2.6000	0.57143

It was noted that maximum students had an intermediate level of knowledge that is about 107(42.6%). About 85(33.9%) of the students had a good level of knowledge, the bulk of which was contributed by the clinical classes that are in the fourth year and the final year. While only 59(23.5%) of the students had poor knowledge and needed improvement.

As shown by the graph there is a systematic increase in the level of knowledge from first year to final year from a mere 2% good knowledge in first year students to a 64% in final year. While in final year only 4% of the students had poor knowledge demonstrating a massive improvement in knowledge.

The mean and standard deviation of each year of study was calculated and the results were found to be highly significant with a (p<0.001).
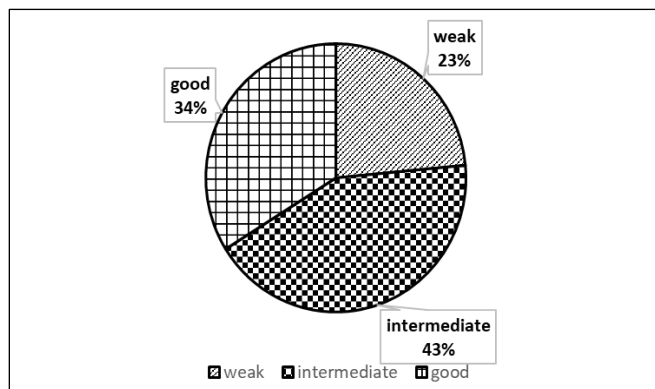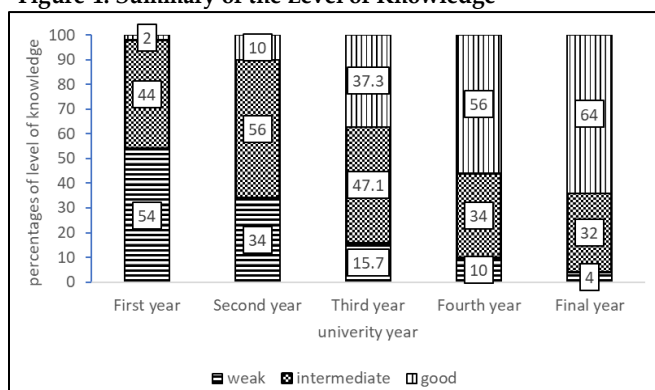

Figure-1: Summary of the Level of Knowledge

Figure-2: Comparison between the scores of students in different in relation to first aid knowledge

The distribution of students' correct answers regarding first aid knowledge was as follows Hypoglycemia-72.9%, CPR cycle-55.4%, Nitroglycerine Dose-32.3%, Drug overdose-76.1%,[9] 3rd degree Burn-61%, Management of burn-32.7%, Ankle sprain-61%, Symptoms of fracture-70.5%, Shock state-35.9%, External bleeding-76.5%, Provision of food to shock patient-64.1%, Management of nose bleeding-33.9%, Obstruction of airway-56.1%, Priority of examination-23.9%, Most students correctly answered the questions regarding the common everyday situations. Majority of them did not know the priority of examination in dealing with emergency situations.

DISCUSSION

In the present study, medical students of Army Medical College, Rawalpindi Pakistan, were assessed for the level of knowledge pertaining to first aid. The statistics showed that maximum of the students had intermediate knowledge. Based on our results, about 59(23.5%) of the students were in the weak category, the bulk of which was contributed by the preclinical classes that are the 1st year and second year. 107 (42.6%) had intermediate knowledge while 85(33.9%) had good knowledge of first aid. The study in Mangalore India also showed that majority of students had moderate level of first aid knowledge that is consistent with our study.[12] A study in Saudi female university showed that only 34.7% had good know-ledge, 57.5% had the average knowledge, and 7.8% had poor knowledge of dealing with emergency situations.[13]

There was a significant improvement in know-ledge with increase in academic year as demonstrated by the fact that the maximum number of students having good knowledge belonged to senior classes. A similar study conducted in King Saud University also revealed an increase in medical knowledge with advancement of university year which can be attributed to many things including the subjects being taught in the year of study.[14] Similarly In Bangalore, India, the association between year of study and level of knowledge was found to be statistically significant.[15]

The study contained questions regarding the circulatory system, respiratory system, toxicology, burn management, fracture handling and shock state management. The results showed that the students had better understanding regarding the theoretical aspects of first aid rather than the practical implementation. The study also showed that regarding the circumstances often experienced by the individuals for example, hypoglycemia, ankle sprain, Fracture, External bleeding majority of the students had adequate knowledge. A study in Urban Bangalore showed that in case of low blood sugar in diabetics, only 49.5 percent said that sugar or something sweet should be given. While in our study 72.9% answered the questions correctly.[16] In a study in Colombia, knowledge scores were low for the initial approach to resuscitation (46.3%, 95%CI) which is somewhat similar to our study 55.4% of the students correctly answered questions related to CPR.[17]

Among the students only 33.9% were able to answer the question regarding management of nose bleed correctly which makes only a small proportion of

the whole population.[11] Similarly results from the research showed students had fair knowledge of epistaxis management with only a few demonstrating excellent knowledge imparting the need of proper training to deal with such a common issue. A study conducted in Riyadh, Saudi Arabia also showed that the male teachers had poor knowledge of handling nose bleeds.[18] A research in Karachi showed that the majority of students had insufficient knowledge about Burn management.[1]

It was noted that those living at home had better knowledge than those availing university accommodation due to the greater exposure they have at home. It was also shown that receiving prior first aid training courses, reading or hearing about the first aid information did not significantly effect on the level of first aid knowledge as the test results were insignificant. Thus a single training course does not impart greater effect on knowledge. This is consistent with a study in Yemen showing that paucity of training program imposes a limitation.[19]

Likewise a Syrian study also indicated that a few students showed good first aid knowledge irrespective of prior training demonstrating that taking courses alone is not sufficient to apply knowledge in real life situations and thus repeated assessments over the course of years should be done to obtain the best possible results.

The study was limited as it was focused only on the students of Army Medical College, Rawalpindi Pakistan and thus cannot be generalized over all the medical colleges. Also the study is focused only on medical students while the first aid knowledge is a necessity for all and the scope of study could have been broadened to include other university students as well.

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CONCLUSION

The study discovered that the academic year had a substantial impact on knowledge levels. From the first year to final year, there was a significant increase in first-aid knowledge. Every year, medical students' first-aid education should be reinforced in order to improve their skills. In addition, the quality of all existing training programs should be improved so that certified students can deliver first aid independently. More research into the knowledge and skills of First Aid among doctors and medical students in Pakistan is needed.

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