

# Knowledge of First Aid Skills Among Students of a Medical College in Mangalore City of South India

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## Abstract

**Background:** The adequate knowledge required for handling an emergency without hospital setting at the site of the accident or emergency may not be sufficient as most medical schools do not have formal first aid training in the teaching curriculum. **Aim:** The aim of this study is to assess the level of knowledge of medical students in providing first aid care. **Subjects and Methods:** This cross-sectional study was conducted during May 2011 among 152 medical students. Data was collected using a self-administered questionnaire. Based on the scores obtained in each condition requiring first aid, the overall knowledge was graded as good, moderate and poor. **Results:** Only 11.2% (17/152) of the total student participants had previous exposure to first aid training. Good knowledge about first aid was observed in 13.8% (21/152), moderate knowledge in 68.4% (104/152) and poor knowledge in 17.8% (27/152) participants. Analysis of knowledge about first aid management in select conditions found that 21% (32/152) had poor knowledge regarding first aid management for shock and for gastro esophageal reflux disease and 20.4% (31/152) for epistaxis and foreign body in eyes. All students felt that first aid skills need to be taught from the school level onwards and all of them were willing to enroll in any formal first aid training sessions. **Conclusion:** The level of knowledge about first aid was not good among majority of the students. The study also identified the key areas in which first aid knowledge was lacking. There is thus a need for formal first aid training to be introduced in the medical curriculum.

**Keywords:** First aid skills, Knowledge, Medical students

## Introduction

First aid is applied to injured or ill persons in any health threatening settings in order to save life, prevent degradation of the situation or contribute to a treatment process before professional medical care is available. This refers to assessments and interventions that can be performed by a bystander (or by the victim) with minimal or no medical equipment.<sup>[1]</sup>

At some point in a medical curriculum students are taught how to handle emergencies in a hospital emergency setting

where drugs and other necessities are available. However, the adequate knowledge required for handling an emergency without hospital setting at the site of the accident or emergency may not be sufficient.<sup>[2,3]</sup>

Studies have found that the knowledge of first aid amongst medical students has always been a neglected subject. Hence, it should not be surprising to note that even junior doctors at certain hospitals cannot perform the first aid skills satisfactorily.<sup>[4]</sup>

As the incidence of medical emergencies are on the rise in recent years it is important to ensure that health personnel are adequately trained to deal with such events.<sup>[5,6]</sup> Very few studies have been performed about knowledge of first aid skills among medical students in India.

The objectives of this study were thus to assess the level of knowledge of undergraduate students in providing first aid care,

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to identify the emergencies where there is a lack of knowledge of first aid and to assess the student's opinion regarding the need for first aid training at medical colleges.

## Subjects and Methods

This cross-sectional study was performed in May 2011 in a private medical college in Mangalore city of south India. The ethical approval for conducting this study was obtained from institutional ethics committee. The target sample size was 177, based on the assumption of knowledge about first aid practices among medical students to be 50%, 95% confidence interval and relative precision of 20%. A total of 77 students were chosen from the fourth semester and 50 each from sixth to eighth semester in accordance to the probability proportional to the size/strength of the class. The criterion for selecting semesters was based on the exposure of students to clinical settings during these semesters. The required number of students in each semester was selected by simple random sampling method.

The students were briefed about the objective of the study and their informed consent was taken for participation. A self-administered anonymous multiple choice questionnaire was used for data collection to assess the knowledge of students regarding administration of first aid in different situations. The questionnaire was pre-tested earlier on a group of 10 house surgeons posted in the department of community medicine and based on their responses questions were modified before it was distributed in its final form to the participants. Reliability of the questionnaire was assessed using Cronbach's Alpha value of which was 0.86 indicating good internal consistency.

The questions on management of common first aid emergencies such as unconsciousness, heat burns, external bleeding, epistaxis, heat stroke, drowning, shock, choking, electrocution, seizures, poisoning, animal bites, frost bite, foreign body in ears and eyes, anginal pain, heart burn, fractures and dislocations were asked. Few questions were developed in the form of scenarios depicting real life situations and covered all the essential aspects of first aid. The face validity of this questionnaire was performed by experts in clinical specialties such as ENT, Ophthalmology, Surgery and Internal Medicine. Each first aid management option was given weighted marks based on the appropriateness of that intervention for that particular condition. This was to bring out the preferred responses of the students to various emergency situations.

The maximum possible score which could be obtained was 207 and minimum being 7. Summation of the scores allotted to the most essential first aid management options for each medical emergency formed the basis of categorization of overall knowledge of students about first aid. The accumulation of points allotted to must know responses was used for deciding the cut-off score for poor performance. Similarly, the cut-off value for moderate performance was based on the

cumulative points allotted to nice to know responses made less from the maximum score of 207. The score between 147 and 207 was considered as good, 67-146 as moderate and 7-66 as poor knowledge about first aid. The incompletely filled questionnaires were excluded from the analysis.

The data entry and analysis was performed using Statistical Package for Social Sciences software package (SPSS Inc., Chicago, IL, USA) version 17. Chi-square test was used to find out the association of socio demographic variables with the level of knowledge regarding first aid and  $P < 0.05$  was taken as statistically significant association.

## Results

A total of 152 fully completed questionnaires were received with a response rate of 85.9%. Of the 152 students, 77 were from fourth semester, 39 from sixth, and 36 from eighth semester.

Most students 26.3% (40/152) were of the age group 20-21 years with a mean age of 20.82 (1.4) years. Age of students ranged from 18 years to 24 years. Most of them were males 59.9% (91/152) and most of them were students of the fourth semester 50.7% (77/152). Only 11.2% (17/152) students had previously exposure to first aid training. Of the total participants, 13.8% (21/152) students had good, 68.4% (104/152) had moderate and 17.8% (27/152) had poor level of knowledge about first aid.

There was no association of gender or previous training in first aid skills with the level of current knowledge about first aid among the participants. Students of the eighth semester had significantly better knowledge about first aid compared to fourth and sixth semester students ( $P = 0.04$ ) [Table 1].

With respect to awareness of first aid measures in various conditions, 21% (32/152) had poor knowledge of first aid procedures in shock and gastro esophageal reflux disease (GERD). This was followed by poor knowledge of first aid procedures in management of epistaxis and foreign body in eyes 20.4% (31/152) [Table 2]. All students felt that they have to be competent in first aid skills and said that they will not hesitate in applying it in various emergencies in real life situations. All felt that these skills need to be taught from the school level onwards and all of them were willing to enroll for any formal first aid training sessions at the medical college.

## Discussion

In the present study very few students had good knowledge about first aid and this was not influenced with whether the student was previously trained or not in first aid procedures. Similarly, a Peruvian study reported that in spite of 52.5% medical students having had prior training in management of medical

**Table 1: Association of gender, semester of study and previous exposure to first aid training with knowledge of first aid skills**

Characteristics	Good knowledge (%)	Moderate knowledge (%)	Poor knowledge (%)	Total
Gender				
Male	7 (11.5)	42 (68.8)	12 (19.7)	61
Female	14 (15.4)	62 (68.1)	15 (16.5)	91
			$\chi^2=0.616, P=0.74$	
Semester				
Fourth	12 (15.6)	50 (64.9)	15 (19.5)	77
Sixth	3 (7.7)	25 (64.1)	11 (28.2)	39
Eighth	6 (16.7)	29 (80.5)	1 (2.8)	36
			$\chi^2=9.535, P=0.04$	
Previous exposure in first aid training				
Yes	5 (29.4)	8 (47.1)	4 (23.5)	17
No	16 (11.9)	96 (71.1)	23 (17)	135
			$\chi^2=5.0, P=0.08$	
Total	21	104	27	152

**Table 2: Distribution of students based on their knowledge in each aspect of first aid management in different emergency conditions**

Aspects of first aid management	Good knowledge	Moderate knowledge	Poor knowledge	Total
Definition of first aid	20 (13.2)	102 (67.1)	30 (19.7)	152
Purpose of first aid	24 (15.8)	100 (65.8)	28 (18.4)	152
First aid in road traffic accidents	19 (12.5)	111 (73)	22 (14.5)	152
First aid in snake bites	23 (15.1)	100 (65.8)	29 (19.1)	152
First aid in syncope attacks	22 (14.5)	106 (69.7)	24 (15.8)	152
First aid in burns	21 (13.8)	105 (69.1)	26 (17.1)	152
First aid in bleeding wounds	20 (13.2)	109 (71.7)	23 (15.1)	152
First aid in epistaxis	21 (13.8)	100 (65.8)	31 (20.4)	152
First aid in heat stroke	18 (11.8)	109 (71.7)	25 (16.5)	152
First aid in hypovolemic shock	24 (15.8)	96 (63.2)	32 (21)	152
First aid following choking by foreign body	20 (13.2)	102 (67.1)	30 (19.7)	152
First aid in electric shock	23 (15.1)	107 (70.4)	22 (14.5)	152
First aid in seizures	21 (13.8)	103 (67.8)	28 (18.4)	152
First aid in poisoning	24 (15.8)	103 (67.8)	25 (16.4)	152
First aid in drowning	22 (14.5)	101 (66.4)	29 (19.1)	152
First aid in animal bites	19 (12.5)	109 (71.7)	24 (15.8)	152
First aid in frost bite	22 (14.5)	103 (67.7)	27 (17.8)	152
First aid in foreign body in ears	19 (12.5)	110 (72.4)	23 (15.1)	152
First aid in foreign body in eyes	23 (15.1)	98 (64.5)	31 (20.4)	152
First aid in anginal pain	18 (11.8)	108 (71.1)	26 (17.1)	152
First aid in gastroesophageal reflux disease	18 (11.8)	102 (67.1)	32 (21.1)	152
Overall knowledge	21 (13.8)	104 (68.4)	27 (17.8)	152

emergencies, 60.4% had poor knowledge about first aid.<sup>[7]</sup> A Dutch study reported 81% of junior doctors to be having poor knowledge about first aid.<sup>[4]</sup> A study conducted in Lucknow, India showed that there was less than adequate knowledge (52%) and practices (54%) in all groups of participants (resident doctors, hospital consultants, and private practitioners).<sup>[8]</sup>

This meant that, not only is first aid training required at medical colleges it has to be reinforced periodically with refresher training workshops in first aid. Only a Karachi based study found that 63.2% medical students had good, 28.3% moderate and 8.3% poor knowledge about first aid, which was better than our observations.<sup>[2]</sup>

In the present study, females had slightly better knowledge about first aid than males, which was similar to the findings of a study performed in Karachi.<sup>[2]</sup> The Peruvian study found a significant association between knowledge about first aid and female gender.<sup>[7]</sup> Senior students in this study had significantly better knowledge about first aid compared to juniors, which was similar to findings of other studies.<sup>[7,9]</sup> Most students in this study had poor knowledge regarding first aid management in shock, GERD, epistaxis and foreign body removal from the eyes.

In this study, only 14.5% students knew correctly the steps of cardio pulmonary resuscitation (CPR) as a part of first

aid management in drowning cases, which was similar to the findings of a study performed in Salem, Tamil Nadu where it was seen among 17.1% of medical students.<sup>[10]</sup> In the Dutch study too only 6% of the students knew and performed correct CPR.<sup>[4]</sup> However, two Karachi based studies reported that 32.2% and 38.8% participants knew how to correctly perform CPR, which was better than our observations.<sup>[2,11]</sup> The knowledge of first aid management in suspected fractures by immobilization and in bleeding by part elevation and pressure bandage in road traffic accidents was good in about 44% students in two studies done at Karachi<sup>[2,11]</sup> and 82.7% in a Peruvian study,<sup>[7]</sup> which was again better than our observations (12.5%). The first aid management of burns was known correctly only by 13.8% students as against 23.2% in an Irish study.<sup>[12]</sup> First aid following accidental choking by a foreign body was good in only 13.2% cases as against 43.6% cases in the Karachi based study<sup>[11]</sup> and 53.4% in the Peruvian study<sup>[7]</sup> where students knew of measures like stroking between shoulder blades or of Heimlich maneuver by hitting the chest.

With respect to correct management of convulsions, 24.8% medical students in the Karachi study knew of recovery position to avoid any aspiration and tongue rolling as against 13.8% students in our study.<sup>[11]</sup> The former study also reported that 30.4% medical students had good knowledge of first aid management in cases of accidentally ingestion of poisons as against 15.8% in our study.<sup>[11]</sup>

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 formal first aid session is introduced into medical curriculum then this will provide students with sound knowledge and practical skills as proven by an United Arab Emirates based study.<sup>[13]</sup> This should be complimented with hands on experience or activities in order to increase students' experiences in practical procedures during medical school followed by its evaluation as there is a problem of assessment of practical competence.<sup>[14]</sup>

The willingness of students to be trained in first aid skills and their agreement in favor of introduction of such training from school level onwards was similar to findings of Karachi study where in 94.4% medical students wanted first aid training to be part of their curriculum with 84% suggesting that it should be part of pre-university curriculum.<sup>[2]</sup> Another advantage of training students in first aid would be that they can be successful peer first aid trainers for others as opined by 97.7% medical students in Altıntaş *et al.* study<sup>[15]</sup> and also reported in a Turkish study.<sup>[16]</sup> These measures will ensure that an increased number of first aid trainers are available at a time of any calamity faced by the people.

Use of modern techniques like using simulation with the aid of computerized mannequins as an educational and assessment

tools has been done before and found to be very effective in few studies.<sup>[9,15]</sup> Students in a New Zealand study for example felt that the simulations were a reasonable measure of their abilities and 91% felt that such simulations should be included in their end-of-year assessment. As current medical undergraduate training does not ensure new graduates can intervene effectively in an emergency, these simulation based workshops should be incorporated into the undergraduate curriculum both for education and assessment of competence in emergency management.<sup>[9]</sup> The other alternative would be patient simulation, which provides a safe learning environment (where events can be scheduled, repeated and observed) offering the potential for greater efficiency and rigor over traditional methods. Simulation has in fact been described as an ethical imperative, but has not yet been widely incorporated into the medical undergraduate curriculum the way it should have been.<sup>[17,18]</sup>

### Strengths

No similar studies regarding awareness of first aid measures among medical students have been done in India before. The study has revealed that awareness on first aid measures needs to be improved amongst students. This is possible by introducing formal first aid training in the medical curriculum.

### Limitations

This study only assessed the knowledge of first aid skills among medical students, but not the practical skills. Assessment of practical skills would have further helped in understanding the difficulties faced by students in rendering first aid during emergencies. This could be an area for future research studies. Moreover, as the study was performed in one medical college, the findings in this study cannot be generalized to all colleges in different parts of India. The required sample size also could not be achieved due to non-responses by few participants.

### Conclusion

The level of knowledge about first aid was not good among most of the students. This study thus identified the need for introducing formal first aid training classes for medical students so that the trained students are competitive enough to provide first aid independently and spontaneously in real life situations. The study also brings out the need for first aid training as a felt need among medical students as there is no formal first aid training in the medical curriculum at the first place. This should be backed up with periodic refresher training as level of knowledge in first aid skills did not differ significantly between students with previous training in first aid and those without. The study also identified key areas in which first aid knowledge was lacking. More such studies should be conducted to evaluate the knowledge and skills of first aid among doctors and medical students in India.

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