



Original Article

## Assessment of Knowledge, Attitude and Practice Towards Emergency Department Among Medical Students of a South Indian Medical College

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### ABSTRACT

**Background:** Curriculum in Emergency Medicine forms a crucial component of medical education as it prepares them to effectively respond to acute and life threatening emergencies. This study is aimed to evaluate the knowledge, attitude and practice of medical undergraduates towards emergency department and thereby establishing their clinical preparedness to face the real world acute care and their inclination to pursue a speciality career in Emergency Medicine.

**Materials and Methods:** A descriptive, cross-sectional study design was used. Study was conducted using a structured, self administered questionnaire to assess the knowledge, attitude and practice (KAP) towards the emergency department. Questionnaire was distributed to participants electronically through Google forms and data was collected. Data was analysed using descriptive statistics and for association Chi square test and Independent t test / ANOVA were used for inferential analysis.

**Results:** A total of 317 medical students had recorded their responses and data was analysed. Among them 68.5% (217) were female and 31.5% (100) were male. The mean scores of Knowledge and Attitude were 8.36 (SD = 1.160), 40.26 (SD = 5.229). The correlation analysis revealed a moderate positive relationship between knowledge and attitude, with a correlation coefficient of  $r = 0.404$  ( $p$  value  $< 0.001^*$ ). In terms of perceptions of training, a considerable proportion of participants 73.5% felt that the current emergency training provided in their curriculum was inadequate, while only 26.5% considered it sufficient.

**Conclusion:** This study revealed significant gaps in practice despite having good knowledge and positive attitudes towards the emergency department; practice seems to have lower score, as there is less exposure and training during undergraduate years. This has definitely influenced the willingness to take speciality training. This emphasizes mandatory emergency medicine clinical postings, training with simulations and OSCE sessions during their undergraduate course years.

**Keywords:** knowledge, attitude, practice, medical students, emergencies.

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### INTRODUCTION

Emergency medicine services are the acute medical care delivered within first few hours of onset of treatable medical conditions<sup>1</sup>. According to the global burden of diseases data, deaths due to emergency conditions is around 27 million and DALYs of about one billion, fifteen million from 2011 to 2019 covering 193 countries.<sup>2</sup> The high global burden of

emergency conditions emphasizes the importance of strengthening and expansion of emergency services throughout the World<sup>2</sup>. In India, Road traffic accidents (RTAs), Myocardial Infarction (AMI), Cerebrovascular accident (CVA) are most common emergency conditions that lead to death and disability<sup>1</sup>.

Emergency medicine speciality which is a unique speciality requiring rapid diagnosis and management was formally recognised by the then Medical Council of India (now replaced by NMC or National Medical Commission) in 2009 and National Board of Examinations (NBE) initiated Diplomate National Board residencies in 2013.<sup>1</sup> Despite the acceptance of the speciality, exposure and training of undergraduates was not introduced in their curriculum. This creates the least confidence in handling emergency situations and poor awareness of the speciality. This lack of awareness has direct and distinctive effect on their willingness to take up the speciality. It is the need of the hour for expanding the emergency medicine speciality by initiating compulsory training for undergraduates in their curriculum and creating opportunities for post graduate training to meet the unmet needs of Indian emergency health conditions.

This study focuses on assessment of undergraduate knowledge, attitude and practice as they would be trained to become specialist doctors in future.

KAP theoretical model was proposed by American Sociologist Dr. Everett M Rogers in late 1950's and early 1960's and was widely used in health education and behavioural intervention. It explains what is known (knowledge), believed (attitude), and done (practice) in relation to the topic of interest. According to this framework, knowledge is necessary for developing appropriate attitudes and practices, while attitude acts as a catalyst for changes in practice. Practice represents the culmination of knowledge and attitude and is also the primary objective of behavioural change.

#### **MATERIALS AND METHODS:**

This study was conducted in the BGS Global Institute of Medical Sciences, Bangalore (South Indian Medical College) among medical students (from 1<sup>st</sup> year MBBS to final year MBBS students) in the month of March 2026.

##### **Inclusion criteria:**

1. All medical students i.e (from 1<sup>st</sup> year MBBS to final year MBBS students) willing to participate.

##### **Exclusion criteria:**

1. Students unwilling to participate.
2. Students absent during the study
3. Incomplete questionnaire responses.

**Research method:** After IEC clearance, students were approached. All students meeting the inclusion criteria were included in the study. Data was collected online using google forms which contains structured questionnaire in English language and responses were recorded and analysed. The Questionnaire contained four sections from A to D. Confidentiality and anonymity was strictly maintained. Time required was 15-20 mins.

#### **SECTION A: Sociodemographic details**

Age, Gender, Year of study, Training of BLS/ACLS.

#### **SECTION B: Knowledge.**

Contains 10 multiple choice questions covering the knowledge about BLS, Trauma, Airway, MLC and regarding speciality.

Each correct answer = 1 mark

Incorrect answer = 0 mark

Total score calculated and categorised as

Poor (<50%)

Moderate (50-75%)

Good (>75%)

#### **SECTION C: Attitude**

Contains 11 questions. Assessed using 5 point Likert scale (Strongly agree to strongly disagree)

Higher score indicates positive attitude. Measures the perception towards emergency medicine as a speciality, confidence in handling emergencies, importance of training during undergraduate course.

#### **SECTION D: Practice**

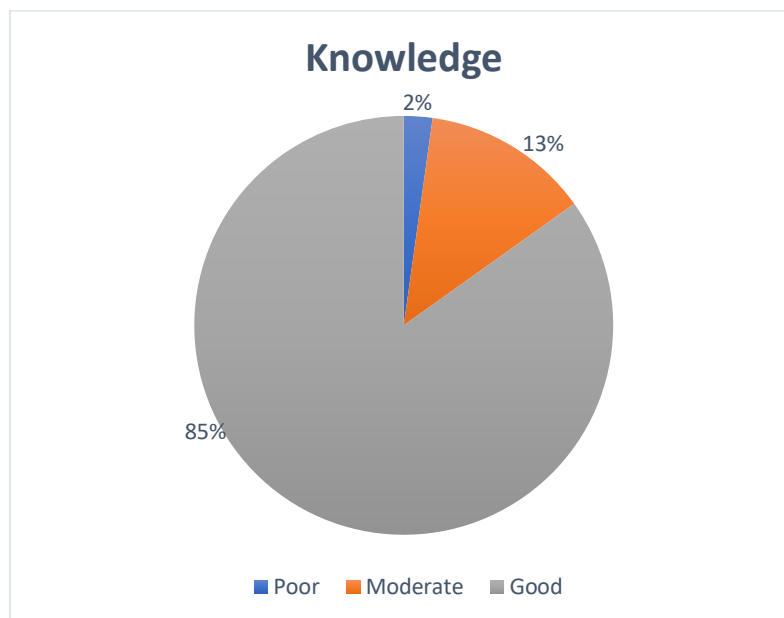
Contains 6 questions regarding participation in emergency postings, exposure to resuscitation, hands on training. Based on frequency and exposure, categorised appropriately.

**Statistical analysis:** Datasets were analyzed using SPSS version 30. Qualitative variables were presented as frequencies and percentages, while quantitative variables were summarized using mean, standard deviation, median, and range. The

chi-square test was used to assess associations between qualitative variables. Independent t-tests and ANOVA were applied to compare mean differences in quantitative variables. Pearson correlation analysis was used to evaluate relationships between quantitative variables. A p-value of less than 0.05 was considered statistically significant.

## RESULTS

The study included a total of 317 participants, among which predominantly female participants comprising 68.5%, whereas males accounted for 31.5% and the majority of participants were in their final year of study 71.0%. Smaller proportions were observed in the second year 14.5% and first year 13.6%, while only a minimal fraction 0.9% were in the third year. Among the of participants 58.0% reported that they had not attended Basic Life Support (BLS) or Advanced Cardiac Life Support (ACLS) training.



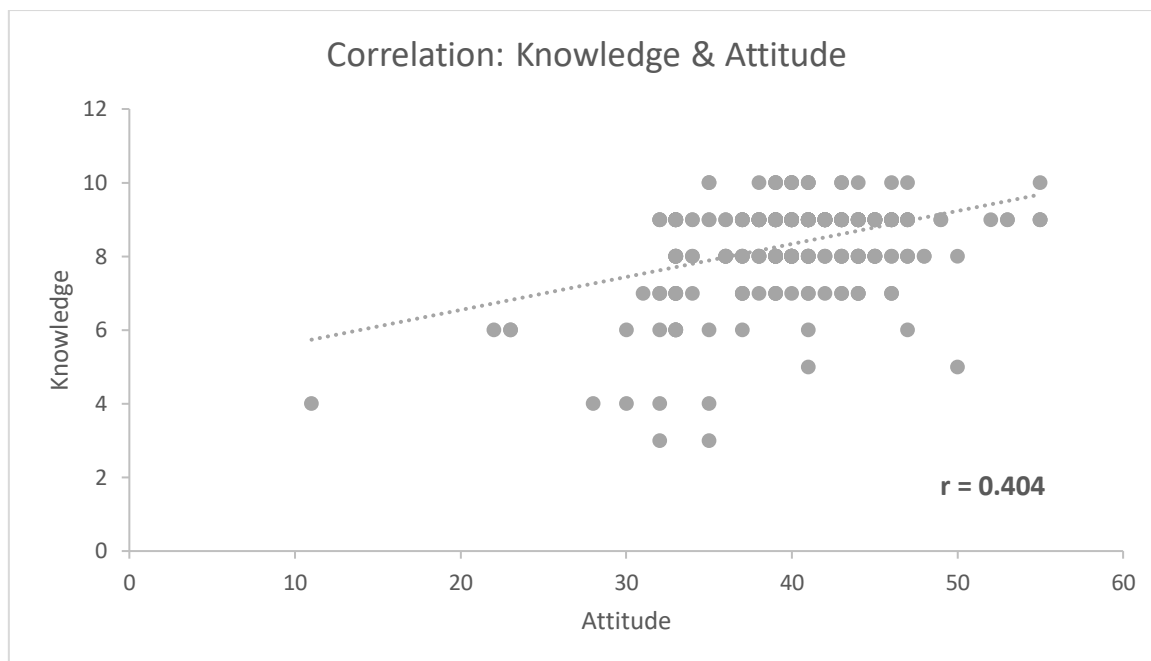
**Chart 1: Distribution of knowledge**

The distribution of knowledge regarding emergency medicine among the participants indicates a predominantly high level of understanding. A substantial majority 85% of participants demonstrated good knowledge, suggesting that most respondents possess adequate awareness and comprehension in this area. Meanwhile, 13% of participants were categorized as having moderate knowledge, indicating a basic but potentially insufficient level that may benefit from further improvement. Only a small proportion 2% exhibited poor knowledge, reflecting minimal understanding of emergency medicine concepts. The mean knowledge score was 8.36 (SD = 1.160), with a median of 9 and scores ranging from 3 to 10. Overall, the findings highlight a strong knowledge base among the study population, with relatively few individuals lacking essential knowledge.

The attitude scores among the participants indicate generally positive perceptions. The mean attitude score was 40.26 (SD = 5.229), with a median of 41, suggesting that most participants tended to have favourable attitudes. The scores ranged from a minimum of 11 to a maximum of 55, indicating some variability in responses, although the majority of values were clustered around the higher end of the scale.

**Table 1: Statistics of knowledge and attitude**

	Knowledge	Attitude
Mean	8.36	40.26
Median	9.00	41.00
Std. Deviation	1.160	5.229
Minimum	3	11
Maximum	10	55



**Chart 2: Correlation between knowledge and attitude**

The correlation analysis revealed a moderate positive relationship between knowledge and attitude, with a correlation coefficient of  $r = 0.404$  ( $p$  value  $< 0.001^*$ ). This indicates that higher levels of knowledge are associated with more positive attitudes among the participants. These findings imply that improvements in knowledge may contribute to more favourable attitudes toward the subject.

**Table 2: Analysis of knowledge among the study participants**

		Knowledge			Chi square (p value)
		Poor	Moderate	Good	
Age (In years)	≤20 years 70(22.1%)	1(1.4%)	12(17.1%)	57(81.4%)	4.367 (0.359)
	20-22 years 180(56.8%)	3(1.7%)	19(10.6%)	158(87.8%)	
	>22 years 67(21.1%)	3(4.5%)	10(14.9%)	54(80.6%)	
Gender	Female 217(68.5%)	4(1.8%)	28(12.9%)	185(85.3%)	0.428 (0.807)
	Male 100(31.5%)	3(3.0%)	13(13.0%)	84(84.0%)	
Year of Study	1st Year 43(13.6%)	1(2.3%)	4(9.3%)	38(88.4%)	8.790 (0.186)
	2nd Year 46(14.5%)	1(2.2%)	12(26.1%)	33(71.7%)	
	3rd Year 3(0.9%)	-	-	3(100.0%)	
	Final Year 225(71.0%)	5(2.2%)	25(11.1%)	195(86.7%)	
Have you undergone BLS or ACLS training	No 184(58.0%)	5(2.7%)	25(13.6%)	154(83.7%)	0.729 (0.694)
	Yes 133(42.0%)	2(1.5%)	16(12.0%)	115(86.5%)	
Have you ever assisted/witnessed CPR	No 242(76.3%)	2(0.8%)	32(13.2%)	208(86.0%)	9.054 (0.011*)
	Yes 75(23.7%)	5(6.7%)	9(12.0%)	61(81.3%)	
	No 144(45.4%)	3(2.1%)	24(16.7%)	117(81.3%)	3.266 (0.195)

<b>Have you independently performed CPR on a patient/mannequin</b>	Yes 173(54.6%)	4(2.3%)	17(9.8%)	152(87.9%)	
<b>Have you ever visited the Emergency Department in your college/hospital for clinical postings</b>	No 218(68.8%)	1(0.5%)	27(12.4%)	190(87.2%)	10.272 (0.006*)
	Yes 99(31.2%)	6(6.1%)	14(14.1%)	79(79.8%)	
<b>Have you used the triage system during clinical postings?</b>	No 278(87.7%)	3(1.1%)	32(11.5%)	243(87.4%)	18.317 ( $<0.0001^*$ )
	Yes 39(12.3%)	4(10.3%)	9(23.1%)	26(66.7%)	
<b>Do you feel the current emergency training provided in your curriculum is adequate</b>	No 233(73.5%)	1(0.4%)	27(11.6%)	205(88.0%)	14.846 (0.001*)
	Yes 84(26.5%)	6(7.1%)	14(16.7%)	64(76.2%)	
<b>Are you willing to take up Emergency Medicine as your career/specialty</b>	No 164(51.7%)	2(1.2%)	26(15.9%)	136(82.9%)	3.893 (0.143)
	Yes 153(48.3%)	5(3.3%)	15(9.8%)	133(86.9%)	

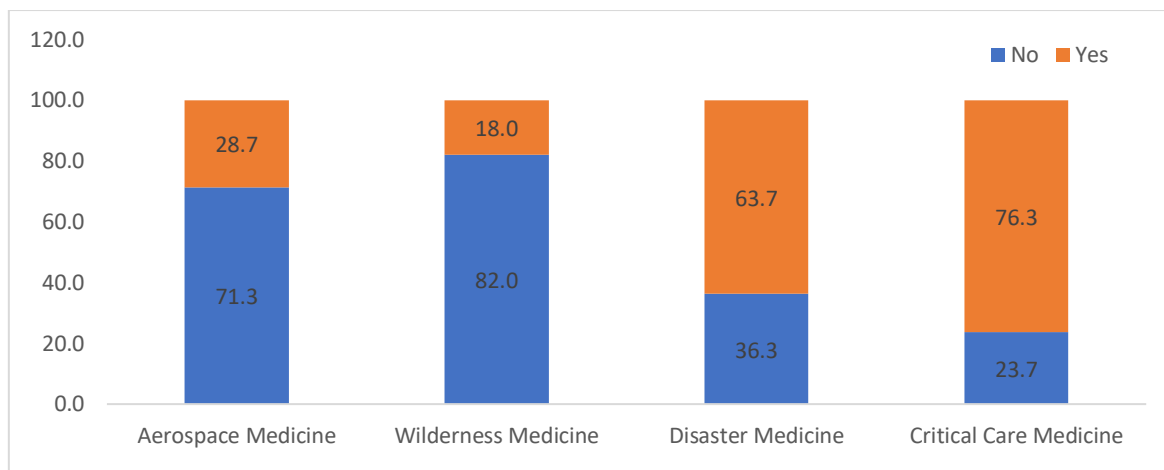
The association between knowledge levels and selected demographic and clinical variables was assessed using the chi-square test. There was no statistically significant association between knowledge and gender ( $\chi^2 = 0.428$ ,  $p = 0.807$ ), indicating that knowledge levels were comparable between males and females. Similarly, year of study did not show a significant association with knowledge ( $\chi^2 = 8.790$ ,  $p = 0.186$ ), although a high proportion of students across all years, particularly final-year students, exhibited good knowledge. Training status (BLS/ACLS) was also not significantly associated with knowledge ( $\chi^2 = 0.729$ ,  $p = 0.694$ ), suggesting that formal training did not markedly influence knowledge levels in this sample. Age group likewise showed no significant relationship with knowledge ( $\chi^2 = 4.367$ ,  $p = 0.359$ ). In contrast, certain exposure-related variables demonstrated statistically significant associations.

Participants who had witnessed or assisted in cardiopulmonary resuscitation (CPR) showed a significant association with knowledge levels ( $\chi^2 = 9.054$ ,  $p = 0.011$ ), indicating that such exposure may influence knowledge. Similarly, visiting the emergency department during clinical postings was significantly associated with knowledge ( $\chi^2 = 10.272$ ,  $p = 0.006$ ), suggesting that clinical exposure contributes to better knowledge outcomes. Use of the triage system also showed a strong significant association ( $\chi^2 = 18.317$ ,  $p < 0.001$ ), highlighting the importance of hands-on clinical experience. Perception of training adequacy was another significant factor ( $\chi^2 = 14.846$ ,  $p = 0.001$ ), where those who perceived their training as adequate demonstrated relatively different knowledge distributions compared to those who did not. However, independently performing CPR ( $\chi^2 = 3.266$ ,  $p = 0.195$ ) and willingness to pursue emergency medicine as a career ( $\chi^2 = 3.893$ ,  $p = 0.143$ ) were not significantly associated with knowledge levels.

**Table 3: Knowledge about Emergency medicine sub specialities**

		No of participants	Percentage
<b>Aerospace Medicine</b>	Don't Know	112	35.3
	No	114	36.0
	Yes	91	28.7
<b>Wilderness Medicine</b>	Don't Know	134	42.3
	No	126	39.7
	Yes	57	18.0
<b>Disaster Medicine</b>	Don't Know	62	19.6
	No	53	16.7
	Yes	202	63.7
<b>Critical Care Medicine</b>	Don't Know	41	12.9
	No	34	10.7
	Yes	242	76.3

Participants only knew Critical Care Medicine as the sub speciality accounting for 76.3% (242), followed by Disaster Medicine at 63.7% (202). In contrast, participants didn't even know about other sub-specialities like Aerospace Medicine only 28.7% (91) and Wilderness Medicine of 18% (57).



**Chart 3: Knowledge about Emergency medicine sub specialities (Considering don't know as no)**

There was no statistically significant difference in attitude scores across age groups ( $F = 0.581, p = 0.560$ ). Participants aged  $\leq 20$  years had a mean score of  $40.86$  ( $SD = 3.943$ ), while those aged 20–22 years and  $>22$  years had mean scores of  $40.09$  ( $SD = 5.720$ ) and  $40.09$  ( $SD = 5.044$ ), respectively. Similarly, gender did not show a significant association with attitude ( $F = 0.847, p = 0.358$ ), although males had a slightly higher mean score ( $40.66 \pm 5.184$ ) compared to females ( $40.08 \pm 5.252$ ). Year of study also did not significantly influence attitude scores ( $F = 0.557, p = 0.644$ ), with mean values remaining comparable across all academic levels. In addition, no significant differences were observed based on BLS/ACLS training status ( $F = 1.291, p = 0.257$ ), witnessing CPR ( $F = 0.014, p = 0.907$ ), independently performing CPR ( $F = 0.848, p = 0.358$ ), visiting the emergency department ( $F = 0.307, p = 0.580$ ), or use of the triage system ( $F = 0.354, p = 0.552$ ). Perception of the adequacy of emergency training approached statistical significance ( $F = 3.728, p = 0.054$ ), with participants who perceived training as inadequate showing slightly higher attitude scores ( $40.60 \pm 4.869$ ) compared to those who considered it adequate ( $39.32 \pm 6.052$ ). Importantly, willingness to pursue emergency medicine as a career demonstrated a statistically significant association with attitude scores ( $F = 14.057, p < 0.001$ ). Participants willing to choose emergency medicine had higher mean attitude scores ( $41.38 \pm 5.258$ ) compared to those who were not willing ( $39.22 \pm 4.997$ ).

**Table 4: Factors associated with attitude score**

		Mean	SD	F (p value)
<b>Age (In years)</b>	$\leq 20$ years 70(22.1%)	40.86	3.943	0.581 (0.560)
	20-22 years 180(56.8%)	40.09	5.720	
	$>22$ years 67(21.1%)	40.09	5.044	
<b>Gender</b>	Female 217(68.5%)	40.08	5.252	0.847 (0.358)
	Male 100(31.5%)	40.66	5.184	
<b>Year of Study</b>	1st Year 43(13.6%)	41.00	3.295	0.557 (0.644)
	2nd Year 46(14.5%)	40.57	4.578	
	3rd Year 3(0.9%)	38.33	1.528	
	Final Year 225(71.0%)	40.08	5.666	
<b>Have you undergone BLS or ACLS training</b>	No 184(58.0%)	39.98	5.126	1.291 (0.257)
	Yes 133(42.0%)	40.65	5.364	
<b>Have you ever assisted/witnessed any CPR</b>	No 242(76.3%)	40.28	4.881	0.014 (0.907)
	Yes 75(23.7%)	40.20	6.260	

Have you independently performed CPR on a patient/mannequin	No 144(45.4%)	39.97	5.448	0.848 (0.358)
	Yes 173(54.6%)	40.51	5.042	
Have you ever visited the Emergency Department in your college/hospital for clinical posting	No 218(68.8%)	40.37	4.917	0.307 (0.580)
	Yes 99(31.2%)	40.02	5.878	
Have you used the triage system during clinical postings?	No 278(87.7%)	40.33	4.747	0.354 (0.552)
	Yes 39(12.3%)	39.79	7.931	
Do you feel the current emergency training provided in your curriculum is adequate	No 233(73.5%)	40.60	4.869	3.728 (0.054)
	Yes 84(26.5%)	39.32	6.052	
Are you willing to take up Emergency Medicine as your career/specialty	No 164(51.7%)	39.22	4.997	14.057 ( $<0.001^*$ )
	Yes 153(48.3%)	41.38	5.258	

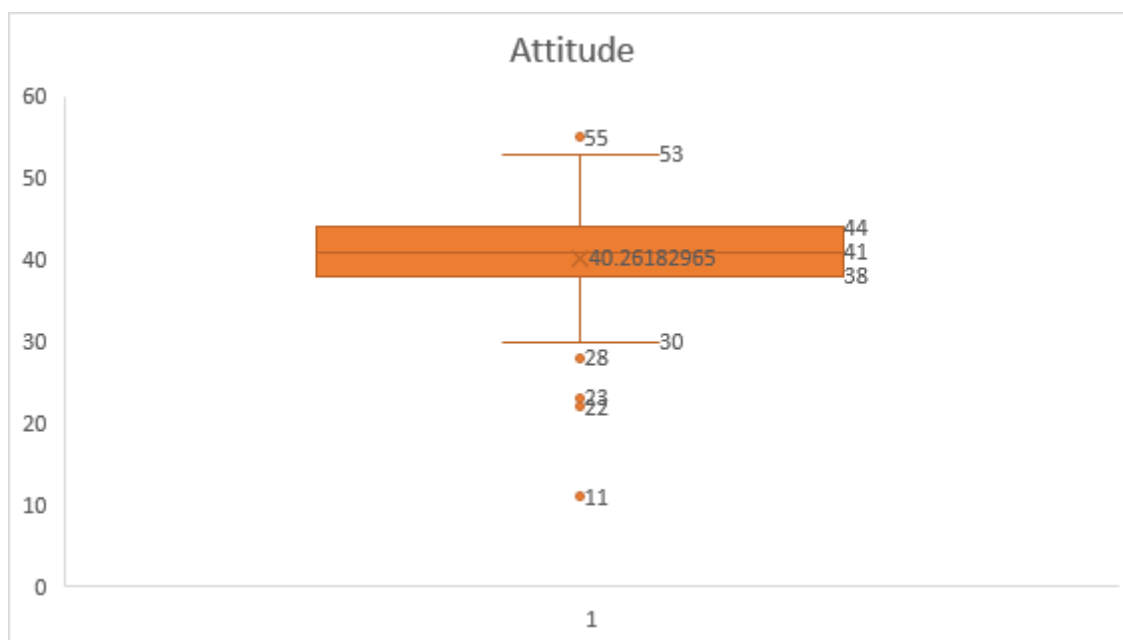
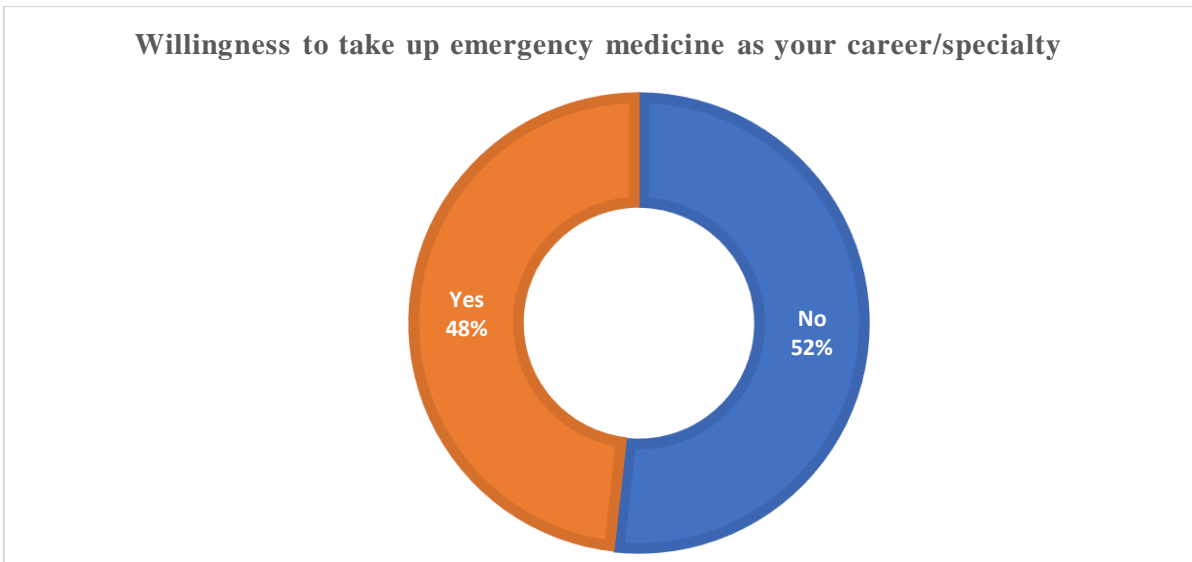


Chart 4: Mean scores for attitude

Table 5: Analysis of practice among the study participants

	Yes	No
Have you ever assisted/witnessed any Cardio Pulmonary Resuscitation (CPR)	75(23.7)	242(76.3)
Have you independently performed CPR on a patient/mannequin	173(54.6)	144(45.4)
Have you ever visited the Emergency Department in your college/hospital for clinical posting	99(31.2)	218(68.8)
Have you used the triage system during clinical postings	39(12.3)	278(87.7)
Do you feel the current emergency training provided in your curriculum is adequate	84(26.5)	233(73.5)
Are you willing to take up Emergency Medicine as your career/specialty	153(48.3)	164(51.7)



**Chart 5: Willingness to take up emergency medicine as career/specialty**

The responses related to exposure and perceptions of emergency medicine practices show varying levels of experience among participants. A large majority 76.3% reported that they had never assisted or witnessed cardiopulmonary resuscitation (CPR), while only 23.7% had such exposure. However, more than half of the participants 54.6% stated that they had independently performed CPR on a patient or mannequin, whereas 45.4% had not. Regarding clinical exposure, 68.8% of participants had not visited the emergency department during their clinical postings, while 31.2% had such experience. Similarly, the use of triage systems was reported by only a small proportion 12.3%, with the vast majority 87.7% indicating that they had not used triage during their postings. In terms of perceptions of training, a considerable proportion of participants 73.5% felt that the current emergency training provided in their curriculum was inadequate, while only 26.5% considered it sufficient. Despite this, nearly half of the participants 48.3% expressed willingness to pursue emergency medicine as a career or specialty, compared to 51.7% who were not interested.

**DISCUSSION**

This study evaluated the knowledge, attitude, and practice (KAP) of South Indian undergraduate medical students towards Emergency Medicine (EM) and examined the interrelationships between these three domains. A substantial chunk of participants demonstrated good knowledge of EM (85%), with a high mean score, indicating that basic conceptual understanding of emergency care is well established, which is encouraging.

Attitudes toward EM were correspondingly positive, with scores skewed toward the higher end of the mean range. Knowledge and attitude showed a moderate positive correlation ( $r = 0.404, p < 0.001$ ), indicating that increased understanding of the specialty branch contributes to constructive beliefs and gravitas toward Emergency Medicine as a specialty impacting day to day healthcare delivery. Despite strong knowledge and positive attitudes, the practice component revealed a substantial and clinically significant deficient which is a symptom of a deeper systemic inadequacy -limited exposure to Emergency medicine in undergraduate clinical training. This directly impacts both confidence and career inclination.

Other KAP-based emergency care studies demonstrate that practical competence invariably lags behind knowledge and attitude due to insufficient hands-on training .<sup>10</sup> Recent National Medical Council decision of removing mandatory emergency department which was previously mandated has definitely hampered the growth of emergency department in medical colleges. The findings of this study lend an empirical support to concerns about this policy change by NMC. Our study is an example, where students found their training in undergraduate training was inadequate and less than 50% were interested in pursuing EM as their career option.

Result	Value	Interpretation	Suggestions
<b>Knowledge</b>	Good knowledge. Only few students score low	Students have strong EM knowledge	Reinforcing EM in their curriculum and continuing of education
<b>Attitude</b>	Scores are high mean	Positive attitude towards EM	Influence this attitude in career choosing by raising awareness
<b>Practice</b>	Only 48% interested in EM career	Students not convinced for choosing EM as career.	Integration of EM in curriculum,

			Career counselling, Hands on training, Dedicated EM departments in institution.
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### Strengths and Limitations

Strengths: Adequate sample size; and identification of exposure-based determinants of KAP provides insights for curriculum formation and reformation.

Limitations: Reporting bias; Lack of qualitative data limits understanding of student motivations and barriers; and Skewed distribution (predominantly final-year students).

### CONCLUSION

The perception among students that EM training is inadequate represents a high-impact finding. It indicates that EM is not sufficiently embedded in the curriculum leading to poor clinical exposure and confidence in handling emergency situations; and establishing proper Emergency departments and enhancing its growth in medical colleges boosts students' acceptability as career choice. The Observed deficits in clinical exposure, Hands-on training and career interest collectively indicate that Emergency Medicine is not yet adequately embedded within the undergraduate curriculum. Establishing functional Emergency departments in Medical Institutions and mandating structured EM rotations are essential steps toward improving clinical readiness and expanding the emergency workforce in India.

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