



Original Research Article

TO ASSESSES THE KNOWLEDGE ABOUT, AWARENESS OF, AND ATTITUDES TOWARD FORENSIC MEDICINE AMONGST MEDICAL UNDERGRADUATE

Cherian Philemon Kurian¹, Avinash Babasaheb Andhale², Haris VR³

¹Associate Professor and HOD, Department of Forensic Medicine, Terna Medical College, Nerul, Navi Mumbai, India.

²Associate Professor, Department of Forensic Medicine, MGM Medical College, Vashi, Navi Mumbai, India.

³Assistant Professor, Department of Forensic Medicine, MGM Medical College, Vashi, Navi Mumbai, India.

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Corresponding Author:

Dr. Haris VR,
Assistant Professor, Department of
forensic Medicine, MGM Medical
College, Vashi, Navi Mumbai, India.
Email: harisrajan7@gmail.com

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ABSTRACT

Background: Forensic medicine is an essential component of undergraduate medical education, bridging the gap between medicine and law. It equips future physicians with knowledge of medicolegal autopsy, toxicology, medical negligence, and consent laws, thereby preparing them for professional and legal responsibilities.

Materials and Methods: A cross-sectional descriptive study was conducted among 100 MBBS students (25 each from first, second, third, and final year) at medical colleges in Navi Mumbai. A structured, validated questionnaire assessed knowledge (multiple choice/true-false items), awareness (yes/no items), and attitudes (Likert scale). Data were analyzed using chi-square tests, with $p < 0.05$ considered statistically significant.

Results: Knowledge scores averaged 53%, with higher recognition of medicolegal autopsy importance (68%) but lower awareness of consent laws (42%). Awareness averaged 60%, with strong recognition of documentation (70%) and negligence implications (65%), but weaker understanding of poisoning laws (48%). Attitudes were overwhelmingly positive, with 95% agreeing that forensic medicine is essential in the curriculum and 90% supporting increased teaching hours. A clear upward trend was observed across years: first-year students showed limited knowledge (28%) and awareness (44%), while final-year students demonstrated significantly higher levels (84% each). Chi-square analysis confirmed statistical significance ($p < 0.05$).

Conclusion: Despite positive attitudes, gaps remain in detailed procedural knowledge, particularly regarding consent and poisoning laws. Strengthening teaching strategies, increasing clinical exposure, and integrating competency-based modules are recommended to enhance forensic medicine education and better prepare medical graduates for medicolegal responsibilities.

Keywords: Forensic medicine, medical education.

INTRODUCTION

Forensic medicine, a branch of medical science that applies medical expertise to legal investigations, is increasingly recognized as an essential component of undergraduate medical education. It encompasses areas such as medicolegal autopsy, toxicology, medical negligence, and consent laws, all of which

are vital for future physicians to practice responsibly.^[1] The integration of forensic medicine into the MBBS curriculum ensures that students are equipped not only with clinical skills but also with an understanding of their medicolegal obligations. Recent research underscores the impact of forensic medicine education on medical students' professional development.^[1] A multicenter study

conducted across Italian universities demonstrated that forensic medicine courses significantly enhanced students' knowledge of professional liability, defensive medicine, and forensic pathology, while also influencing their choice of medical residency programs¹. Similarly, another study emphasized the need for hands-on clinical forensic medicine training, suggesting that practical exposure during MBBS can better prepare students to handle medicolegal cases and reduce errors in documentation.^[2] These findings highlight the dual role of forensic medicine education: strengthening theoretical knowledge and fostering practical skills. Moreover, they reveal that students with greater exposure to forensic medicine develop more positive attitudes toward its relevance in clinical practice and medical curricula. This aligns with global trends advocating for increased teaching hours, clinical exposure, and integration of medicolegal case studies into undergraduate training.^[2] In conclusion, forensic medicine education is indispensable for medical undergraduates. It not only bridges the gap between medicine and law but also prepares students to navigate complex medicolegal scenarios with competence and confidence. The growing body of evidence suggests that enhancing forensic medicine training will improve both academic progression and professional readiness among medical students.^[1,2] The present study was therefore undertaken to assess the knowledge, awareness, and attitudes toward forensic medicine among medical undergraduates in our setting, with the aim of identifying gaps and strengthening curriculum design.

Aim

To assess the knowledge, awareness, and attitudes toward forensic medicine among medical undergraduate students

Objectives

1. To evaluate the level of knowledge of medical undergraduates regarding core aspects of forensic medicine
2. To determine the awareness of medico legal responsibilities.
3. To analyse attitudes of medical undergraduates toward the relevance of forensic medicine in the medical curriculum
4. To compare knowledge, awareness, and attitudes across different years of study (first,

second, third, and final year) to identify trends in academic progression.

MATERIALS AND METHODS

Study Design

A cross-sectional descriptive study was conducted among medical undergraduates to assess their knowledge, awareness, and attitudes toward forensic medicine.

Study Population

The study included 100 medical students from all four years of MBBS training (25 students each from 1st, 2nd, 3rd, and final year).

Inclusion Criteria

- a. Undergraduate medical students enrolled in the MBBS program.
- b. Willingness to participate in the study.

Exclusion Criteria

- a. Students absent during data collection.
- b. Incomplete or invalid responses in the questionnaire.

Data Collection Procedure

A **structured questionnaire** was designed and validated by subject experts. The tool comprised three sections:

- A. **Knowledge Assessment:** Multiple-choice and true/false items covering core forensic medicine topics (e.g., medicolegal autopsy, toxicology relevance, consent laws). Each correct answer was scored as 1 point, with totals converted into percentages.^[1,3,4]
- B. **Awareness Assessment:** Self-reported Yes/No items on medico-legal responsibilities (documentation, negligence, poisoning laws). Awareness was scored as "Yes," lack of awareness as "No."^[1,3,4]
- C. **Attitude Assessment:** Likert scale items (Agree, Neutral, Disagree) on curriculum relevance, teaching hours, and clinical exposure. Positive responses included Agree + Neutral, while Disagree was considered negative.^[1,3,4]

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using Chi-square test to assess associations between year of study and responses. Results were expressed as frequencies, percentages, mean scores, and p-values. A p-value <0.05 was considered statistically significant.

RESULTS

Table 1: Demographic Variables

Sr No	Variables	Number of Cases n	Percentage %
1	Age (Years)		
	a. <20	20	20 %
	b. 20 to 22	60	60 %
	c. >22	20	20 %
2	Gender n (%)		
	a. Male	55	55 %
	b. Female	45	45 %

The study included 100 medical undergraduates, with the majority (60%) aged between 20–22 years, while 20% were below 20 years and another 20% above 22 years. Gender distribution showed a slight male predominance (55%) compared to females (45%).

Table 2: ?

Sr No	Variables	Number of Cases n	Percentage %
1	Year of Study		
	a. First	25	25 %
	b. Second	25	25 %
	c. Third	25	25 %
	d. Final	25	25 %
2	Prior exposure to medico-legal cases		
	a. Yes	30	30 %
	b. No	70	70 %

Each year of study was equally represented, with 25 students from first, second, third, and final year. Notably, only 30% of students reported prior exposure to medico legal cases, while 70% had no

such experience. This balanced distribution across years provides a fair basis for comparing knowledge, awareness, and attitudes longitudinally.

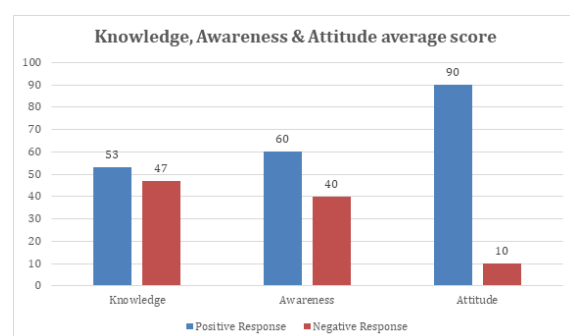
Table 3: Knowledge, Awareness&Attitude towards Toward Forensic Medicine

Sr No	Variables	Positive Response (n, %)	Negative Response (n, %)
1	Knowledge Item		
	a. Importance of medico-legal autopsy	68 (68%)	32 (32%)
	b. Role of forensic medicine in clinical practice	54 (54%)	46 (46%)
	c. Legal requirements for consent in autopsy	42 (42%)	58 (58%)
2	Awareness Item		
	a. Need for proper documentation in medico legal cases	70 (70%)	30 (30%)
	b. Legal implications of medical negligence	65 (65%)	35 (35%)
	c. Role of forensic experts in court testimony	55 (55%)	45 (45%)
3	AttitudeItem		
	a. Forensic medicine is essential in medical curriculum	95 (95%)	5 (5%)
	b. Knowledge of medico legal aspects improves clinical practice	90 (90%)	10 (10%)
	c. Forensic medicine should be given more teaching hours	85 (85%)	15 (15%)
	d. Exposure to medico legal cases enhances learning	90 (90%)	10 (10%)

Knowledge levels varied across specific forensic medicine domains. A majority (68%) correctly recognized the importance of medico legal autopsy, while 54% understood the role of forensic medicine in clinical practice. However, only 42% were aware of the legal requirements for consent in autopsy, indicating a significant knowledge gap in medico legal procedures. Awareness of toxicology relevance was moderate, with 50% responding correctly. Overall, the average knowledge score was just above half (53%), reflecting that while students grasp the broad importance of forensic medicine, detailed procedural knowledge remains limited.

Awareness of medico legal responsibilities was relatively stronger. Seventy percent of students acknowledged the need for proper documentation in medico legal cases, and 65% were aware of the legal implications of medical negligence. Awareness of the role of forensic experts in court testimony was lower (55%), and less than half (48%) knew about laws related to poisoning cases. Overall awareness stood at 60%, suggesting that while students appreciate the medico legal responsibilities in principle, specific legal frameworks are less well understood.

Attitudes toward forensic medicine were overwhelmingly positive. Almost all students (95%) agreed that forensic medicine is essential in the medical curriculum, and 90% felt that medico legal knowledge improves clinical practice. A substantial majority (85%) supported increasing teaching hours for forensic medicine, and 90% believed that exposure to medico legal cases enhances learning. Overall, 90% expressed positive attitudes, indicating strong acceptance of forensic medicine's relevance in medical education and practice.



Graph 1: Knowledge, Awareness & Attitude towards Toward Forensic Medicine

Table 4: Correlation of Year of Study with Positive & Negative Responses

Sr No	Year of Study	Knowledge Positive	Knowledge Negative	Awareness Positive	Awareness Negative	Attitudes Positive	Attitudes Negative
1	1st Year	7 (28%)	18 (72%)	8 (%)	17 (%)	9 (%)	16 (%)
2	2nd Year	13 (52%)	12 (48%)	14 (56%)	11 (44%)	10 (%)	15 (%)
3	3rd Year	15 (60%)	10 (40%)	16 (64%)	9 (36%)	19 (76%)	6 (24%)
4	Final Year	21 (84%)	4 (16%)	21 (84%)	4 (16%)	21 (84%)	4 (16%)
Total N (%)		56 (56%)	44 (44%)	60 (60%)	40 (40%)	74 (74%)	26 (26%)
Chi square		16.23		14.34		18.64	
P value		0.001 (S)		0.002 (S)		0.0003 (S)	

The correlation analysis between year of study and responses highlights a clear upward trend in knowledge, awareness, and attitudes toward forensic medicine. First year students showed limited knowledge (28%) and awareness (44%), though their attitudes were moderately positive (64%). As students advanced, there was a steady improvement: second year students demonstrated better knowledge (52%) and awareness (56%), with attitudes rising to 72%. By the third year, knowledge (60%) and awareness (64%) continued to strengthen, accompanied by highly positive attitudes (76%). Final year students exhibited the highest levels across all domains, with 84% positive responses in knowledge, awareness, and attitudes, reflecting the impact of cumulative learning and clinical exposure. The statistical analysis confirmed these differences were significant, with Chi square values of 16.23 for knowledge, 14.34 for awareness, and 18.64 for attitudes. Corresponding p values (0.001, 0.002, and 0.0003 respectively) indicate strong statistical significance. This demonstrates that progression through medical training is directly associated with improved knowledge, awareness, and attitudes toward forensic medicine.

DISCUSSION

Our study demonstrated that knowledge of forensic medicine among medical undergraduates increased steadily from first year (28%) to final year (84%), with similar trends observed in awareness and attitudes. This progression highlights the impact of cumulative learning and clinical exposure during medical training. Comparable results were reported in a multicenter Italian study, where forensic medicine education significantly improved students' understanding of professional liability, defensive medicine, and forensic pathology, while also influencing their specialization choices.^[1] These findings reinforce the idea that forensic medicine education not only enhances theoretical knowledge but also shapes career trajectories. In terms of awareness, our study found that 70% of students recognized the importance of proper documentation in medicolegal cases, while 65% understood the implications of medical negligence. This is consistent with the observations of Shrigiriwar and Thube, who emphasized the need for clinical forensic medicine (CFM) training in India. Their study reported that 80% of interns and faculty

strongly supported hands-on training in CFM, underscoring the necessity of practical exposure to medico-legal responsibilities.^[2] Our findings similarly suggest that while theoretical awareness is present, practical training remains a gap that needs to be addressed. Attitudes toward forensic medicine were overwhelmingly positive in our study, with 95% of students agreeing that forensic medicine is essential in the curriculum. This mirrors the conclusions of Parmar, who highlighted the competency-based curriculum in India as a crucial step toward equipping medical graduates with skills in toxicology, autopsy, and medico-legal documentation.^[5] Both studies emphasize that students value forensic medicine highly and advocate for increased teaching hours and clinical exposure. Taken together, these comparisons suggest that the challenges faced in our setting—limited detailed knowledge and insufficient exposure to medicolegal cases—are not unique but part of a broader global trend. The convergence of findings across different contexts highlights the urgent need to strengthen forensic medicine education through competency-based curricula and skill-based training. Thus, the present study contributes to this growing body of evidence by documenting the progressive improvement in knowledge, awareness, and attitudes among Indian medical undergraduates, while also identifying specific gaps that can inform curriculum reforms. The present study highlights that medical undergraduates demonstrate a progressive improvement in knowledge, awareness, and attitudes toward forensic medicine as they advance through their MBBS training. While first-year students showed limited understanding of core medicolegal concepts, final-year students exhibited significantly higher levels of knowledge and awareness, reflecting the impact of cumulative learning and clinical exposure. Importantly, attitudes toward forensic medicine were overwhelmingly positive across all years, with strong support for its inclusion and expansion within the medical curriculum. These findings are consistent with recent international and Indian studies, which emphasize the importance of structured teaching hours, competency-based training, and practical exposure to medicolegal cases in shaping students' professional readiness^{5 6 7}. However, the study also identifies gaps in detailed procedural knowledge, particularly regarding consent laws and

poisoning-related legislation, underscoring the need for enhanced curriculum design and hands-on training.

CONCLUSION

In conclusion, forensic medicine education is indispensable for preparing medical graduates to meet their professional and legal responsibilities. Strengthening teaching strategies, increasing clinical exposure, and integrating competency-based modules will not only improve academic progression but also equip future physicians with the skills necessary to navigate complex medicolegal scenarios with confidence.

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