

Exploring Perceptions and Attitudes of Medical Students Towards Forensic Medicine and Toxicology: A Monocentric Survey-Based Evaluation

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Abstract

Background: Forensic Medicine and Toxicology (FMT) are integral components of the MBBS curriculum, encompassing legal, toxicological, and medical jurisprudence aspects. Despite their importance, research on students' perceptions of FMT remains limited.

Aim: This study aimed to evaluate medical students' knowledge, perceptions, and attitudes towards FMT and assess the influence of FMT training on their career inclinations.

Methods: A cross-sectional descriptive study was conducted at KMC, Katihar, Bihar, involving 476 participants from various professional years. Participants completed a validated questionnaire assessing their opinions on FMT subject in the MBBS curriculum. Data were analysed using statistical tests to compare responses across different groups.

Results & Discussion: The study revealed diverse demographics among participants, with significant variations in attitudes towards FMT across different professional years. While the majority recognized the utility of FMT in their studies, opinions varied on its application and relevance, particularly in legal contexts. Participants engaged in FMT training demonstrated higher levels of interest and understanding, highlighting the positive impact of training on student engagement and comprehension. However, opinions on the overall quality of FMT education remained consistent across all groups, suggesting the need for further curriculum refinement.

Conclusion: This study provides insights into medical students' perceptions of FMT, emphasizing the importance of tailored educational interventions to meet evolving needs. Further research and multicentric validation are warranted to inform evidence-based strategies for enhancing FMT education in medical schools.

Keywords: Forensic Medicine Training; Medical Student Attitudes; Curriculum Development; Career Preferences


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INTRODUCTION

Background

Forensic Medicine and Toxicology (FMT) constitute crucial components of the MBBS curriculum and are studied in every medical university.^{1,2} Historically, in India, prior to the establishment of the National Medical Commission (NMC), FMT was taught during the 2nd professional year, lasting for 18 months.² However, with the advent of new regulations, the duration

of teaching this subject has been extended to 23.5 months, spanning across both the 2nd and 3rd professional years.³ FMT encompasses the legal and toxicological aspects of medicine, presented as Forensic Medicine and Forensic Toxicology, respectively. Additionally, it makes aware students with the legal obligations inherent in medical practice, known as medical jurisprudence. Given the legal ramifications, medical professionals often find themselves summoned to court to testify on their findings. Despite the significance of FMT in addressing the dearth of trained professionals in the field and the abundance of career opportunities, there remains a paucity of research globally concerning students' perceptions and inclinations towards this subject¹

AIM

This study endeavours to recognize methods for enhancing the utilization and interest in the subject among medical students.

OBJECTIVES

1. To evaluate the knowledge, perceptions, and attitudes regarding Forensic Medicine and Toxicology as a component of the MBBS curriculum.
2. To assess the influence of the course on students' knowledge and inclinations towards pursuing a career in Forensic Medicine and Toxicology.

MATERIALS AND METHODS

Conducted between September 2023 and November 2023 at KMC, Katihar, Bihar, this

cross-sectional descriptive study involved 476 participants. Inclusion criteria comprised all undergraduate medical students from the 1st professional year to the Internship, while individuals unwilling to participate were excluded. Ethical clearance was obtained from the Institutional Ethical Committee prior to commencement. Consent was procured from eligible individuals who were then requested to respond to a questionnaire via a Google Form distributed through various online channels. Of the 26 initial questions, 19 were retained following validation, ensuring a Cronbach's alpha value exceeding 0.9. Responses were graded on a five-point Likert scale, ranging from 'strongly disagree' to 'strongly agree.' Data were analysed chronologically based on the participants' progression through the MBBS course. Subgroups included students currently studying the subject in the 2nd and 3rd professional years, juxtaposed with those who had completed the course and were undergoing clinical rotations. Analysis was conducted using MS Excel and SPSS Version 25, focusing on internal and external interests, inconveniences, scope, and participants' opinions regarding the subject across different study groups. The responses to the questionnaires from all participants were analysed statistically using the Pearson Chi-Square test, univariate analysis and student t-test.

This manuscript aims to shed light on the perceptions and attitudes of medical students towards Forensic Medicine and Toxicology, providing insights for educational interventions to enhance engagement and interest in this vital field of study.

Questionnaires asked to the participants (Cronbach's alpha value):

Q. 1. Before admission to MBBS, I had prior awareness of the subject matter. (0.981)

Q. 2. I have a genuine interest in the subject matter (0.98)

Q. 3. I believe that the subject is highly useful in the MBBS curriculum. (0.98)

Q. 4. I believe that the subject remains underutilized for its potential in medico-legal investigations in India when compared to developed countries like the USA. (0.979)

Q.11. I possess knowledge regarding the practical use of the subject, specifically in clinical toxicology and clinical forensic applications. (0.98)

Q.12. I have a negative opinion of the subject due to its involvement with deceased individuals. (0.984)

Q.13. I may hesitate to select the subject as my career option due to its involvement with legal matters and potential court appearances (0.984)

Q.14. There is limited awareness among students and the general public about the subject's utility as defensive medicine and scope in medico-legal investigations. (0.979)

Table Cont...

Q. 5. I am motivated to study the subject because I find it easy, interesting, comprehensible, and relevant to the legal system. (0.98)	Q.15. Students' interest in the subject can be fostered through effective teaching methods, showcasing real-world clinical applications, providing exposure to court procedures under expert guidance, integrating innovative technologies like virtual autopsy and molecular autopsy, and promoting research. (0.979)
6. I see significant potential in the subject for improving the quality of medico-legal investigations when applied efficiently. (0.982)	Q.16. The use of effective teaching methods, like audio- visual demonstrations paired with relevant clinical case scenarios, can impact your level of interest in the subject. (0.979)
Q. 7. In my view, it is imperative for every doctor to possess fundamental knowledge of the subject as a safeguard against medico-legal challenges during their professional (0.979)	Q.17. Various TV programs such as CID, Crime Patrol, Discovery Channel, web series, and movies featuring the subject have the potential to spark interest in the subject among students. (0.981)
Q.8. In my opinion, the subject should be effectively harnessed for high-impact medico-legal investigations (0.983)	Q.18. How would you rate the overall importance of the subject in dealing with medico-legal cases in India? (Very high, High, Moderate, Low, Very low) (0.979)
Q.9. I would be inclined to select the subject as my career option. (0.98)	Q.19. Do you believe that Forensic Medicine should remain an integral part of the existing MBBS curriculum? (0.979)
Q.10. I consider the primary limitation of the subject at present to be the insufficient clinical application. (0.981)	

RESULTS

The demographic evaluation revealed that out of the total participants, 273 were male and 203 were female, with the maximum age group distribution observed at 21 years for 1st professional, 22 years for 2nd professional, 23 years for 3rd professional Part-1, 24 years for 3rd professional Part-2, and 25 years for interns. The majority of participants are from Bihar, followed by West Bengal, Jharkhand, and Uttar Pradesh (Table 1).

Table 1: Demographic Profile of Responding MBBS Students

Year of MBBS	Male (%)	Female (%)	Total	Median Age (Yrs)	Area Distribution (%)
<i>1st Prof</i>	54 (50)	54 (50)	108	22	Bihar: 60, Other States: 40
<i>2nd Prof</i>	57 (64)	32 (36)	89	23	Bihar: 92, Other States: 08
<i>3rd Prof P-1</i>	65 (63)	39 (37)	104	23	Bihar: 83, Other States: 17
<i>3rd Prof P-2</i>	66 (61)	42 (39)	108	24	Bihar: 54, Other States: 46
<i>Intern</i>	31 (46)	36 (54)	67	24	Bihar: 72, Other States: 28

This table delineates the demographic characteristics of MBBS students who responded to the survey. It outlines the gender composition, total count, median age, and geographic distribution among Bihar and other states.

Correlating the responses from 1st professionals to interns, notably, significant differences were found in the responses to some questions, as indicated by p-values less than 0.05. For instance,

Questions 2, 4, 10, 11, 12, and 18 exhibited such significance. Conversely, other questions showed no significant differences, with p-values exceeding 0.05. This suggests varied perceptions and attitudes towards the subject among participants. Table 2 provides a summary of the responses and corresponding p-values for each question.

A comparison between two groups indicated that 52% of participants were from the 2nd professional and 3rd Professional Part-1 cohort, while 48%

were from the 3rd Professional Part-2 and intern group. The responses to the questionnaires were categorised into 'Disagree', 'Neutral', or 'Agree' with each statement. Most students in both groups agreed that Forensic Medicine training is really useful in their studies. They also mostly agreed that FMT is not used similarly in India and developed countries. Both groups also thought it's really important for medical professionals to know about legal issues, like in court cases. However, when it

Table 2: Percentage Distribution of Responses and p-values (Pearson Chi-Square test).

Q.No. for Survey Items	No. of students responded for different response options/statements (%)					Total No. of response	p-value
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree		
Q.1	15 (3.15)	43(9.03)	96(20.17)	207(43.49)	115(24.16)	476	>0.05
Q.2	3(0.63)	6 (1.26)	72(15.13)	255(53.59)	140(29.39)	476	<0.001
Q.3	5(1.05)	5 (1.05)	91(19.16)	259(54.41)	116(24.37)	476	>0.05
Q.4	3(0.63)	8 (1.68)	102(21.43)	244(51.26)	119(24.96)	476	<0.05
Q.5	4(0.84)	11(2.31)	80(16.81)	225(47.27)	156(32.77)	476	>0.05
Q.6	1(0.21)	3 (0.63)	46 (9.66)	224(47.06)	202(42.44)	476	>0.05
Q.7	2(0.42)	4 (0.84)	15 (3.15)	211(44.33)	244(51.26)	476	>0.05
Q.8	1(0.21)	3 (0.63)	47 (9.87)	254(53.36)	171(35.96)	476	>0.05
Q.9	26 (5.46)	94 (19.75)	209(43.91)	101(21.22)	46 (9.66)	476	>0.05
Q.10	2(0.42)	19(3.99)	88(18.49)	239(50.21)	128(26.89)	476	<0.05
Q.11	4(0.84)	31(6.51)	118(24.79)	253(53.16)	70(14.70)	476	<0.05
Q.12	76(15.97)	213 (44.74)	99(20.76)	72(15.13)	16 (3.36)	476	<0.05
Q.13	22 (4.62)	105 (22.06)	167(35.13)	140(29.41)	42 (8.78)	476	>0.05
Q.14	3(0.63)	13(2.73)	106(22.27)	278(58.40)	76(15.97)	476	>0.05
Q.15	3(0.63)	2 (0.42)	63(13.24)	242(50.84)	166(34.85)	476	>0.05
Q.16	3(0.63)	5 (1.05)	59(12.39)	226(47.48)	183(38.45)	476	>0.05
Q.17	2(0.42)	3 (0.63)	55(11.55)	221(46.40)	195(40.00)	476	>0.05
Q.18*	2(0.42)	3 (0.63)	37 (7.77)	155(32.64)	279(58.53)	476	<0.001
Q.19	2(0.42)	6 (1.26)	61(12.82)	267(56.30)	140(29.20)	476	>0.05

*Scoring from 1 to 5 are done for very low, low, moderate, high and very high respectively

This table displays the percentage distribution of responses for survey items Q1 to Q19, along side the corresponding p-values determined by the Pearson Chi-Square test. It reflects the distribution of responses across participants from 1st professionals to internship and the statistical significance of the findings.

comes to choosing FMT as a career, more interns and older students liked the idea compared to younger students. Overall, both groups mostly agreed that FMT is important in their studies, but some differences showed up in their thoughts about careers in this field (Table 3).

The table below presents findings from an independent t-test comparing three distinct groups: individuals without exposure to FMT Training, those currently engaged in learning FMT, and those who have completed FMT training and are now undergoing clinical posting. The study aimed to gauge respondents' perspectives

Table 3: Univariate analysis of question aries with professional years of MBBS curriculum

Questionaries	Response (for the statements)	Professional years			p-value
		2 nd &3 rd Prof-1; n (%)	3 rd Prof-2 & Intern; n (%)	Total; N (%)	
QA. The subject is highly useful in the MBBS curriculum.	<i>Disagree</i>	2(0.54)	7(1.90)	9(2.45)	0.158
	<i>Neutral</i>	35 (9.51)	27 (7.34)	62(16.84)	
	<i>Agree</i>	156(42.39)	141(38.32)	297(80.71)	
QB. Utilization of subject in India is not similar to developed countries.	<i>Disagree</i>	1(0.27)	8(2.17)	9(2.45)	0.007
	<i>Neutral</i>	49(13.31)	29 (7.88)	78(21.19)	
	<i>Agree</i>	143(38.85)	138(37.50)	281(7.61)	
QC. All medical professionals should possess fundamental knowledge of the medico-legal issue.	<i>Disagree</i>	2(0.54)	3(0.82)	5(1.35)	0.429
	<i>Neutral</i>	3(0.82)	6(1.64)	9(2.45)	
	<i>Agree</i>	188(51.08)	166(45.10)	354(96.20)	
QD. I would be inclined to select the subject as my career option.	<i>Disagree</i>	50(13.59)	47(12.77)	97(26.36)	0.017
	<i>Neutral</i>	98(26.63)	66(17.93)	164(44.56)	
	<i>Agree</i>	45(12.22)	62(16.84)	107(29.08)	
QE. The legal matters and potential court appearances is the main reason for not selecting the subject as career option	<i>Disagree</i>	56(15.22)	41(11.14)	97(26.36)	0.119
	<i>Neutral</i>	69(18.75)	54(14.67)	123(33.42)	
	<i>Agree</i>	68(18.47)	80(21.73)	148(40.22)	
QF. Limited awareness about its utilization as defensive medicine.	<i>Disagree</i>	4(1.09)	9(2.45)	13 (3.53)	0.231
	<i>Neutral</i>	37(10.05)	37(10.05)	74(20.11)	
	<i>Agree</i>	152(41.30)	129(35.05)	281(76.36)	
QG. The course should remain an integral part of the existing MBBS curriculum	<i>Disagree</i>	3(0.82)	4(1.09)	7(1.90)	0.856
	<i>Neutral</i>	23 (6.25)	22 (5.97)	45(12.23)	
	<i>Agree</i>	167(45.38)	149(40.49)	316(85.87)	

The response given as 'strongly disagree' and 'disagree' with the statements are categorised as "Disagree", 'Neutral' as "Neutral", and 'strongly agree' and 'agree' as "Agree". The "Professional years" categorizes participants into "2nd & 3rd Professional Year Part-1" and "3rd Professional Year Part-2 & Intern". The "p-value<0.05 is considered significant indicating the significance level for the statistical analysis.

across various dimensions, including intrinsic and extrinsic interest in the subject, understanding of its intricacies, and opinions/suggestions regarding its quality and potential improvement (Table 4).

Table 4: Independent t-test of group statistics of the response to each question of the study

	Groups								p-value	Remarks
	No FMT Exposure (group 1)		Learning FMT (group 2)		Completed FMT course (group 3)		Total			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Internal Interest										
Q2	3.88	0.72	4.26	0.69	4.06	0.76	4.1	0.74	<0.001	1 vs 2, 2 vs 3#
Q3	3.96	0.78	4.01	0.68	4.02	0.82	4	0.76	<0.05	1 vs 2 @
Q5	3.96	0.84	4.18	0.73	4.06	0.87	4.09	0.81	<0.05	1 vs 2 #
Q9	3.23	0.96	2.99	0.97	3.13	1.06	3.1	1	<0.05	1 vs 2 #
Q16	4.13	0.77	4.27	0.7	4.22	0.77	4.22	0.75	>0.05	All
External Interest										
Q1	3.84	0.92	3.78	1.03	3.7	1.05	3.76	1.01	>0.05	All
Q6	4.19	0.75	4.44	0.75	4.24	0.73	4.31	0.69	<0.05	1 vs 2, 2 vs 3 #
Q11	3.53	0.78	3.7	0.81	3.93	0.81	3.74	0.81	<0.001, <0.05	1 vs 3 # 2 vs 3 #
Q17	4.24	0.77	4.33	0.65	4.22	0.75	4.27	0.71	>0.05	All
In conveniences observed										
Q10	3.78	0.84	4.12	0.73	3.98	0.84	3.99	0.8	<0.05, <0.001	1 vs 3 # 1 vs 2 #
Q12	2.47	0.94	2.27	1.02	2.64	1.08	2.45	1.04	0.001	2 vs 3 #
Q13	3.06	0.95	3.09	1.05	3.29	1.01	3.16	1.01	>0.05	All
Opinion										
Q8	4.21	0.67	4.27	0.64	4.23	0.7	4.24	0.67	>0.05	All
Q15	4.11	0.69	4.26	0.66	4.15	0.8	4.19	0.72	>0.05	All
Q19	4.11	0.67	4.12	0.62	4.15	0.77	4.13	0.7	>0.05	All

The "Groups" indicates the different exposure levels. "Mean" represents the average score for each question with in each group. "SD" refers to the standard deviation of scores within each group. "p-value" signifies the statistical significance level for the independent t-test comparing groups. "Remarks" provides insights into significant differences between groups. # indicates Significant (2-tailed) and @ indicate Significant value. 'All' indicate similar p-value observed in all the group statistics such as 1 vs 2, 1 vs 3 and 2 vs 3.

Key findings are as follows

1. Individuals exposed to FMT, whether through learning or completing the course, demonstrated significantly higher levels of intrinsic interest compared to those without exposure.
2. Both learning and completing FMT were associated with increased extrinsic interest in the subject.
3. Completion of the FMT course notably enhanced understanding of subject intricacies.
4. Overall opinions regarding the subject's quality and potential improvement did not differ significantly among the groups.

In summary, exposure to FMT positively influenced interest levels and understanding, while opinions about its quality remained consistent across all groups.

DISCUSSION

The research article explores the intricate perceptions and attitudes of medical students towards Forensic Medicine and Toxicology, employing comparative analysis with existing literature to offer a comprehensive understanding of the subject. Through contextualizing the findings, the study highlights the exclusive importance and mandatory nature of FMT, providing training in fundamental concepts, legal implications, defensive medicine, and professional liability.^{1,4} Within the broader research landscape, our study resonates with prior research, acknowledging the pivotal role of FMT within the MBBS curriculum. Works by Vidua *et al.* (2020)² and Aulino G *et al.* (2023)⁵ emphasize FMT's significance in equipping students with essential skills for medical practice. Similarly, our findings echo this sentiment, with 78.78% of students acknowledging the subject's usefulness in the MBBS curriculum, while 19.16% remained neutral in their response.

However, disparities emerge when assessing students' tendencies towards pursuing a career in FMT. Notably, while 82.98% of students find the subject interesting, only 30.88% express a desire to opt for it as a career, mirroring findings by Vidua *et al.*² where 83.3% found the subject interesting. Interestingly, other non-clinical subjects like anatomy 34.6% pathology 68.5% and 45.68%, and community medicine 55.4% having positive attitude 93.9% also garnered significant interest in various studies.⁶⁻¹⁰ In a study, Pathology emerged as the most captivating subject (43%), followed by pharmacology (34%), forensic medicine (17%), with microbiology ranking as the least engaging.¹¹ Diverse studies have documented students' career preferences, with anatomy at 31.1%, forensic medicine at 14.2% and 7.34%, pathology at 40.9%, and pharmacology at 10.9% showcasing varied inclinations.^{2,6,7,12,13} In a study by Kuteesa *et al.* (2021), final-year students favoured Obstetrics and Gynaecology as the most preferred option, followed by Surgery, Internal Medicine, Paediatrics, and Public Health and other nonclinical subject.¹⁴ While our study indicates an overall inclination of 30.88% of students towards choosing forensic medicine as a career, interns and older students exhibit a higher inclination, whereas younger cohorts demonstrate hesitancy towards selecting FMT as a career path (16.84% vs. 12.22%; p -value < 0.05), citing concerns about legal matters, dealing with deceased individuals, and court appearances similar to other studies.^{2,5}

In comparison to the study by Vidua *et al.* (2020), there has been a significant increase in

the inclination towards choosing FMT as a career option, more than doubling from 14.2% to 30.88%. This shift may be attributed to changes in the curriculum regulations enforced by the National Medical Commission, where the FMT subject now spans 23.5 months, included as a paraclinical subject rather than a preclinical one, and studied during the 2nd professional and 3rd professional part-1 course years, enhancing its importance.³ Additionally, heightened incidents of violence against doctors and medical negligence cases during and after the pandemic have contributed to doctors' reluctance to practice clinical subjects.¹⁵⁻¹⁷ Defensive medicine, aimed at protecting doctors from medico-legal liability, poses a significant public health concern, with doctors often resorting to it worldwide, as observed in studies such as those by Studder DM (2005), O'Leary KJ (2012), and Aulino G (2023).^{5,18,19} Despite this, our study found that 74.37% of students were initially unaware of FMT's use in defensive medicine, though this perception diminished with increased exposure to the subject matter (41.30% vs. 35.05%).

Factors such as role models, departmental organization, lifestyle preferences, media influence and teaching mode were cited as influential in career decision-making, with preferences potentially evolving over time and experience.^{5,14} Multiple other factors like gender, interest, personality, performance, teaching mode, awareness of their role and experience in the subject matter are also considered to decide to choose the specialization in the medical field.⁵ The risk of malpractice is observed highest in the specialty of neurosurgery, cardiovascular thoracic surgery, general surgery, family medicine, orthopaedics, obstetrics and gynaecology make the students decision more difficult to choose their speciality.^{5,20} In the same study, it is suggested that, compared to 4th-year students, fifth and sixth-year students tend to choose less clinical or surgical practice, preferring fields related to public health due to heightened awareness of professional liability risks.⁵ This trend is also observed in our study among students who have completed FMT training and are facing clinical postings compared to those who are still studying the subject. This could be enhanced by implementing effective teaching modes, showcasing real-world clinical applications, providing exposure to court procedures under expert guidance, integrating innovative techniques like virtual autopsy and molecular autopsy, and promoting research as suggested in our results. These measures would motivate the students and reduce their fear of court procedures, fostering a love for choosing this

subject as their career option. Although this finding aligns with various studies suggesting that career perceptions are influenced by exposure to practical experiences, perceived career prospects, and concerns about legal implications associated with the field.^{2,5,14}

However, numerous private medical colleges lack medicolegal autopsy facilities due to both internal and external policies, even though autopsy remains a crucial and widely recognized component of FMT.²¹ Many authors recommend that undergraduate students witness a minimum of 10 autopsies to gain essential knowledge.^{5,22} In India, especially in Bihar and neighboring states, the majority of autopsies are typically performed at district hospitals by MBBS qualified medical officers, highlighting the growing demand for improved education in FMT to enhance outcomes. Implementing internship hours in the FMT department dedicated to autopsy is vital for enhancing understanding in this field.^{5,23} The National Medical Commission (NMC) has taken a commendable step by mandating a one-week internship in the Forensic Medicine and Toxicology department for all undergraduates, facilitating exposure to medicolegal work in day-to-day clinical settings and reducing violence against doctors while ensuring quality work but it needs to increase the duration to better exploration.²⁴ Despite the potential for exposure to FMT to enhance interest and understanding, our findings highlight a consistent perception of the subject's quality across all exposure groups. This contrasts with research by Vidua *et al.* (2020), which stressed the need for continuous evaluation and improvement of FMT education programs. This suggests that while exposure may positively impact students' engagement with FMT, there remains room for refinement in the delivery and content of FMT curricula to ensure optimal learning outcomes and student satisfaction.

The major recommendations are as follow:

1. Stress the pivotal role of forensic medicine education in equipping medical students with essential skills like professional liability and defensive medicine and advanced technology.
2. Encourage students to explore non-clinical pathways, including forensic medicine, for post-graduate specialization, reflecting evolving career trends.
3. Address the toll of medico-legal challenges on physician well-being, particularly among frontline practitioners, to prevent burnout.
4. Advocate for comprehensive autopsy

training within forensic medicine curricula, emphasizing practical learning and increased internship engagement.

5. Emphasize a student-centric approach in forensic medicine education, adapting to changing perspectives and global demands.
6. Propose incentives and career guidance initiatives to attract and retain talent in forensic medicine, alongside policy adjustments to expand practitioners' roles and enhance public understanding of the field's significance.

CONCLUSIONS

In conclusion, our study contributes nuanced insights into medical students' perceptions of Forensic Medicine and Toxicology (FMT), enriching existing literature by delving into the multifaceted factors influencing their attitudes towards the subject. By comparing our findings with prior research, we deepen our understanding of the complexities surrounding students' perspectives on FMT and the diverse considerations shaping their career aspirations. Moving forward, tailored educational interventions and curriculum enhancements can leverage these insights to better prepare medical students for the challenges and opportunities within forensic medicine and toxicology, addressing faculty shortages and ensuring the quality of medical practice. However, our study's monocentric nature and reliance on individual perceptions highlight the potential for bias, underscoring the importance of a multicentric approach to validate our findings and recommendations.

Declaration of generative AI and AI-assisted technologies in the writing process:

During the preparation of this work the authors used 'Chat GPT' in order to improve the language and readability. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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