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Original Research Article

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 (Bachelor of Medicine, Bachelor of Surgery) 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.
Materials and Methods: A cross-sectional descriptive study was conducted from September to November 2023 at KMC, Katihar, Bihar, India, involving 368 participants from various professional years. Participants completed a validated questionnaire assessing their opinions on FMT subjects 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 multidisciplinary validation are warranted to inform evidence-based strategies for enhancing FMT education in medical schools.

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

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1. Background

Forensic Medicine and Toxicology (FMT) play pivotal roles in the MBBS (Bachelor of Medicine, Bachelor of Surgery) curriculum, a fundamental part of medical education across numerous international institutions.[1-2] However, the role of a Forensic Medicine specialist varies significantly from country to country, often overlapping with other medical disciplines. For instance, in the United States, Forensic Pathologists collaborate closely with coroners in criminal investigations, distinct from specialists in Forensic Medicine. In various European countries, forensic physicians assume a wide range of duties and responsibilities. In France, they not only conduct autopsies for suspicious deaths but also evaluate a person's fitness for work. In Spain, forensic physicians frequently serve as consultants during trials, where they assess the causes of death, evaluate psychological and physical injuries following assaults, and examine mental abnormalities or disorders. In Italy, apart from autopsy their role also includes determining the extent of harm (biological damage) experienced by a patient due to medical malpractice.[2-3]

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In India, the medicolegal work predominantly relies on Forensic Medicine specialists or Registered Medical Practitioners (RMPs) which encompasses a wide array of tasks, including post-mortem examinations, liaising with law enforcement agencies, managing legal cases, and drafting medico-legal reports for judicial purposes. It is common for these professionals to provide testimony in court and face cross-examination from defense attorneys.[1] The varying roles and responsibilities of Forensic Medicine specialists can sometimes lead to misconceptions about their work. Nonetheless, the inclusion of forensic medicine as a compulsory subject in most medical universities, particularly in India, has significantly enhanced student understanding, despite potential confusion caused by unreliable sources.[1]

Historically in India, prior to the establishment of the National Medical Commission (NMC), Forensic Medicine and Toxicology (FMT) was taught during the second professional year of the 4.5-year MBBS program, followed by a one-year internship.[1] However, with the new regulations, the duration of teaching this subject has been extended to 24 months, spanning both the second professional and third professional part-1 years of the said duration of MBBS program, and now also includes a week of internship in FMT, which was not previously included.[4]

FMT encompasses the legal and toxicological aspects of medicine, presented as Forensic Medicine and Forensic Toxicology, respectively. Additionally, it makes students aware of 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 subject. This study aims to recognize methods for enhancing the utilization and interest in Forensic Medicine and Toxicology among medical students by evaluating their knowledge, perceptions, attitudes, and the influence of the course on their career inclinations. This study also aiming to provide insights to improve the interest and importance of the subject among medical professionals.

2. Materials and Methods

This cross-sectional descriptive study was conducted at KMC, Katihar, Bihar, India, between September 2023 and November 2023, involving 368 participants from a single medical college. Inclusion criteria comprised all undergraduate medical students from the 2nd professional year to the Internship, while individuals unwilling to participate, and students of 1st professional year were excluded. Ethical clearance was obtained (vide IEC/IRB No: KMC/IEC/Dept. Res./005/2023 (Forensic Med. & Toxicology), dated 21.08.2023) 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 such as WhatsApp, SMS, or Email using the link generated for the same.

To achieve the study's objectives, a 26-item questionnaire was initially developed in English, covering key aspects of Forensic Medicine and Toxicology. The questionnaire was reviewed by ten FMT experts with 6 to 15 years of teaching and research experience. Based on their feedback, 19 out of 26 questions were retained, ensuring they aligned well with the study's goals.

The questionnaire's reliability was assessed using Cronbach's alpha, with the final version achieving a value exceeding 0.9, indicating strong internal consistency. To further ensure its effectiveness, a pilot test was conducted with a small group from the target population. This confirmed the questionnaire's clarity and appropriateness for the study.

Responses were graded on a five-point Likert scale, ranging from 'strongly disagree' to 'strongly agree.' Data were analyzed chronologically based on the participants' progression through the MBBS course. Subgroups included students currently studying the subject in the 2nd professional and 3rd professional part-1 years, juxtaposed with those who had completed the course (3rd professional part-2 and interns) 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 analyzed statistically using the Pearson Chi-Square test, univariate analysis, and student t-test.

2.1. Questionaries asked to the participants

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 (0.980)
Q. 3.	I believe that the subject is highly useful in the MBBS curriculum. (0.980)
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. 5.	I am motivated to study the subject because I find it easy, interesting, comprehensible, and relevant to the legal system. (0.98)
Q. 6.	I see significant potential in the subject for improving the quality of medico-legal investigations when applied efficiently.(0.982)

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. 8.	In my opinion, the subject should be effectively harnessed for high-impact medico-legal investigations (0.983)
Q. 9.	I would be inclined to select the subject as my career option. (0.980)
Q. 10.	I consider the primary limitation of the subject at present to be the insufficient clinical application. (0.981)
Q. 11.	I possess knowledge regarding the practical use of the subject, specifically in clinical toxicology and clinical forensic applications. (0.980)
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)
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)
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. 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. 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. 19.	Do you believe that Forensic Medicine should remain an integral part of the existing MBBS curriculum? (0.979)
Note: **(**Cronbach's alpha value of corresponding questionnaire are provided in bracket**)**	

3. Results

The demographic evaluation revealed that out of the 368 participants, 219 were male and remaining were female. The maximum age group distribution was observed at 22 years for 2nd professional, 23 years for 3rd professional Part-1, 24 years for 3rd professional Part-2, and 25 years for interns. Most participants were from Bihar, followed by West Bengal, Jharkhand, and Uttar Pradesh, are the states of India (**Table 1**).

Table 1: Demographic profile of responding MBBS students.

Year of MBBS	Male (%)	Female (%)	Total	Median Age (Yrs)	Area Distribution in %
2nd Prof	57 (64)	32 (36)	89	23	Bihar: 92, Other States: 08
3rd Prof P-1	65 (63)	39 (37)	104	23	Bihar: 83, Other States: 17
3rd Prof P-2	66 (61)	42 (39)	108	24	Bihar: 54, Other States: 46
Intern	31 (46)	36 (54)	67	24	Bihar: 72, Other States: 28
Total	219 (59.41)	149 (40.49)	368		
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.					

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	13 (3.53)	37 (10.05)	71 (19.29)	158 (42.93)	89 (24.18)	368	>0.05
Q.2	3 (0.82)	5 (1.36)	40 (10.87)	201 (54.62)	119 (32.34)	368	<0.05
Q.3	4 (1.09)	5 (1.36)	62 (16.85)	209 (56.79)	88 (23.91)	368	>0.05
Q.4	3 (0.82)	6 (1.63)	78 (21.20)	186 (50.54)	95 (25.82)	368	<0.05
Q.5	3 (0.82)	8 (2.17)	55 (14.94)	176 (47.83)	126 (34.24)	368	>0.05
Q.6	1 (0.27)	2 (0.54)	27 (7.34)	178 (48.37)	160 (43.48)	368	>0.05
Q.7	1 (0.27)	4 (1.09)	9 (2.45)	159 (43.21)	195 (52.99)	368	>0.05
Q.8	1 (0.27)	2 (0.54)	35 (9.51)	196 (53.36)	134 (36.41)	368	<0.05
Q.9	23 (6.25)	74 (20.11)	164 (44.57)	72 (19.57)	35 (9.51)	368	>0.05
Q.10	1 (0.27)	15 (4.08)	54 (14.67)	191 (51.91)	107 (29.08)	368	>0.05
Q.11	4 (1.09)	22 (5.98)	75 (25.38)	207 (56.25)	60 (16.30)	368	>0.05
Q.12	63 (17.12)	163 (44.29)	71 (19.29)	57 (15.49)	14 (3.80)	368	>0.05
Q.13	16 (4.35)	79 (21.47)	123 (33.42)	113 (30.71)	35 (9.51)	368	>0.05
Q.14	2 (0.54)	11 (2.99)	74 (20.11)	219 (59.51)	62 (16.85)	368	>0.05
Q.15	3 (0.82)	2 (0.54)	43 (11.66)	186 (50.54)	134 (36.41)	368	<0.05
Q.16	3 (0.82)	3 (0.82)	38 (10.33)	180 (48.91)	144 (39.13)	368	>0.05

Q.17	2 (0.54)	1 (0.27)	39 (10.60)	177 (48.10)	149(40.49)	368	>0.05
*Q.18**	2 (0.54)	2 (0.54)	19 (5.16)	125 (33.97)	220 (59.78)	368	>0.05
Q.19	2 (0.54)	5 (1.36)	45 (12.23)	206 (55.98)	110 (29.89)	368	>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, alongside the corresponding p-values determined by the Pearson Chi-Square test. It reflects the distribution of responses across participants from 2nd professionals to internship and the statistical significance of the findings.							

Table 3: Univariate analysis of questionaries with professional years of MBBS curriculum.

Questionaries	**Response (for the statements)**	**Professional years**			**p-value**
		2nd & 3rd Prof-1; n(%)	**3rd Prof-2 & Intern; n(%)**	**Total; N(%)**	
QA. The subject is highly useful in the MBBS curriculum.	Disagree	2 (0.54)	7 (1.90)	9 (2.45)	0.158
	Neutral	35 (9.51)	27 (7.34)	62 (16.84)	
	Agree	156 (42.39)	141 (38.32)	297 (80.71)	
QB. Utilization of subject in India is not similar to developed countries.	Disagree	1 (0.27)	8 (2.17)	9 (2.45)	**0.007**
	Neutral	49 (13.31)	29 (7.88)	78 (21.19)	
	Agree	143 (38.85)	138 (37.50)	281 (7.61)	
QC. All medical professionals should possess fundamental knowledge of the medico-legal issue.	Disagree	2 (0.54)	3 (0.82)	5 (1.35)	0.429
	Neutral	3 (0.82)	6 (1.64)	9 (2.45)	
	Agree	188 (51.08)	166 (45.10)	354 (96.20)	
QD. I would be inclined to select the subject as my career option.	Disagree	50 (13.59)	47 (12.77)	97 (26.36)	**0.017**
	Neutral	98 (26.63)	66 (17.93)	164 (44.56)	
	Agree	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	Disagree	56 (15.22)	41 (11.14)	97 (26.36)	0.119
	Neutral	69 (18.75)	54 (14.67)	123 (33.42)	
	Agree	68 (18.47)	80 (21.73)	148 (40.22)	
QF. Limited awareness about its utilization as defensive medicine.	Disagree	4 (1.09)	9 (2.45)	13 (3.53)	0.231
	Neutral	37 (10.05)	37 (10.05)	74 (20.11)	
	Agree	152 (41.30)	129 (35.05)	281 (76.36)	
QG. The course should remain an integral part of the existing MBBS curriculum	Disagree	3 (0.82)	4 (1.09)	7 (1.90)	0.856
	Neutral	23 (6.25)	22 (5.97)	45 (12.23)	
	Agree	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 Part-1 year" and "3rd Professional Part-2 year & Intern". The "p-value <0.05 is considered significant indicating the significance level for the statistical analysis.					

Correlating the responses from 2nd 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, 8, and 15 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 (learning FMT), while 48% were from the 3rd Professional Part-2 and intern group (completed FMT). The responses to the questionnaires were categorized into 'Disagree,' 'Neutral,' or 'Agree' with each statement. Most students in both groups agreed that Forensic Medicine training is very useful in their studies. They also mostly agreed that FMT is not used similarly in India and developed countries. Both groups also thought it is very important for medical professionals to know about legal issues, such as court cases. However, when it 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 emerged in their thoughts about careers in this field **(Table 3).**

The table below presents findings from an independent t-test comparing two distinct groups: individuals 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 across various dimensions, including intrinsic and extrinsic interest in the subject, understanding of its intricacies, and opinions and suggestions regarding its quality and potential improvement, revealing that both learning and completing the FMT course were associated with high intrinsic and extrinsic interest in the subject; however, individuals who completed the FMT course and had clinical exposure showed

significantly higher intrinsic interest compared to the learning group, although this significant difference was observed only for questions 2, 6, and 11; completing the FMT course notably enhanced understanding of the subject's intricacies; and 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 **(Table 4)**.

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

	Groups				p-value
	Learning FMT (group A)		Completed FMT course and have clinical exposure (group B)		
	Mean	SD	Mean	SD	
Internal interest					
Q2	4.26	0.69	4.06	0.76	<0.001
Q3	4.01	0.68	4.02	0.82	>0.05
Q5	4.18	0.73	4.06	0.87	>0.05
Q9	2.99	0.97	3.13	1.06	>0.05
Q16	4.27	0.70	4.22	0.77	>0.05
External Interest					
Q1	3.78	1.03	3.70	1.05	>0.05
Q6	4.44	0.75	4.24	0.73	<0.05
Q11	3.70	0.81	3.93	0.81	<0.05
Q17	4.33	0.65	4.22	0.75	>0.05
Inconveniences observed					
Q10	4.12	0.73	3.98	0.84	>0.05
Q12	2.27	1.02	2.64	1.08	<0.001
Q13	3.09	1.05	3.29	1.01	>0.05
Opinion					
Q8	4.27	0.64	4.23	0.70	>0.05
Q15	4.26	0.66	4.15	0.80	>0.05
Q19	4.12	0.62	4.15	0.77	>0.05

The "Groups" indicates the different exposure levels. "Mean" represents the average score for each question within 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. P-value <0.05 is considered as Significant (2-tailed) and <0.001 as highly significant.

4. 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. By 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.[1,5] 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)[3] emphasize FMT's significance in equipping students with essential skills for medical practice. Similarly, our findings echo this sentiment, with 80.71% of students acknowledging the subject's usefulness in the MBBS curriculum, while 16.14% remained neutral in their response.

However, disparities emerge when assessing students' tendencies towards pursuing a career in FMT. Notably, while 86.96% of students find the subject interesting, only 29.08% express a desire to opt for it as a career, mirroring findings by Vidua et al. where 83.3% found the subject interesting.[2] Interestingly, other non-clinical subjects like anatomy (34.6%), pathology (68.5%), and community medicine (55.4%) also garnered significant interest in various studies.[6-10] In a study, Pathology emerged as the most captivating subject (43%), followed by pharmacology (34%) and 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%, 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, with other non-clinical subjects also of interest.[14] While our study indicates an overall inclination of 29.08% 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.[2-3]

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 29.08%. 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.[4] 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).[3,18-19] 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.[3,14] 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, making the students' decision more difficult to choose their specialty.[3,20] 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.[3] 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.[2,3,14]

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 should witness a minimum of 10 autopsies to gain essential knowledge.[3,22] In India, especially in Bihar and neighbouring 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.[3,23] 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 medico-legal 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.

4.1. The major recommendations are as follows

1. *Enhance Practical Exposure:* Increase practical exposure to FMT throughout the MBBS curriculum, particularly focusing on clinical applications like examination of the medico-legal case, autopsy procedures and courtroom simulations. This can be achieved through integrating virtual autopsy technologies and promoting hands-on experiences.
2. *Improve Awareness and Perception:* Develop educational interventions aimed at enhancing awareness among medical students about the critical role of FMT in medico-legal investigations and its potential impact on medical practice. This includes showcasing real-world applications and promoting its relevance in defensive medicine.
3. *Modify Teaching Methods:* Implement innovative teaching methods such as audio-visual demonstrations and case-based learning that highlight the practical relevance and complexities of FMT. This approach can help sustain student interest and improve understanding of the subject.
4. *Address Career Misconceptions:* Address misconceptions about careers in FMT, particularly concerns related to legal matters and court appearances. Provide career counselling and mentorship programs that highlight diverse career paths and opportunities within forensic medicine.
5. *Evaluate Curriculum Updates:* Continuously evaluate and update the MBBS curriculum to reflect the evolving role of FMT and align with international standards. This includes adjusting the duration and content of FMT courses to ensure comprehensive coverage of legal obligations and forensic techniques.

5. 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. The limitation of this study lies in its monocentric nature and reliance on individual perceptions, which create potential biases and limit generalizability due to specific institutional and cultural contexts. This underscores the need for a

multicentric approach on a large sample size to validate findings across diverse populations and settings, ensuring more robust and reliable conclusions that can inform broader recommendations in healthcare or other fields relying on subjective assessments. Another limitation of this study is the exclusive focus on participants' self-reported biological sex, without consideration of gender identity or a more nuanced spectrum of sex and gender. As a result, the study does not address the potential influences of gender roles, behaviors, or non-binary identities, which may limit the generalizability of the findings to a more diverse population. Future research could benefit from integrating both sex and gender dimensions, in line with the Sex and Gender Equity in Research (SAGER) guidelines, to enhance the precision and applicability of the results.

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None.

7. Conflict of Interest

None.

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