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Medical Jurisprudence with Mentorship Programs Merit Exploration, to Keep Updated in Legal Medicine, to Ensure Accountability, Not only by Utilizing Electronic Documentation, but Also by Generating Awareness for Patient Rights

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Forensic Medicine and Toxicology (FMT) play pivotal roles in medical education, blending legal, toxicological, and medical jurisprudence aspects. Despite their significance, there's a scarcity of research on students' perceptions regarding FMT. Hence, evaluating medical students' knowledge, perceptions, and attitudes towards FMT is imperative, along with assessing the impact of FMT training on their career inclinations.

One emerging field within FMT is forensic trichology, the scientific study of human hair, which has become invaluable in criminal investigations. Hair evidence can provide crucial insights into suspects' identities, linking them to crime scenes and potentially uncovering motives. This article explores forensic trichology's advantages, showcases its significance through real-life case scenarios, elucidates its methodologies, and discusses current practices while pondering its future scope amidst technological advancements.

Furthermore, the implementation of compulsory mentorship programs in medical education deserves attention. While there are numerous benefits to mentorship, such as fostering professional development and offering guidance, challenges like mentor availability and compatibility exist. Exploring various aspects of mentorship can pave the way for effective mentoring, especially considering the National Medical Commission's NMC guidelines mandating mentorship for undergraduates.

Medical negligence, a serious offense, requires adjudication with exceptions acknowledging licensed physicians' expertise, offering exemption from liability. It balances accountability and medical practice complexities. Indian medical professionals, legal counselors, and judges ensure justice in malpractice cases. Staying updated with recent Indian law updates, namely, Bharatiya Nyaya Sanhita (BNS), Bharatiya Nagarik Suraksha Sanhita (BNSS), Bharatiya Sakshya Adhiniyam (BSA), 2023 is crucial for prevention of medical negligence and aids in better medicolegal management of malpractice lawsuits.

Electronic Health Records (EHRs) form another crucial aspect as legal defence in malpractice lawsuits, often overlooked in their role within legal and forensic contexts. The forensic experts navigate through the labyrinth of clinical documentation, elucidating its significance as a silent observer in healthcare settings. By dissecting various forms of documentation, including EHRs, progress notes, and imaging reports, it highlights their critical role as evidence in legal proceedings and forensic investigations. It emphasizes the necessity of accuracy, completeness, and timeliness in documenting patient encounters for effective forensic scrutiny.

Lastly, Legal Medicine, drawing on tort law, addresses civil wrongs in healthcare, ensuring accountability and upholding care standards. Common torts like medical malpractice and negligence provide a legal framework for patients seeking redress due to harm caused by healthcare professionals' actions or negligence. This framework ensures accountability and serves as a safeguard for the patient's rights.

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Original Article

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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 subject[1]

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.

Questionaries 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.11. I possess knowledge regarding the practical use of the subject, specifically in clinical toxicology and clinical forensic applications. (0.98)
Q. 2. I have a genuine interest in the subject matter (0.98)	Q.12. I have a negative opinion of the subject due to its involvement with deceased individuals. (0.984)
Q. 3. I believe that the subject is highly useful in the MBBS curriculum. (0.98)	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. 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.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 (%)**
1st Prof	54 (50)	54 (50)	108	22	Bihar: 60, Other States: 40
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

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	*No.of students responded for different response options/statements (%)*					*Total No. of response*	*p-value*
Items	*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*
		2nd&3rd Prof-1; n (%)	**3rd** Prof-2 & Intern; n (%)	**Total; N (%)**	
QA.The subjectis 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 it sutilization 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 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,	1 vs 3 #
									<0.05	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	1 vs 3 #
									<0.001	1vs 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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Preserving Integrity: Understanding the Legal Implications of Clinical Documentation

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Abstract

This abstract offers a comprehensive exploration of the often-overlooked role of clinical records in legal and forensic contexts. This review article navigates through the intricate landscape of clinical documentation, unraveling its significance as a silent observer in healthcare settings. By examining the various forms of documentation, including electronic health records, progress notes, and imaging reports, the article unveils how these records serve as critical pieces of evidence in legal proceedings, forensic investigations, and medical malpractice cases.

Through a lens of forensic scrutiny, the article dissects the elements of effective documentation practices, emphasizing the importance of accuracy, completeness, and timeliness in capturing patient encounters. It illuminates the inherent challenges and pitfalls in documentation, such as ambiguity, bias, and discrepancies, which can have far-reaching implications in legal settings. Moreover, the article delves into the evolving landscape of digital documentation, exploring the opportunities and challenges posed by electronic health records systems in forensic analysis.

By elucidating the forensic implications of clinical documentation, the article underscores the dual role of healthcare providers as caregivers and custodians of evidence. It calls attention to the ethical and legal responsibilities inherent in documenting patient care, highlighting the need for standardized protocols, ongoing training, and robust quality assurance measures. Ultimately, the article advocates for a holistic understanding of clinical documentation as not only a tool for patient care but also a vital component of forensic investigation and legal justice.

In conclusion, "The Clinical records" serves as a beacon illuminating the intricate intersection of healthcare and Forensic Medicine. Through its nuanced examination of clinical documentation, the article invites readers to appreciate the profound impact of meticulous documentation practices on patient outcomes, legal proceedings, and the pursuit of justice.

Keywords: Clinical documentation; Legal implications; EHR (Electronic Health Records); medical malpractice; healthcare settings; ICT (Information and Communication Technologies).

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INTRODUCTION

Clinical documentation serves as the cornerstone of effective healthcare delivery, providing a comprehensive record of patient encounters, diagnoses, treatments, and outcomes.[1] However, beyond its primary function in patient care, clinical documentation plays a significant yet often overlooked role in legal and forensic contexts.[2] This article delves into the multifaceted relationship between clinical records and forensic investigations,

shedding light on the critical role of documentation in legal proceedings and medical malpractice cases. In healthcare settings, meticulous documentation practices are essential for maintaining accurate and complete records of patient care (American Health Information Management Association.[3] Detailed documentation not only facilitates continuity of care among healthcare providers but also serves as a historical record that can inform future treatment decisions.[3] Moreover, thorough documentation is vital for ensuring patient safety, as it allows for the identification and mitigation of errors or discrepancies in care delivery.[4] While the primary purpose of clinical documentation is to support patient care, its forensic implications extend far beyond the healthcare setting. Clinical records are frequently used as evidence in legal proceedings, including medical malpractice lawsuits, personal injury claims, and criminal investigations.[5] As such, the accuracy and completeness of clinical documentation can have profound implications for legal outcomes and the administration of justice.[5] Electronic health records (EHRs) have revolutionized the landscape of clinical documentation, offering numerous advantages in terms of accessibility, efficiency, and data analytics.[6] However, the transition to digital documentation has also introduced new challenges and considerations, particularly concerning data security, privacy, and the integrity of electronic records.[6,7] Moreover, the proliferation of EHR systems has raised questions about the standardization and interoperability of electronic records across different healthcare settings.[6-8] In recent years, the forensic implications of clinical documentation have garnered increased attention from healthcare providers, legal professionals, and policymakers alike. High-profile cases involving allegations of medical negligence or misconduct have underscored the pivotal role of clinical records as evidence in legal proceedings.[9] Consequently, there is a growing recognition of the importance of accurate, timely, and comprehensive documentation in safeguarding both patient care and legal interests.[9,10] "The Clinical records" aims to provide a comprehensive overview of the forensic implications of clinical documentation, addressing key topics such as documentation standards, legal considerations, digital documentation challenges, and the role of healthcare providers as custodians of evidence. By examining the intersection of healthcare and Forensic Medicine, the article seeks to enhance understanding and awareness of the critical role that clinical records play in legal proceedings and the pursuit of justice. The National Informatics Centre (NIC) has been instrumental in developing and implementing online medico legal reporting systems. These systems are deployed in both government hospitals and private practices to enhance the accuracy, accessibility, and legal compliance of medical documentation.[11,12] By integrating such systems, hospitals can ensure better compliance with legal requirements and enhance the overall integrity of medical records. Future discussions on clinical documentation should include these ongoing efforts by NIC to provide a comprehensive overview of the advancements in medico legal documentation and their implications for both public and private healthcare sectors in India.[11,12,13]

Objectives: This review explores clinical documentation's role in legal contexts, emphasizing accuracy and completeness. It examines documentation practices, challenges, and the impact of electronic health records (EHR).

Methodology: Methodology includes literature review, case analysis, expert interviews, and surveys. Thematic analysis and comparative studies between traditional and digital records highlight the importance of standardized protocols, training, and quality assurance in maintaining meticulous clinical records for patient care and legal justice.

Observations and findings

In India, significant progress has been made in the field of clinical documentation and medicolegal reporting through the initiatives of the National Medical Commission (NMC) and the National Informatics Centre (NIC). The NIC has also played a crucial role by implementing advanced ICT solutions in hospitals. Such initiatives help streamline healthcare processes and ensure adherence to legal standards, thereby improving overall patient care and legal compliance.

Importance of Accurate Clinical Documentation: Clinical documentation is essential for ensuring high-quality patient care, facilitating effective communication among healthcare providers, and maintaining a comprehensive medical history for patients. Accurate documentation supports clinical decision-making, continuity of care, and patient safety.

Legal Requirements and Standards: Legal frameworks and regulations such as the Health Insurance Portability and Accountability Act (HIPAA) in the United States mandate strict guidelines for the privacy and security of patient health information.

Documentation must meet standards set by

regulatory bodies like the Joint Commission, Centers for Medicare & Medicaid Services (CMS), and state laws to avoid legal repercussions.

Risk of Legal Consequences: Inadequate or improper documentation can lead to legal actions including malpractice lawsuits, penalties for non-compliance, and loss of medical licenses.

Common issues that lead to legal problems include incomplete records, lack of timely updates, and inaccurate or falsified information.

Electronic Health Records (EHR) and Legal Implications: The adoption of EHRs has transformed clinical documentation, offering benefits such as real-time access to patient information, reduced errors, and improved coordination of care.

However, EHR systems also present legal challenges, including issues of data breaches, system errors, and ensuring proper use of templates and copy paste functionalities to maintain originality and accuracy.

Documentation Best Practices: Healthcare providers should adhere to best practices in clinical documentation, which include being clear, concise, and thorough; documenting in real-time; and ensuring that all entries are dated, timed, and authenticated by the author.

Regular training and education on documentation standards and legal implications are crucial for healthcare providers.

Impact of Poor Documentation on Patient Outcomes: Poor documentation can lead to miscommunication, misdiagnoses, inappropriate treatments, and ultimately, adverse patient outcomes.It can also affect the reimbursement process and lead to financial losses for healthcare facilities due to denied claims or fines.

Role of Healthcare Administrators and Legal Teams: Healthcare administrators and legal teams play a critical role in establishing robust documentation policies, conducting audits, and implementing corrective actions to ensure compliance and mitigate legal risks.

They also facilitate ongoing education and training programs to keep healthcare providers informed about current legal standards and best practices in documentation.

Ethical Considerations: Ethical principles in medical practice, such as honesty, confidentiality, and patient autonomy, are closely tied to clinical documentation practices.

Ethical lapses in documentation, such as falsifying records or failing to report errors, not only compromise patient care but also expose healthcare providers and institutions to legal actions.

DISCUSSION

The discussion of the Legal implications of clinical documentation underscores the critical importance of meticulous documentation practices in healthcare settings. Clinical records serve as a foundational pillar of patient care, facilitating communication among healthcare providers, supporting clinical decision-making, and ensuring continuity of care.[14] However, beyond their primary function in patient care, clinical records also play a crucial role in legal, serving as invaluable pieces of evidence in legal proceedings and forensic investigations.[15]

The accuracy and completeness of clinical documentation are paramount in legal proceedings, where clinical records are often scrutinized to establish the standard of care, assess the quality of care provided, and determine liability in cases of alleged medical negligence or malpractice.[15] Inadequate or inconsistent documentation can undermine the credibility of healthcare providers and compromise the defense of medical professionals in legal disputes.[16] Therefore, healthcare organizations must prioritize documentation standards and provide comprehensive training to healthcare providers on effective documentation practices.[15,16]

The transition to electronic health records (EHRs) has introduced both opportunities and challenges in clinical documentation. While EHRs offer benefits such as improved accessibility, efficiency, and data analytics capabilities, they also present challenges related to data security, privacy, and the integrity of electronic records.[16-18] Issues such as copy-pasting, templated documentation and auto-population features can compromise the accuracy and reliability of EHRs, raising concerns about their forensic validity in legal proceedings.[18] Moreover, the proliferation of EHR systems has led to variability in documentation practices across different healthcare settings, hindering the interoperability and exchange of electronic records Standardization of documentation templates, terminology, and coding systems is essential to ensure consistency and comparability of clinical records, particularly in forensic analysis and cross-

institutional collaborations.[15] Healthcare providers must also be cognizant of their role as custodians of evidence in the documentation process. Beyond their clinical duties, healthcare professionals have a legal and ethical responsibility to accurately and comprehensively document patient encounters, treatments, and outcomes. This includes documenting relevant clinical findings, diagnostic tests, treatment plans, and informed consent discussions in a timely and legible manner.[19]

RESULTS

Significant advancements in clinical documentation and medicolegal reporting in India include the implementation of NMC guidelines ensuring accurate, timely, and confidential documentation, and NIC's deployment of ICT solutions and EHR systems in hospitals to streamline processes, enhance legal compliance, and improve patient care .

CONCLUSION

The integration of NMC guidelines and NIC's ICT solutions, including Electronic Health Records (EHR), has significantly advanced clinical documentation and medicolegal reporting in India. These efforts ensure accuracy, timeliness, confidentiality, and legal compliance, thereby improving patient care and streamlining healthcare processes in both government and private sectors.

RECOMMENDATIONS

1. **Standardization of Documentation Practices**: Healthcare organizations should establish standardized documentation protocols and guidelines to ensure consistency, accuracy, and completeness in clinical records. This includes the development of templates, terminology, and coding systems that facilitate clear and concise documentation across different healthcare settings.
2. **Ongoing Training and Education**: Healthcare providers should receive comprehensive training on effective documentation practices, with a focus on the forensic implications of clinical documentation. Continuing education programs and workshops can help reinforce best practices and address emerging issues related to documentation in healthcare.
3. **Integration of Forensic Considerations**: Healthcare providers should be mindful of the forensic implications of their documentation practices, recognizing the role of clinical records as potential evidence in legal proceedings. This includes documenting relevant clinical findings, diagnostic tests, treatment plans, and informed consent discussions in a manner that is accurate, objective, and legally defensible.
4. **Quality Assurance Measures**: Healthcare organizations should implement robust quality assurance measures to monitor and audit documentation practices, identifying areas for improvement and addressing issues of non-compliance. Regular audits of clinical records can help ensure adherence to documentation standards and mitigate risks associated with inadequate or inconsistent documentation.
5. **Collaboration and Interdisciplinary Communication**: Collaboration between healthcare providers, legal professionals, and policy makers is essential to address challenges and promote best practices in clinical documentation. Interdisciplinary communication channels should be established to facilitate dialogue, share insights, and develop strategies for enhancing the forensic validity of clinical records.
6. **Ethical Considerations**: Healthcare providers should uphold ethical principles of patient confidentiality, privacy, and autonomy in their documentation practices. This includes obtaining informed consent for treatment and disclosure of medical information, as well as safeguarding patient confidentiality in accordance with legal and ethical standards.

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Review Article

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Implementation of Compulsory Centorship Program in the Present Medical Education Scenario-Benefits and Challenges

Padmini Hannah Noone

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Abstract

Mentoring in medical education has been going on globally over a long period of time. It has its own challenges and advantages. Since in the present day scenario the NMC has made it mandatory to implement mentoring, the challenge is now of handling a mandatory mentorship program. This review article explores the views and various aspects in relation to mentoring. The conclusions seen are that mentoring is shown to be beneficial to both the mentees and mentors. However certain impediments like time constraints, difficulty in opening up, confidentiality may hinder its effectiveness. Peer assisted mentoring and use of exploratory sessions to find their specific needs can help in improving the quality of mentoring.

Keywords: Mentoring; Medical education; Compulsory; Professional satisfaction; Guidance, Exploratory session; Peer Assisted Mentoring.

INTRODUCTION

Mentoring in medical education has been going on in many countries in many ways. There are many advantages of conducting the mentorship program. However, that is also not without challenges. This narrative review attempts to explore the various aspects of mentorship with an aim to find an effective way of mentoring. This becomes relevant in the present day since NMC guidelines mandate mentorship for undergraduates to be conducted compulsorily.

DEFINITION

Mentoring is defined by the Cambridge Dictionary as the act or process of helping and giving advice to a younger or less experienced person, especially in a job or at school[1] and a commonly accepted definition is "A process whereby an experienced, highly regarded, empathetic person (the mentor) guides another (usually younger) individual (the mentee) in the development and re-examination of their own ideas, learning, and personal and professional development."[2]

TYPES AND BENEFITS

The medical course is a stressful one. The mentorship program is an attempt to make sure that every student has someone to guide them in their adjustment phase and also in their career pathway. The mentors' expertise may help the mentee in professional growth, this may help the mentee in the form of professional coach, role model and support system.[3] Mentorship has been proven to be beneficial to improve job satisfaction and can help in steering the younger generation into the right path.[4] The mentors also gain from professional satisfaction and improvement in communication skills.[5]

There are two broad categories of mentorship: traditional and transformational. There are four

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subtypes within each of those areas: formal, informal, spot, or peer.[4] Group based mentorship programs have been included in medical education. A systematic review on 17 articles showed results in favour of group mentorship. They found that it helps in mitigating the stressors in medical education and longitudinal and integrated mentorship helps in psychosocial development.[5] Even in resource limited settings it has been found to be beneficial for overall development.[6] According to Tan et al a small group number (5 to 8 mentees) is ideal for personal development and a larger group would benefit in professional development.[7]

CHALLENGES

The challenges described in literature includes poor student attendance, doubts in their expectations, additional burden to work. Some mentees on the other hand felt that the confidentiality and respect in groups were compromised.[8] Finding an appropriate time to meet has also been described as a challenge.[9]

NECESSARY OR NOT

Mandatory group meetings have been recommended since it ensures that the mentorship activity is not submerged within the teaching schedule. Neer peer method is in fact found to be successful and a senior student as a second mentor is in fact recommended to be helpful in successful implementation.[5] In a study reported from India regarding first year mentoring, Over 95% of respondents felt it was a good idea.[9] A thematic analysis with Focussed group discussion showed that there is a consensus among students that the mentorship program is essential, the current operational framework still has limited confidence due to biases, fears, and misinformation among the students. This means that their specific needs have to be addressed for making it successful.[10]

CONCLUSION

From the discussion it is seen that most mentees are actually in favour of the mentorship program. Mentorship has been proven to be helpful to the mentees in the long run especially if its longitudinally integrated. The mentors are also to benefit in the form of professional satisfaction and psychosocial skill development. The mentors may find it difficult because students may not turn up, or it is difficult to find the right time in an already burdened work schedule. The students on the other hand may not open up due to fear, or confidentiality issues. Using peers as assistants may help in some aspects since they may relate to the juniors more. Exploratory sessions to know their specific needs and follow up may be necessary for the successful implementation of the program.

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Review Article

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Tort in Legal Medicine: Literature Review

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Abstract

Legal medicine relies on tort law to address civil wrongs in healthcare. Medical malpractice, informed consent violations, and negligence are common torts. They provide a legal framework for patients seeking redress due to harm caused by healthcare professionals' actions or negligence, ensuring accountability and upholding standards of care.

Keywords: Tort; Crime; Legal medicine; Negligence; Crime; Contract.

Synopsis

INTRODUCTION

Tort law plays a crucial role in legal medicine, serving as a framework that addresses civil wrongs and liabilities arising from medical practices. In the context of legal medicine, a tort refers to a civil wrongdoing or harm caused by a healthcare professional's negligence or intentional misconduct. This area of law seeks to provide compensation to individuals who have suffered injury or harm due to the actions or omissions of medical practitioners.

One common type of medical tort is medical malpractice, where healthcare providers fail to meet the standard of care expected in their profession, resulting in harm to the patient. This may include misdiagnosis, surgical errors, medication mistakes, or inadequate treatment. Legal medicine often grapples with cases involving complex medical

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evidence, requiring expert testimony to establish the breach of duty and causation.

Another relevant tort in legal medicine is the concept of informed consent. Patients have the right to be fully informed about the risks, benefits, and alternatives of a medical procedure before giving their consent. Failure to obtain proper informed consent can lead to legal repercussions for healthcare professionals.

Moreover, the concept of negligence is paramount in legal medicine. Negligence in the medical context involves a breach of the duty of care owed to a patient, causing harm. Proving negligence requires establishing that the healthcare provider deviated from the standard of care, which is often a contentious and intricate process.

DEFINITIONS

TORT

The word 'tort' is derived from 'tortus' meaning 'twisted'. From there it came to mean 'wrong' and it is still so used in French. In English, the word 'tort has a purely technical legal meaning-a legal civil wrong for which the law provides a remedy.[1]

In Ballentine's Law Dictionary[2] the term has been defined comprehensively as under:

Tort: A wrong. A wrong independent of contract. A breach of duty which the law, as distinguished from a mere contract, has imposed. An injury or wrong committed, either with or without force, to the person or property of another. Such injury may arise by the nonfeasance, by malfeasance or by the misfeasance by the wrongdoer.

Extort: To get something by using threats or violence.

Distort: To change the shape or sound of something so that it seems strange.

CONTRACT

Contract: The term has been defined in Black's Law Dictionary[3] as under:

"Contract. An agreement between two or more persons which creates an obligation to do or not to do a particular thing. As defined in Restatement, Second, Contracts: A contract is a promise or a set of promises for the breach of which the law in some way recognises as a duty. A legal relationship consisting of the rights and duties of the contracting parties, a promise or set of promises constituting an agreement between the parties that gives each a legal duty to the other and also the right to seek a remedy for the breach of those duties. Its essentials are competent parties, subject matter, a legal consideration, mutuality of agreement, and mutuality of obligation. Express and implied.

Express Contract: An express contract is an actual agreement of the parties, the terms of which are openly uttered or declared at the time of making it, being stated in distinct and explicit language, either orally or in writing.

NEGLIGENCE

Negligence means: the omission to do something which a reasonable man, guided by those ordinary considerations which ordinarily regulate human affairs, would do or the doing of something which a reasonable and prudent man would not do.[4]

The term Negligence has been defined in the Book on Medical Negligence & Compensation. 4th Ed. By Dr. Jagdish Singh & Adv. Vishwa Bhushan. BLP (2014),[5] as under: In case of Municipal Corpn. of Greater Bombay v Laxman Iyer, 2003,[6] A case of Motor accident, Supreme Court observed that Negligence is not solely synonymous with absolute carelessness but rather denotes a lack of the requisite degree of care demanded by specific circumstances. It encompasses the failure to uphold the necessary level of care, precaution, and vigilance to safeguard the interests of another person, resulting in harm to that individual. The concepts of negligence and duty are inherently interconnected. Negligence can be understood subjectively as a state of mind marked by carelessness or objectively as negligent conduct. It is a relative, rather than absolute, term, lacking a universally fixed standard or precise formula for measurement. Determining negligence involves a comprehensive consideration of all relevant facts and circumstances, varying under different conditions. The key question in evaluating negligence lies in assessing whether a reasonable person would foresee the potential damage caused by a particular act. Non-compliance with legal obligations or a deviation from the prescribed manner, mode, or method outlined by the law inherently constitutes negligence. Thus, negligence is contingent on a contextual analysis of surrounding factors to ascertain whether an act qualifies as negligent.[6]

Professional Negligence

Negligence as defined above, committed by a professional person. A professional is one

engaged in one of the learned professions or in an occupation requiring a high level of training and proficiency.[7]

Medical Negligence

Medical negligence is defined as lack of reasonable care and skill or willful negligence on the part of a doctor in respect to acceptance of a patient, history taking. examination, diagnosis, investigation, treatment medical or surgical, etc. resulting in injury or damage to the patient.[8] The law requires that the practitioner must bring to his task a reasonable degree of skill and knowledge and must exercise a reasonable degree of care. The law does not expect the very highest nor a very low degree of care and competence judged in the light of the particular circumstances of each case.[9]

Damage

The term 'damage' means physical, mental or functional injury to the patient.[10]

Gross Negligence

The term has been defined in Black's Law Dictionary[11] as under: The intentional failure to perform a manifest duty in reckless disregard of the consequences. Ordinary negligence, dealt with under an earlier question is based on the fact that one ought to have known results of his acts, while gross negligence rests on the assumption that one knew results of his acts, but was recklessly or wantonly indifferent to results.[12]

CRIME

A positive or negative act in violation of penal law; an offense against the State.[13]

Crimes are those wrongs which the government notices as injurious to the public, and punishes in what is called a "criminal proceeding," in its own name. A crime or public offense is an act committed or omitted in violation of a law forbidding or commanding it, and to which is annexed, upon conviction, either of the following punishments: (1) Death; (2) imprisonment; (3) fine; (4) removal from office; or (5) disqualification to hold and enjoy any office of honor, trust, or profit in this state.

Criminal Case

An action, suit, or cause instituted to punish an infraction of the criminal laws.[14]

Criminal Negligence

Negligence of such a character, or occurring under such circumstances as to be punishable as a crime by a statute; or such a flagrant and reckless disregard of the life and safety of others, or willful indifference to the injury liable to follow, as to convert an act, otherwise lawful, into a crime against the State when it results in personal injury or death. Here the negligence is so great as to go beyond matter of mere compensation.[14] A crime or misdemeanor shall consist in a violation of a public law, in the commission of which there shall be a union or joint operation of act and intention, or criminal negligence.[15]

Criminal Assault and Battery

The term has been defined in Black's Law Dictionary[16] as: An accused may be guilty of a "criminal assault and battery" if he intentionally does an act which by reason of its wanton and grosslynegligent character exposes another to personal injury and in fact causes injury.[17]

Criminal Gross Negligence

The term has been defined in Black's Law Dictionary[18] as: Gross negligence is culpable or criminal when accompanied by acts of commission or omission, of a wanton or willful nature, showing a reckless or indifferent disregard of the rights of others, under circumstances reasonably calculated to produce injury, or which make it not improbable that injury will be occasioned, and the offender knows or is charged with knowledge of the probable result of his acts; "culpable" meaning deserving of blame or censure.[19]

Criminal Instrumentality Rule

Where the wrong is accomplished by a crime, the crime and not the negligent act of the party which made it possible is the "proximate cause".[20]

Criminology

The science which treats of crimes and their prevention and punishment.[21]

Criminal Insanity

Want of mental capacity and moral freedom to do or abstain from doing particular act.[22]

ETHICS of profession

What is generally called the "ethics" of the profession is but consensus of ***expert opinion*** as to necessity of professional standards.[23]

Expert Evidence

Testimony given in relation to some scientific, technical, or professional matter by experts, i.e., persons qualified to speak authoritatively by reason of their special training, skill, or familiarity with the subject.[24]

EXPERT

An expert is a skillful or experienced person; a person having skill or experience, or peculiar knowledge on certain subjects, or in certain professions; a scientific witness.[25]

The word 'expert' or 'expert opinion' is not directly defined anywhere in the Indian Evidence Act or in any other Statute. Section 45 of the Indian Evidence Act simply says that the persons who are specially skilled in foreign law, science, art, handwriting or finger impressions are called experts.[26] Thus, Section 45 limits the subject of expert testimony as stated. Section 45 of the Indian Evidence Act,[27] provides:

"When the Court has to form an opinion upon a point of foreign law, or of science or art or as to identity of handwriting or finger impressions, the opinions upon that point of persons specially skilled in such foreign law, science or art or in questions as to identity of handwriting or finger impressions are relevant facts. Such persons are called experts."

EXPERT WITNESSES

Expert witness may be men of science educated in the art, or persons possessing special or peculiar knowledge acquired from practical experience.[26]

It was in Balkrishna Das v. Radha Devi,[27] and State of Himachal Pradesh v. Jailal,[28] the Court made an attempt to spell out the characteristics of a person to be called as an expert according to law. They are summarised as follows:

(i) An expert is a person who has made the subject upon which he speaks a matter of particular study, practice or observation and thereby has a special knowledge of the subject;

(ii) He is not a witness of fact and his evidence is really of an advisory character;

(iii) He must have devoted sufficient time and study to the subject.

In India, qualification is necessary to admit an expert's evidence. A vague statement without any particulars of training or type of service does not make any person an expert. Law does not permit any assumption without evidence on material point of competence. Therefore, it is the burden of the expert to prove his competence.

If the examination in chief clearly shows no competency the opinion given by the witness will be excluded. The regular practice is that the expert will be allowed to give his evidence and his competency can be challenged in cross-examination. The analysis of these judicial pronouncements would not only give us an acceptable definition of an expert but would also help to identify the role of an expert and scope of his evidence. Taking this into account, an expert can be defined thus: Expert is a person who has specialised in a particular field with his level of knowledge, skill, experience, training or education which is outside the ken of ordinary human being, and whose testimony shall be tested by significant cross-examination and received by Courts at its discretion, with adequate safeguards.

Modern definition regarding expert is paraphrased on the statement "an expert is what an expert does". From these words one can say than an expert becomes an expert, not only through academic qualifications, but also from the spectrum of activities, which he does in any specialised field.[29]

DUTY OF EXPERT WITNESS

The duties of expert witnesses are summarized as follows:

(i) Expert evidence should be independent and not influenced by the exigencies of litigation.

(ii) Expert opinion should be unbiased and objective; an expert witness should never assume the role of an advocate.

(iii) Facts or assumptions upon which the opinion was based should be stated, together with material facts which could detract from the concluded opinion.

(iv) An expert witness should make it clear when a question or issue fell outside his experience.

(v) If there was insufficient data upon which to reach an opinion, this had to be stated with an indication that the opinion was provisional and any doubts had to be stated.

(vi) If the expert changed his mind, this had to be made known to the other side without delay.

(vii) There ought to be full disclosure of documents referred to in the expert evidence.[31]

The function of an expert witness was clearly laid down by Lawton LJ in Regina v. Turner,[32] as follows: "their function is to provide the Court with information about a point at issue or to help the tribunal of fact to interpret information about a point at issue, which is out with the knowledge and experience of that tribunal." In doing so, the expert may express an opinion as to the interpretation of the proven facts. Their task is to basic scientific or technical data and to present inference and conclusions. From the name (experts) itself it is clear that they are different from other witnesses and they are getting priority over ordinary witnesses. They can speak on a matter of special study, practice or observation. Their role is thus an educator to assist the lawyers in the preparation of the case and as an advisor, if the case goes to the Court to assist the judge to reach of fair decision.[33]

TORT Vs CONTRACT: Differences & Similarity

In a general way, a tort is distinguished from a breach of contract in that the latter arises under an agreement of the parties, whereas the tort, ordinarily, is a violation of a duty fixed by law, independent of contract or the will of the parties, although it may sometimes have relation to obligations growing out of, or coincident with a contract, and frequently the same facts will sustain either class of action. There is a well-marked distinction between a contract and a tort.[34]

Table 1: TORT Vs CONTRACT: Differences

Difference	Contract	Tort
Act	For doing Rightful Act. As per the terms & conditions of contract.	Doing Wrongful Act. A wrong independent of contract
Violation	Breach of contract arises from the non - compliance, contradicting from terms under an agreement of the parties	Tort is a violation of a duty fixed by law, independent of contract or the will of the parties
Consent	A contract necessitates privity between the parties to it	a tort is inflicted against or without consent
Privity	A contract is founded upon consent	in tort no privity is needed.
Infringement/Violation of a right	breach of contract is an infringement of a right in personam, i.e., of a right available only against some determinate person or body, and in which the community at large has no concern.	a tort is a violation of a right in rem, i.e., of a right vested in some determinate person, either personally or a a member of the community, and available against the world at large.
Duty	In the case of a contract, the duty is fixed by the will and consent of the parties, and it is owed to a definite person or persons.35	In the case of a tort, the duty is one imposed by the law and is owed to the community at large.

Thus, if A assaults B, or damages B's property without lawful cause or excuse, it is a tort. In this context, the breached duty is one mandated by the law, specifically, the obligation to refrain from causing unlawful harm to the person or property of another. However, in the scenario where A agrees to sell goods to B at an agreed upon price, and if either party fails to fulfill their contractual obligations, it constitutes a breach of contract. In this situation, the duty is reciprocal, with A owing a duty solely to B, and conversely, B owing a duty exclusively to A.

The breached duty is a particular obligation owed exclusively by one party to the other, as opposed to a general duty owed to the broader community. Secondly, in a breach of contract, the motive behind the breach is irrelevant, whereas in a tort, it is frequently considered. Thirdly, in a breach of contract, damages serve solely as compensation.[36]

In a lawsuit for property related torts, the principles are typically similar. However, when the harm pertains to an individual's person, character, or emotions, and the circumstances reveal inappropriate motives or behaviors such as fraud, malice, violence, cruelty, or similar factors that exacerbate the plaintiff's injury, the court may grant aggravated damages.

Exemplary damages, designed to punish the defendant and discourage future misconduct, can be granted in specific tort cases but are infrequently awarded in contract disputes.[37] A contractual provision limiting liability is not applicable to individuals not party to the contract who incur liability in tort.[38] Another notable distinction lies in the objectives of these legal domains: tort law focuses on allocating and preventing losses, while contract law ensures the fulfillment of promises made within a contractual agreement.[39]

Similarities between Tort & Contract

In Singh, J. Bhushan, V. Medical Negligence & compensation, the authors explained that an identical action can give rise to both a tort and a contract breach. Individuals, such as carriers, solicitors, or surgeons, who assume specific duties and willingly enter into contracts for their proper execution, may face liability for negligence or lack of skill in either a contract breach lawsuit or a tort action by a party to the contract. In the case of a person not party to the contract suffering harm, a tort action alone is applicable. The violation of such a contract is considered a tort as well, as these individuals would bear liability even in the absence of a contract, as they undertake a duty independently of any contractual agreement.[40]

A father engages the services of a surgeon to care for his son. If the son suffers harm due to incompetent treatment, a contractual relationship exists between the father and the surgeon, but none exists between the son and the surgeon. Consequently, the father has the option to file a contract lawsuit against the surgeon, while the son is limited to pursuing a tort claim against the surgeon.[41]

In the celebrated case of Donoghue v Stevenson,[42] a manufacturer, who provided a substandard product to a retailer, leading to its sale to a customer, was found responsible when a friend of the customer fell ill after consumption. The manufacturer had a contractual obligation to the retailer and breached that duty; additionally, the manufacturer also had a tortious duty to exercise reasonable care to avoid causing harm to the consumer.[43]

The aforementioned distinctions between a tort and a contract, while fundamentally sound, are becoming increasingly blurred in certain domains. Although normally a duty in tort is independent of any consent or agreement and is fixed by the law there are cases where some sort of prior consent or agreement on the part of the defendant is necessary.[44]

The duty of care owed to a person advised by a gratuitous advisor, who is placed in such a position that others may reasonably rely upon his judgment or skill, has been described as "equivalent to contract" and is dependent upon the advisor's agreeing to give advice in circumstances in which but for the absence of consideration there would be a contract.[45]

It is noteworthy that the inherent obligation in a contract, akin to a duty in tort, arises solely through the force of the law.[46] Another parallel worth noting is that while initially, a tort duty is owed to individuals in general, following a breach of that duty, the obligation to provide compensation in tort becomes comparable to a contractual duty owed to specific individuals.[47]

It is presently acknowledged that there can exist concurrent contractual and tortious duties owed to the same plaintiff, granting the plaintiff the option to pursue either a tort or contract claim.[48] Recent advancements in negligence law enable a plaintiff, even when their person or property remains unharmed, to seek recovery for economic losses resulting from the defendant's negligent actions in breaching a contract with a third party. This is contingent upon a close degree of proximity and the loss being a direct and foreseeable consequence of the defendant's negligence.[49] These developments suggest a trend towards the principle that every avoidable breach of contract is also a harm to a person foreseeably affected, extending even to the parties involved in the contract.[50]

Thus, liability for negligence may sometimes be fixed by the courts simultaneously under contract and tort, as is the case with cases under the Consumer Protection Act.

Generally, a professional individual bears both a tortious and contractual duty to their client when providing advice or performing services.[51] Medical practitioners do not enjoy any immunity and they can be sued in contractor tort on the ground that they have failed to exercise reasonable skill and care.[52]

CONTACT VS CONTRACT

Tort means Wrong

The contract is with written consent.

Contact: Good touch or bad touch: It is part of sexual education for children to prevent them from undergoing any future incidence of sexual abuse, harassment or sexual assault.

Table 2: Contract Vs Contact: A Comparison

-	Contract	Contact
Mutual	Mutual agreement to be in touch with other	Mutually touching each other during act of meeting/hugging/assault/crime
Consent	Contract is with written/verbal/implied consent	Contact can be with or without consent
Mutual	Friendship is a **Mutual agreement** to be in touch with other (between males/female/boyfriend/girlfriend)	Locard's principle of **mutual exchange** of trace material between boyfriend & girlfriend kissing each other
Consensual	**Relationship** is Mutual verbal agreement to be in touch with other (between male & female committed to each other with honesty in relations: Faithfulness)	Locard's principle of **mutual exchange** of trace material between boyfriend & girlfriend having sexual act with **consent** & will (stains of semen/ saliva/Love-bites/Hair/cloth thread fragments)
Crossing the boundaries	**Courtship** is Mutual agreement to be in touch with other (between male & female committed to marry each other, and involves in sexual act with mutual consent & will, to check their compatibility in sexual relationship)	Locard's principle of mutual exchange of trace material between assailant & victim, having forceful sexual act without consent (stains of blood/semen/saliva/bitemark/Hair/ cloth-thread fragments)
Violent	**Wrestling** is Mutual agreement to fight with each other (between male withmale/ female with female) committed to not having any animosity & no actual intention to hurt grievously)	Assault is mutual physical violence to injure each other, having animosity & intention to hurt each other without any limits: hurt can be grievous & dangerous to life (stains of blood/saliva/ bitemark/Hairs)
Sexual act	While Making Sexually Explicit Videos, the director signs a written contract of mutual agreement with the female actor to have sexual act with male actor, using all precautions & barriers (condoms) to prevent any infection, and itis video recorded for commercial purposes	Sexual Assault is an act of sexual violence done by assailant (male) on private parts (genitalia) of victim (female): Locard's principle of mutual exchange of trace material (stains of blood/ saliva/ Semen/ bitemark)

Toxic Riddle in Rhymes on the intoxicating aspects of Tort:

Do You Know Those Treacherous Beings, Hiding In Its Fort. Causing The Breach, In Your Trust, By Putting, In Its Snort. Do Causes, Personal Injury, To Its Rival, Playing Their Sport.

Poison Clubbers, Seeks, To Settle Their Differences, To Sort.

Which Is, of One Meter, Long, But Remain, One Inch, Short.

Lies Twisted, In a Tortuous Manner, In A Wrong, Spoil-sport.

Breaches The Contract, To Guard and Isolates Self To Abort.

Injects its venom, during violent bite & disfigures to distort.

Charmers misuse these creatures to exploit viewer & extort.

Do Not, Punish It, By Killing, In the Revenge, As Last Resort.

But Do Gets Compensation, In Form of Money, From Court.

Let Us Prove the conspiracy In this Medicolegal Law of Tort!

Riddle AnalysisTortious

- Tort = Wrong

Do you know a poison clubber who has the right to be wrong (tort)!

- To go wrong (against the right direction)
- To do wrong (kill for food)

Nature has gifted snake with venom, as 🐍 has no limbs.

- To tort & twist in abnormal manner
- Double up in the wrong position (dis-tort) in infinity ♾ shape.
- It has a criminal mind (mens rea) to deceit by it's wicked nature, wicked keep 🐍 snake in the sleeve to kill in cold blooded manner.
- Snake like 🐍 shrewd defendant successfully defends that he had no duty of care, to the injured.

Breach of duty is the allegations in tort law.

As snake is 🔕 silent and can't 🐵 speak 🗣 for itself, but it's bitemark is telltale marker. Defendant's conduct is erroneous and wrong, and bitemark is Res ipsaloquitor, thing speaks of itself.

Table 2: Analogy Between the Law of Torts & Snake bites

-	Tortuous Snake	Law of Torts
Name	Tortuous & twisted in shape	Twisting (Tortus) the facts for personal gains
Breaches trust	Snakes are infamous for Breach of trust	Torts covers Breach of trust
Distort	For personal gains (To insure regular supply of food: for insuring life of self by violence to hunt)	For personal gains (insure illegal supply of money: insurance frauds for life insurance)
Damages	Damages by Tortuous twisting its curls forced around neck & chest of its prey (mouse/ rat)	Damages of Torts committed with force
Types	Non-venomous (not dangerous) & Venomous (dangerous to life/ limb)	Civil negligence (not dangerous) & Criminal (dangerous to life/limb) negligence
Wrongs	Wrongful injury dangerous to life	Wrongful act dangerous to life
Duty	Snake charmers have duty for care the well being of snakes they keep, but snakes are prone to neglect	Duty of care is a must in proving the law of torts in a negligence suit, against the caretaker (doctor)
works	Snake charmers are professionally negligent & their snakes don't survive long, due to malnutrition (snakes drink milk: a myth)	Professional Negligence is common among caretakers, who milk the customers, for selling branded products
crime	Personal injury, no crime against state	Personal injury, no crime against state
Intent	Personal gain to hunt for food to eat the kill	Fraud by duty officer for personal gain (bribery)
misuse	To murder human by snakebite, is crime against state	Harming humans to cause loss of life/limb by criminal act claiming as criminal negligence
Loss	Loss of life (death) /Limb (gangrene) permanently	Loss of life /Limb permanently is punishable
IPC	304 IPC: Culpable homicide not amounting to murder	304 IPC: Culpable homicide not amounting to murder
Medical	304-A IPC: Death due to negligence of snake charmer	304- A IPC: Death due to negligence of doctor
distort	Distorts vision due to ptosis of eyes, blindness caused by spitting cobra	Distorts the facts of case, due to neglected act, putting a blind eye to errors and omissions (Blind Justice)
Doctored in dark silence	Snakes may lie still in dark, manipulates its bite to inject venom & catches their prey for personal gains (fulfil their hunger)/ by causing personal injury to its prey	Manipulation of facts keeping in dark, for personal gains (fulfil greed of hunger)/personal injury is caused, as the documents are doctored to change facts by forgery/copying signature of others
Judge	Doctor judges the injuries & gives the antidote to neutralize the venom injected by snakebite to restore circulation & breathing to compensate the loss	Judge with blindfolds, judges the evidence of injuries caused, and provide judicial remedies of penalty to compensate the loss.
Abandonment of torts: Trespasses into another's personal territory	The relinquishment of animal (snake) who had committed a trespass to the person injured, in discharge of the (snake charmer) owner's liability for such trespass or injury.	The relinquishment of animal/ human who had committed a trespass to the person injured, in discharge of the owner's liability for such trespass or injury.
Actionable Tort	To constitute an "act against the Tortuous snake," there must be a legal duty, imposed by statute or otherwise, owing by defendant (doctor) to the one injured, and in the absence of such duty damage caused is "injury without wrong"	To constitute an "actionable tort," there must be a legal duty, imposed by statute or otherwise, owing by defendant (lawyer) to the one injured, and in the absence of such duty damage caused is "injury without wrong"
Aggravation of Tort	Any circumstance attending the commission of a crime of snakebite or tort which increases its guilt or enormity or adds to its injurious consequences, but which is above and beyond the essential constituents of the crime of snakebite or tortuous snake itself.	Any circumstance attending the commission of a crime or tort which increases its guilt or enormity or adds to its injurious consequences, but which is above and beyond the essential constituents of the crime or tort itself.
Torture	Tortuous Snakes are kept by snake charmers in their circular baskets by keeping them in Tortuous manner is torture & cruelty to these living beings against animal rights	Notice the Consumers' rights to prevent them suffering from wrongful acts, are drafted in consumer protection act, 2019.

Tortious

"Tortious" refers to conduct that constitutes a tort. In essence, tortious behavior encompasses any actions, excluding breach of contract, that can be subject to a civil lawsuit as a wrongful act.

Offence, Tort & Crime

Although the same act may constitute both a crime and a tort, the crime is an offence against the public pursued by the sovereign, while the tort is a private injury which is pursued by the injured party.[53]

The focal point of criminal investigations predominantly resides in forensic science laboratories. Consequently, scientific evidence has become indispensable in the resolution of criminal matters, spanning a diverse array of disciplines, all centered around the core element of science. Modern technology and recent advances in the scientific area have enlarged the scope of Forensic Science. The attorney who is going to practice Criminal law must know the problems faced in collectingscientific proof. He must understand the extent to which Science has been able to help the investigator in the criminal field.

In the current era, despite the plethora of resources accessible to prosecutors, scientific evidence that could have been accessible is either

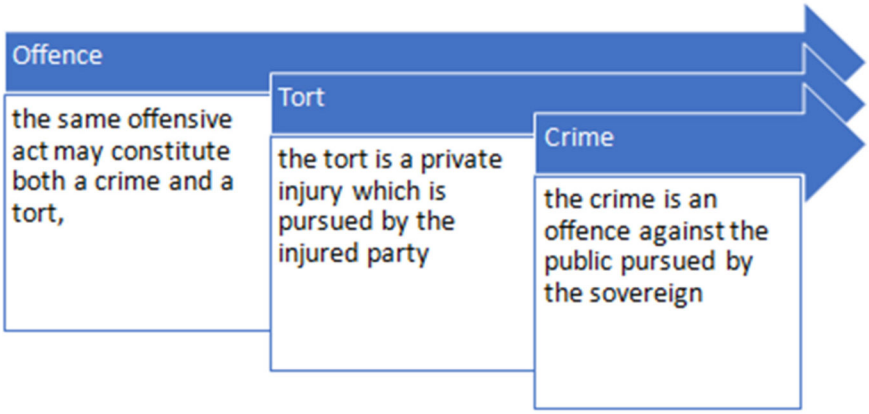

Fig. 1: Flowchart on Offence, Tort & Crime

overlooked, rendered useless due to contamination, or entirely escapes the notice of law enforcement and prosecutors in approximately ninety-five percent of the cases prosecuted.

Recent developments in the field of science can, when properly applied to the practice of criminal law, open up new doors, new channels of thought and entirely new gambits in the field of proof.[54]

CONCLUSION

In conclusion, tort law in legal medicine is a vital component that provides a legal avenue for individuals to seek redress when they have suffered harm due to the negligence or intentional actions of healthcare professionals. It serves as a mechanism to uphold the standard of care within the medical profession and ensures that patients are protected from undue harm in the pursuit of healthcare services.

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Review Article

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Recent Updates in Legal Medicine

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Abstract

Addressing medical negligence involves adjudicating it according to provisions for exceptions and exemptions. These provisions grant licensed physicians' immunity from liability. Medical negligence, while a serious offense, requires adjudication with consideration of exceptions. These provisions acknowledge the expertise of licensed physicians, offering exemption from liability in certain cases. It's a balance between accountability and recognizing the complexities of medical practice.Indian medical professionals, healthcare providers, legal counselors, advocates, police officers, and honorable judges play vital roles in ensuring justice and fair practices in medical malpractice cases. Staying updated with recent updates in criminal law, notably, Bharatiya Nyaya Sanhita (BNS), Bharatiya Nagarik Suraksha Sanhita (BNSS), Bharatiya Sakshya Adhiniyam (BSA), is imperative for effective prevention, investigation, and management of legal hurdles in such cases. These professionals must acquaint themselves with the nuances of these laws to navigate complexities and uphold ethical standards in healthcare. By continuously updating their knowledge, they can foster a system where accountability, transparency, and justice prevail, ultimately safeguarding the rights and well-being of patients and healthcare providers alike.

Keywords: Negligence; Malpractice; Offence; Medical Practice; Consumer Court; Bharatiya Nyaya Sanhita (BNS); Bharatiya Nagarik Suraksha Sanhita (BNSS); Bharatiya Sakshya Adhiniyam (BSA); Crime; Lawsuits.

INTRODUCTION

Medical negligence is a grave concern within the healthcare system, often leading to detrimental consequences for patients and legal ramifications for healthcare providers. However, the adjudication of medical negligence requires careful consideration of exceptions and exemptions provisions to ensure fairness and justice.

Within the realm of medical practice, errors can occur despite the best intentions and efforts of healthcare professionals. These errors may range from misdiagnosis to surgical mistakes, leading to harm or even death for patients. However, not all instances of medical negligence warrant legal action against the healthcare provider. Exceptions and exemptions provisions play a crucial role in determining liability in such cases.

One key aspect of these provisions is the recognition of the expertise and judgment of

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licensed physicians. Healthcare professionals undergo extensive training and education to obtain their licenses, and they are expected to adhere to certain standards of care. Exceptions provide a framework for acknowledging that despite the best efforts of a physician, adverse outcomes can occur due to various factors beyond their control. These may include unforeseen complications, patient-specific conditions, or the inherent risks associated with certain medical procedures.

The exemption from liability granted to licensed physicians through exceptions provisions is not a blanket immunity but rather a recognition of the complexities of medical practice. It does not absolve healthcare providers of responsibility but rather acknowledges that not all adverse outcomes are indicative of negligence. Instead, it encourages a nuanced approach to adjudicating medical malpractice claims, taking into account the circumstances surrounding each case and the standard of care expected of a reasonable healthcare professional in similar situations.

However, it's essential to strike a balance between protecting patients' rights and ensuring that healthcare providers are not unfairly penalized for unavoidable complications. Clear guidelines and rigorous oversight are necessary to prevent the misuse of exceptions provisions and to uphold the principles of accountability and patient safety within the healthcare system. Ultimately, the adjudication of medical negligence requires a careful examination of the facts, expert testimony, and legal precedents to arrive at a just and equitable resolution for all parties involved.

Causing bodily harm or injury is generally considered an offense. However, in the context of medical or surgical treatment, injury, although technically an offense such as 'harm,' 'injury,' 'grievous injury,' or 'homicide,' is not considered a crime. The key point of contention is under what exceptional circumstances a medical act becomes an actionable offense, which is known as medical negligence.

DISCUSSION

Negligence occurs when someone fails to perform a duty by either omitting to do something that a reasonable person, guided by common considerations, would do, or by doing something that a prudent and reasonable person would not do. Actionable negligence involves neglecting to use ordinary care or skill toward someone to whom the defendant owes this duty, resulting in injury to the plaintiff's person or property. Negligence comprises three key elements: (1) a legal duty to exercise due care toward the plaintiff within the scope of the duty; (2) a breach of this duty; and (3) resulting damage. A cause of action for negligence arises only when damage occurs, as damage is a necessary component of this tort[1]

Negligence is actionable only when the plaintiff has suffered injury to their person or property, and a cause of action for negligence arises only when damage occurs. In cases of medical negligence, a physician's negligent act while treating a patient becomes a cause of action and gives rise to an actionable claim when it results in bodily damage, whether physical, physiological, or functional, to the patient.

Causing injury intentionally is defined as an offence under Bharatiya Nyaya Sanhita (BNS)[2] 2023, formerly known as Indian Penal Code (IPC)."Injury" refers to any harm illegally caused to a person's body, mind, reputation, or property. The term "illegal" applies to anything that constitutes an offense, is prohibited by law, or provides grounds for a civil action. A person is "legally bound to do" whatever it is illegal for them to omit. Whoever causes bodily pain, disease, or infirmity to another person is said to cause hurt.Anyone who acts with the intention of causing hurt to another person, or with the knowledge that their actions are likely to cause hurt, and does cause hurt, is said to voluntarily cause hurt.The following types of hurt are designated as "grievous":

- Emasculation.
- Permanent loss of sight in either eye.
- Permanent loss of hearing in either ear.
- Loss of any member or joint.
- Destruction or permanent impairment of the powers of any member or joint.
- Permanent disfiguration of the head or face.
- Fracture or dislocation of a bone or tooth.
- Any hurt that endangers life, causes the sufferer severe bodily pain for fifteen days, or renders the person unable to follow their ordinary pursuits.

The punishment for harm is proportionate to the severity of the injury inflicted:

As per Sec125 a, b of BSA,2023. (IPC 336, 337, 338) Whoever acts so rashly or negligently as to endanger human life or the personal safety of others shall be punished with imprisonment for a term up to three months, or with a fine up to two

thousand five hundred rupees, or both. However:

(a) If hurt is caused, the punishment shall be imprisonment for a term up to six months, or a fine up to five thousand rupees, or both. (b) If grievous hurt is caused, the punishment shall be imprisonment for a term up to three years, or a fine up to ten thousand rupees, or both.[2]

There is no specific provision for medical negligence, which is considered distinct and unique. Criminal medical negligence, or acts of medical negligence that attract criminal liability, are determined by judicial interpretation. Surgical procedures such as amputations and organ removal typically cause grievous hurt.Criminal Negligence may result in homicide, if it causes death due to a rash or negligent act. Whoever causes the death of any person by such an act, not amounting to culpable homicide, shall be punished with imprisonment for a term up to seven years and shall also be liable to a fine, as per Sec 106 (1) of BSA 2023 (IPC 304A). Anyone who causes the death of a person by engaging in a rash or negligent act, not amounting to culpable homicide, shall be subject to imprisonment for up to five years, along with a fine. If such an act is committed by a registered medical practitioner during a medical procedure, they shall face imprisonment for up to two years, in addition to a fine (added in BNS, 2023)[2]

All the aforementioned offenses fall within the realm of criminal law and are adjudicated as such. However, they incur both criminal and civil liabilities. Medical negligence, in particular, is subject to scrutiny under tort law, civil law, or common law, which determines civil liability for monetary compensation. Proof of the offense according to legal provisions is necessary before either civil or criminal liability is established or assigned.

Exceptions which may protect from the medicolegal liability

"Within this Sanhita (BNS), every definition of an offense, each penal provision, and every illustration of such definitions or provisions shall be interpreted in light of the exceptions outlined in the chapter titled 'General Exceptions,' even if those exceptions are not explicitly restated in each definition, provision, or illustration. An exception renders an offense null, absolving the accused offender of any liability, whether civil or criminal."

Emerging medical negligence jurisprudence that protects physicians

The recent judgment by the Honourable Supreme Court extensively revisited previous rulings on medical negligence, emphasizing how evolving jurisprudence, while acknowledging exemption clauses in the Indian Penal Code (now Bhartiya Nyaya Sanhita 2023), has effectively reduced the criminalization of medical negligence.

In the latest Supreme Court judgment, Bombay Hospital vs. Asha Jaishwal 2021 CIVIL APPEAL No. 1658 OF 2010,[3] it was noted that in Martin F. D'Souza v. Mohd. Ishfaq (2009)[4], the court observed that doctors cannot be held liable for medical negligence solely based on the doctrine of res Ipsa loquitur. This is because a patient's unfavourable response to treatment or a failed surgery does not automatically imply negligence on the part of the doctor. There is a regrettable tendency to blame doctors when patients experience adverse outcomes, which reflects an intolerant attitude from family members who refuse to accept such outcomes. The increased incidents of violence against medical professionals, who tirelessly work under challenging conditions, have been particularly evident during the pandemic.

Merely because a patient does not respond favourably to a treatment or a surgery fails, it does not automatically render the doctor liable for medical negligence under the doctrine of res Ipsa loquitur. It is improbable that any conscientious professional would deliberately undertake actions or omissions leading to harm or injury to the patient, as their professional reputation would be jeopardized. Even a single failure could have significant consequences for their career.

When a patient experiences adverse outcomes or mishaps, there is often a tendency to attribute blame to the doctor. However, it is widely acknowledged that even the most skilled professionals, let alone average ones, may encounter failures. Similar to how a lawyer cannot win every case in their career, they cannot be penalized for losing a case provided they fulfilled their professional duties and presented their arguments.

In a landmark judgment known as Jacob Mathew v. State of Punjab and Anr. (2005)[5], this Court emphasized that mere lack of care, an error in judgment, or an unfortunate accident do not necessarily constitute negligence on the part of a medical professional. The Court held: Negligence occurs when there is a breach of duty caused by

either failing to do what a reasonable person, guided by ordinary considerations, would do, or by doing something that a prudent and reasonable person would not do. This definition of negligence, as outlined in the Law of Torts by Ratanlal & Dhirajlal (edited by Justice G.P. Singh),[1] remains valid. Negligence becomes actionable when it results in injury stemming from an act or omission that amounts to negligence and is attributable to the person being sued. The essential components of negligence are duty, breach, and resulting damage.

In the context of the medical profession, negligence requires a distinct approach. To infer rashness or negligence on the part of a professional, particularly a doctor, additional considerations must be taken into account. Occupational negligence differs from professional negligence. Mere lack of care, an error in judgment, or an accident do not prove negligence on the part of a medical professional. As long as a doctor adheres to a practice deemed acceptable by the medical profession at that time, they cannot be held liable for negligence merely because a better alternative treatment was available or because a more skilled doctor may have chosen a different approach. When assessing the failure to take precautions, it must be determined whether the precautions taken were sufficient based on ordinary experience; failure to employ extraordinary precautions cannot be the basis for alleged negligence. Similarly, the standard of care is evaluated based on the knowledge available at the time of the incident, not at the date of trial. Likewise, if the charge of negligence stems from the failure to use specific equipment, the charge would fail if that equipment was not generally available at the time of the incident when it was suggested it should have been used.

In above case the Honourable Court criticized the judgment in Gupta's case, particularly questioning the use of the term "gross" negligence. They argued that all negligent acts resulting in death should be treated equally. Section 304-A of the IPC was seen as a looming threat over doctors, affecting those working in both government hospitals and the private sector. This situation had long been recognized as problematic, leading to defensive medical practices where doctors were hesitant to administer proper treatments or surgical procedures for fear of adverse outcomes. Consequently, doctors were being sued despite not being at fault.[5]

The term "gross" is not pertinent to Section 304-A of the Indian Penal Code, nor is it associated with negligence. In the above case, the Punjab High Court observed that doctors should not be treated differently under Section 304-A. The landmark judgment by a three-judge bench of the Supreme Court in Jacob Mathew v. State of Punjab practically absolves medical professionals from liability under Section 304-A. This clarifies that while Sections 304 and 304-A of the IPC could theoretically apply to doctors, they can now practice with confidence, free from fear or apprehension of being unfairly targeted on trivial grounds.

The Honourable Court thoroughly examined the challenges faced by medical professionals, and this landmark judgment is expected to restore balance to the doctor patient relationship, ultimately benefiting patients in the long run.This landmark judgment will alleviate undue anxiety among doctors in carrying out their professional duties. Essentially, it underscores the importance of maintaining realistic expectations from professionals, with standards that are achievable. This entails recognizing the inevitability of ordinary human error and acknowledging the limitations inherent in the performance of complex tasks. Sustaining the competency of doctors necessitates continuous medical education to stay abreast of advancements in the field. Regulatory bodies and professional associations should actively discourage incompetence stemming from either lack of knowledge or quackery. These decisions are not only a source of relief for doctors, who have often been perceived as easy targets by law enforcement agencies and subjected to harassment by dissatisfied patients, but they also contribute to an overall enhancement in the quality of healthcare services.

In the case of Arun Kumar Manglik v. Chirayu Health and Medicare Private Limited and Anr. (2019),[6] this Court emphasized that the standard of care, as established in the Bolam case, must evolve in line with subsequent interpretations by both English and Indian Courts. The Court stated:In the practice of medicine, there may exist various approaches to treatment, leading to genuine differences of opinion among professionals. However, when choosing a course of treatment, medical professionals must ensure that it is not unreasonable. The threshold to establish unreasonableness is determined with careful consideration of the risks associated with medical treatment and the working conditions of medical professionals. This is essential to prevent situations where doctors practice "defensive medicine" to avoid negligence claims, which can ultimately harm the patient. Therefore, in cases where unreasonableness in professional conduct

is proven based on the specific circumstances of the case, a professional cannot evade liability for medical negligence simply by relying on a consensus of professional opinion.

In the case of C.P. Sreekumar (Dr.), MS (Ortho) v. S. Ramanujam (2009)[7], this Court emphasized that the Commission should not assume that the allegations in the complaint are incontrovertible truths, especially when they lack supporting evidence. The Court stated:

Upon reviewing the Commission's order, it is evident that the Commission proceeded under the assumption that the allegations made by the respondent in the complaint were unquestionably true, despite the absence of supporting evidence. As previously stated in the Jacob Mathew case [(2005) 6 SCC 1 : 2005 SCC (Cri) 1369][5], the burden of proving medical negligence rests primarily on the claimant, and this burden can be met by presenting compelling evidence. Mere allegations in a complaint, which are contested by the opposing party, cannot be considered as evidence to substantiate the claimant's case. It is the responsibility of the complainant to furnish both the factual allegations (facta probanda) and the supporting evidence (facta probantia).

In the case of Kusum Sharma and Others v. Batra Hospital and Medical Research Centre and Others (2010),[8] a complaint was lodged alleging medical negligence against a doctor who performed surgery. During the procedure, it was discovered that the tumor was malignant. Unfortunately, the patient passed away after receiving extensive treatment in various hospitals. The Court deliberated: Medical science has undoubtedly provided significant benefits to humanity, yet these benefits are accompanied by inherent risks. Every surgical procedure carries its own set of risks, and progress in medical techniques also entails potential risks. It is widely recognized that in the aftermath of unfortunate events, there is often a tendency to assign blame to a human factor, driven by a desire for accountability. However, it is crucial to acknowledge that professionals operate within an environment fraught with complexities and uncertainties. The Indian Penal Code (IPC), 1860 has been crafted to safeguard individuals who act in good faith from unwarranted punishment. Sections 88, 92, and 370 of the IPC offer comprehensive protection to professionals, including medical practitioners, ensuring they can carry out their duties without fear of unjust repercussions. Honorable Supreme Court made the following observations:The Indian Penal Code has been crafted to ensure that individuals acting in good faith are not subjected to punishment. Sections 88 and 92 of the Indian Penal Code offer adequate protection to professionals, especially medical practitioners. It is incumbent upon civil society to prevent the unnecessary harassment or humiliation of medical professionals, enabling them to fulfill their duties without fear or apprehension.

Medical practitioners must also be safeguarded from malicious complaints filed by individuals seeking unjust compensation, particularly against private hospitals or clinics. Such baseless proceedings should be dismissed to protect medical professionals.

As long as medical professionals perform their duties with reasonable skill and competence in the interest of their patients, they are entitled to protection. The welfare of patients should always be the top priority for medical professionals. Section 88 and 92 of IPC shield doctors from professional liability or allegations of medical negligence in situations where acts performed for the patient's benefit, with or without their consent, do not yield the desired outcome. These sections establish that any action undertaken in good faith cannot be deemed negligent. Doctors should familiarize themselves with these sections to defend against negligence claims.

In a recent judgment, Dr. Harish Kumar Khurana v. Joginder Singh & Others (2021)[9], this Court emphasized the obligation of hospitals and doctors to exercise due care in treating patients under all circumstances. However, in unfortunate cases, despite best efforts, death may occur. It is essential for sufficient material or medical evidence to be available before the adjudicating authority to determine whether death resulted from medical negligence. Not every patient death can be automatically attributed to medical negligence. The Court underscored that an accident typically refers to an unintended and unforeseen injurious occurrence, something that deviates from the usual course of events or could not reasonably be anticipated. The Court referred to the decision in Martin F. D'Souza v. Mohd. Ishfaq (2009) 3 SCC 1,[4] which emphasized that a patient's unfavourable response to treatment or a failed surgery does not automatically render the doctor liable for medical negligence under the doctrine of Res Ipsa Loquitor. Unless strong evidence suggests otherwise, a doctor or surgeon should not be presumed guilty of medical negligence merely because a treatment fails despite their best efforts.

It is recognized that following unfortunate

events, there is often a tendency to seek a human factor to blame, driven by a desire for accountability. However, professionals, including medical practitioners, deserve comprehensive protection. The Indian Penal Code ensures that individuals acting in good faith are not unfairly punished. Sections 88 and 92 of the IPC offer adequate protection to professionals, particularly medical practitioners, in their endeavors to serve their patients diligently.

Upon examining the prominent cases of medical negligence, both within our country and abroad, particularly in the United Kingdom, certain fundamental principles emerge in handling such cases. When determining whether a medical professional is culpable for medical negligence, the following well-established principles should be considered: It is imperative for our civil society to recognize its duty and responsibility in ensuring that medical professionals are not unduly harassed or humiliated. This ensures that they can carry out their professional duties without fear or apprehension.

Provisions in Bharatiya Nyaya Sanhita, 2023,[10] that absolves a physician of liability for offences caused by medical negligence: basis: good faith.

Sec2(7) defines "dishonestly" means doing of an act with the intention of causing wrongful gain to one person or wrongful loss to another person;Sec2(7) of BSA 2023, IPC 24.

An act of providing treatment to a patient by a qualified and licensed physician can not be a dishonest act.

Sec2(11) defines "good faith". – Nothing is said to be done or believed in "good faith" which is done or believed without due care and attention; IPC 52.

The Doctrine of 'Good Faith' serves as the foundational principle underlying exemptions from liability for an offense. It stands as a cornerstone in the actions of medical professionals. It's crucial to note that while good intentions are important, they don't necessarily equate to good faith. This section specifies that an act can be deemed to have been performed in good faith only if it was executed with due 'care and attention'. Essentially, this constitutes a negative definition. Physicians can readily furnish circumstances demonstrating good faith from the patient's medical records. Subsequently, it falls upon the complainant to substantiate any allegations of bad faith or malicious intent.

Sec2(14) defines "injury" means any harm whatever illegally caused to any person, in body, mind, reputation or property; IPC 44.

Sec2(15) defines "illegal"- "legally bound to do". – The word "illegal" is applicable to everything which is an offence, or which is prohibited by law, or which furnishes ground for acivilaction; and a person is said to be "legally bound to do" whatever it is illegal in him too mit; IPC 43.

For an injury to be considered an actionable harm (Negligence), it must have been caused unlawfully. Any bodily injuries resulting from the actions of a qualified and licensed surgeon or physician, whether intentional or unintentional, as part of treatment, are lawful. These medical professionals are obligated by law to provide treatment when approached by a patient.

Throughout this Sanhita (BNS) every definition of an offence, every penal provision, and every Illustration of every such definition or penal provision, shall be understood subject to the exceptions contained in the Chapter entitled "General Exceptions", though those exceptions are not repeated in such definition, penal provision, or Illustration.

Illustrations: The sections, in this Sanhita which contain definitions of offences, do not express that a child under seven years of age cannot commit such offences; but the definitions are to be understood subject to the general exception which provides that nothing shall be an offence which is done by a child under seven years of age.

Thus all 'general exceptions' apply to all the offences in this Act. Every offence is to be considered subject to the exceptions. Exceptions are the basic statutory defence. Exceptions decriminalise.

General Exceptions described in BNS, 2023

- **Section 14 of BNS, 2023:** Nothing is an offence which is done by a person who is, or who by reason of amistake of fact and not by reason of a mistake of law in good faith believes himself to be,bound bylawtodoit.[10]

Treatment administered by a licensed, practicing physician falls within this category, with good faith serving as the basis for any exceptions.

- **Section 15 of BNS, 2023:** Nothing is an offence which is done by a Judge when acting judicially in the exercise of any power which is, or which in good faith he believes to be, given to him by law.[10]

Judicial officers are granted immunity from liability for their judicial decisions and actions based on the principle of good faith. Similarly, physicians are also entitled to similar immunity from liability

for their medical decisions and actions carried out in good faith.

- **Section 17 of BNS, 2023:** Nothing is an offence which is done by any person who is justified by law, or who by reason of a mistake of fact and not by reason of a mistake of law in good faith, believes to be himself, to be justified law, in doing it.[10]

The act of a physician providing treatment for a disease is legally justified.

- **Section 18 of BNS, 2023**: Nothing is an offence which is done by accident or misfortune, and without any criminal intention or knowledge in the doing of a lawful act in a lawful manner by lawful means and with proper care and caution.[10]

A duly qualified and licensed physician, adhering to medical standards, provides treatment in a lawful manner and by lawful means. This treatment is conducted with the patient's consent and without any intention to harm. Any unintended injury or harm resulting from the treatment is deemed accidental or unfortunate and does not constitute an offense.

- **Section 19 of BNS, 2023:** Nothing is an offence merely by reason of its being done with the knowledge that it is likely to cause harm, if it be done without any criminal intention to cause harm, and in good faith for the purpose of preventing or avoiding other harm to person or property.

Explanation.—It is a question off act in such a case whether the harm to be prevented or avoided was of such an a ture and so imminent as to justify or excuse the risk of doing the act with the knowledge that it was likely o cause harm.[10]

A disease causes continuous harm to the patient, leading them to seek medical intervention from a doctor to alleviate its effects. Surgical procedures, especially ablative surgeries, are designed to cause harm as a necessary aspect of the treatment, with the patient's consent. The physician undertakes these procedures with the objective of preventing or reducing further harm to the patient, rather than harboring any criminal intent to harm them.

- **Section 25 of BNS, 2023:** Nothing which is not intended to cause death, or grievous hurt, and which is not known by the doer to be likely to cause death or grievous hurt, is an offence by reason of any harm which it may cause, or be intended by the doer to cause, to any person, above eighteen years of age, who has given consent, whether express or implied, to suffer that harm; or by reason of any harm which it may be known by the doer to be likely to cause to any such person who has consented to take the risk of that harm.[10]

Even grievous injury, considered as harm, may be accidentally inflicted, provided that a competent individual has consented to endure such harm.

- **Section 26of BNS, 2023:** Nothing, which is not intended to cause death, is an offence by reason of any harm which it may cause, or be intended by the doer to cause, or be known by the doer to be likely to cause, to any person for whose benefit it is done in good faith , and who has given a consent, whe there xpressor implied, to suffer that harm, or to take the risk of that harm. IPC 88.[10]

Illustration

A, a surgeon, knowing that a particular operation is likely to cause the death of Z, whosuffers under the painful complaint, but not intending to cause Z's death, and intending, ingood faith, Z's benefit, performs that operation on Z, with Z's consent. A has committed no offence.

Sections 25 and 26 of the Bharatiya Nyaya Sanhita (BNS) delineate the statutory parameters within which physicians are authorized to intervene in the human body. These provisions hinge on three key elements: Benefit, Consent, and Good Faith. Good faith, as defined in Section 2(11) of the BNS, is substantiated by the doctor's legal competence through qualifications and licensing, meticulous care and attention as evidenced by the patient's treatment records for their benefit, and documented proof of consent, thus legally authorizing the provision of treatment. These criteria offer concrete evidence to fulfill the legal standards and constructs established by the judiciary for assessing negligence, particularly concerning criminal liability. Good faith forms the foundation of these provisions.

- **Section 28 of BNS, 2023:** A consent is not such a consent asisintended by any section of this Sanhita−

If the consent is given by a person under fear of injury, or under a misconception of fact, and if the person doing the act knows, or has reason to believe, that the consent was given in consequence of such fear or misconception.[10]

A consent given freely, without coercion, intimidation, or deceit, is considered valid consent.

Mnemonic for Consent: 5F's for easy recall

A consent is F-Fine, if given without F-Force, F-Fear or F-Fraud – is (F-Fair) valid consent.

- F-Fine (Ok)
- F-Fair (justified)
- F-Fear (threat to life of self or near & dear ones)
- F-Force (Blackmail)
- F-Fraud (Cheating)

- **Section 30 of BNS, 2023:** Nothing is an offence by reason of any harm which it may cause to a person for who se benefit it is done in good faith, even without that person's consent, if the circumstances are such that it is impossible for that person to signify on sent, or if that person is incapable of giving consent, and has no guardian or other person in lawful charge of him from whom it is possible to obtain consent in time for the thing to be done with benefit: IPC 92.[10]

All the above exceptions are applicable to Sec 106(1) under which death by rash or negligent act is a punishable offence.

Section 100 of BNS, 2023: Who ever causes death by doing an act with the intention of causing death, or with the intention of causing such bodily injury as is likely to cause death, or with the knowledge that he is likely by such act to cause death, commits the offence of culpable homicide.[10]

A physician never administers treatment with the intent to cause the patient's death.

Section 106 (1) of BNS, 2023: Who ever causes the death of any person by doing any rash or negligeent act not amounting to culpable homicide, shall be punished with imprisonment of either description for a term which may extend to seven years, and shall also be liable to fine. IPC 304 A.[10]

As per the above stated exceptions a Duly qualified and licensed physician (competent) in good faith (honestly) providing treatment to a patient (care), which he believes would benefit of the patient (relieve him of his disease and suffering) with consent of the patient, is exempted from any liability for injury to the patient. The physician has committed No offence.The paramount doctrine of Good Faith is the basis of statutory protection (exemption) under clauses 14, 17, 18, 19, 25, 26 and 30 of Bharatiya Nyaya Sanhita 2023.

Sec 25 and 26 state as under:

Section 25 of BNS, 2023: Nothing which is not intended to cause death, or grievous hurt, and which is not known by the doer to be likely to cause death or grievous hurt, is an offence by reason of any harm which it may cause, or be intended by the doer to cause, to any person, above eighteen years of age, who has given consent, whether express or implied, to suffer that harm; or by reason of any harm which it may be known by the doer to be likely to cause to any such person who has consented to take the risk of that harm. IPC 87.[10]

Section 26 of BNS, 2023: Nothing, which is not intended to caused eath, is an offence by reason of any harm which it may cause, or be intended by the doer to cause, or be known by the doer to be likely to cause, to any person for whose benefit it is done in good faith, and who has given a consent, whether re xpressor implied, to suffer that harm, or to take the risk of that harm.[10]

Illustration

A surgeon, A, aware that a specific operation may result in the death of Z, who is suffering from a painful condition, but without the intention to cause Z's death, and with the sincere intention to benefit Z, conducts the operation with Z's consent. In this scenario, A has not committed any offense..[10]

IPC sections 87, 88, 90 and others have been invoked by Hon'ble Supreme Court to provide protection and exemption to physicians in medical negligence cases. Vide supra.

Good Faith is defined as:

Sec2(11) "good faith".—Nothing is said to be done or believed in "good faith" which is done or believed without due care and attention; IPC 52.[10]

Care and attention constitute the dual components of Good Faith. In the context of medical treatment, "care" entails addressing the medical requirements of the patient through the provision of treatment, while "attention" involves carefully assessing the patient's medical needs following examination, investigations, and diagnosis. A medical record serves as irrefutable evidence that care and attention have been administered to the patient. Definition of Good Faith in General Clauses Act is also relevant in this context: Clause (22) Gen Clauses Act: A thing shall be deemed to be done in "good faith" where it is in fact done honestly, whether it is done negligently or not.

It's important to highlight that "honesty" in actions is the cornerstone of "Good Faith." When a duly qualified, licensed, and competent doctor provides treatment to a patient with their consent, it is deemed to be carried out in "Good Faith," regardless of whether it was done negligently or not. For bodily harm or injury to be justifiably exempted from liability, Clause 26 of the Bharatiya Nyaya Sanhita (BNS) stipulates that, in addition to "Good Faith," the treatment must be for the "Benefit" of the patient and with their "Consent," whether expressed or implied. A properly executed informed consent, as per Clause 28 of the BNS, suffices for exemption from liability for any harm caused by the treatment, serving as evidence that the physician exercised due caution. It's also worth noting that an act causing bodily harm to be actionable must be "illegal," as per Clauses 2(15) and 2(14) of the BNS.

Sec 2(15) of BNS 2023 defines "illegal"- "legally bound to do". — The word "illegal" is applicable toeverything which is an offence or which is prohibited by law, or which furnishes ground for acivilaction; and a person is said to be "legally bound to do" whatever it is illegal in him too mit.[10]

An act of providing treatment by a duly licensed medical practitioner cannot be deemed "illegal." Such practitioners are legally obligated to provide treatment when approached by a patient.

Sec 114 of BNS 2023: Whoever causes bodily pain, disease or infirmity toany person is said to cause hurt.[10]

Sec 115(1) of BNS 2023: Whoever does any act with the intention of thereby causing hurt to any person, or with the knowledge that he is likely there by to cause hurt to any person, and does there by cause hurt to any person, is said "voluntarily to cause hurt".[10]

Sec 115(2) of BNS 2023: Whoever, except in the case provided for by sub-section (1) of section 120 voluntarily causes hurt, shall be punished with imprison men to feither description for a term which may extend toone year, or with fine which may extend to ten thousand rupees, or with both.[10]

Sec 117(1) of BNS 2023: Whoever voluntarily causes hurt, if the hurt which he intends to cause orknows himself to be likely to cause is grievous hurt, and if the hurt which he causes is grievous hurt,is said "voluntarily to cause grievous hurt".[10]

It's worth noting that procedures such as limb amputation or the removal of organs like the kidney, spleen, intestine, eye, or larynx through ablative surgery, while technically resulting in grievous harm, do not constitute an offense. This is because they are performed with the patient's consent and in good faith for their benefit. All intentional injuries inflicted by a physician must be considered separately. Invasive procedures carried out by a physician inherently entail some level of injury. Exceptions are in place to provide physicians with immunity for all their actions conducted in good faith.[11]

CONCLUSION

Exceptions are statutory protection against liability for an offence. They are available to a medical practitioner irrespective whether the case is filed for civil liability or criminal liability. Thus, Indian Medical Professionals, Healthcare providers, legal counsellors, advocates, Police officers and Hon'ble Judges need to update their knowledge, based on recent updates in Criminal Law, namely BNS, BNSS & BSA 2023, for prevention, investigation and management of legal hurdles related to medical malpractice lawsuits in future.

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Short Communication

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Forensic Trichology: An Overview

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Abstract

Forensic trichology, the scientific study of human hair, has emerged as a valuable tool in criminal investigations. Hair evidence can provide essential information related to the identity of suspects, linking them to crime scenes, and even revealing potential motives. This article delves into the advantages of forensic trichology, presents case scenarios highlighting its significance in real-life investigations, explores the methods used in the field, and discusses the current practices. Additionally, it examines the future scope of forensic trichology as advancements in technology and research continue to shape its potential. All information presented in this article is based on scientific literature and research in the field of forensic trichology.

INTRODUCTION

Forensic trichology is a branch of forensic science that focuses on the examination of human hair evidence in criminal investigations. Hair analysis has proven to be a valuable asset in various cases, such as homicides, sexual assaults, and kidnappings. Trained forensic trichologists can deduce critical information from hair samples, including racial origin, age, and potential exposure to toxic substances.[1] This article aims to shed light on the advantages, case scenarios, methods, current practices, and future scope of forensic trichology in modern forensic science.

Advantages of Forensic Trichology

Individual Identification

Human hair is unique to each individual, much like a fingerprint. Forensic trichology plays a crucial role in linking suspects to crime scenes by comparing hair samples from the scene with those of potential suspects. Hair evidence can provide crucial information about the perpetrator's presence, aiding law enforcement in narrowing down their search.[2]

Racial and Ethnic Identification

Forensic trichology can assist in determining the racial and ethnic origin of an individual based on hair characteristics, such as hair shape, texture, and pigmentation. This information can be valuable in identifying suspects or victims in cases where visual identification is challenging.[3]

Time of Last Hair Treatment

Hair samples can reveal patterns of hair treatments, such as dyeing or bleaching. Analyzing the hair's growth pattern and chemical composition can provide insight into when the hair was last treated, potentially establishing an alibi or timeline for suspects.

Linking Suspects to Crime Scenes

When suspects leave behind hair evidence at crime scenes, forensic trichology can help investigators link the suspects directly to the scene. Hair samples collected from victims, clothing, or crime scene surfaces can be compared with those of potential suspects to establish a direct connection.

CASE SCENARIOS

Kidnapping and Identity Confusion

In a recent kidnapping case, forensic trichology played a pivotal role in reuniting a child with their rightful family. By analyzing the hair samples of the abducted child, investigators identified discrepancies in hair characteristics between the kidnapped child and the supposed parents. The analysis revealed that the child's hair did not match the parents' biological hair features, leading to the discovery of an identity swap scheme.[4]

HOMICIDE INVESTIGATION

In a murder investigation, hair samples were found at the crime scene, suspected to belong to the perpetrator. Through forensic trichology analysis, investigators determined the hair's racial origin, narrowing down the list of potential suspects and aiding in the eventual arrest and conviction of the perpetrator.[4]

METHODS USED IN FORENSIC TRICHOLOGY

Microscopic Examination

Microscopic analysis of hair samples is a fundamental method used in forensic trichology. By examining hair under a microscope, trichologists can observe morphological characteristics such as cuticle scale patterns, medullary structure, and pigment distribution. These features are essential for individual identification and racial profiling.

DNA Analysis

Advancements in technology have enabled forensic trichologists to conduct DNA analysis on hair samples. DNA extraction from hair roots allows for more precise individual identification and can be crucial in cases where hair shaft morphology alone is insufficient for conclusive results.

Chemical Analysis

Chemical analysis of hair samples can reveal information about an individual's exposure to toxic substances, drugs[5,6], or environmental pollutants. This aspect of forensic trichology can be valuable in cases involving poisoning or drug related offenses.

Current Practices in Forensic Trichology

Forensic trichology is currently an established discipline within forensic science. Trained trichologists work closely with forensic investigators and law enforcement agencies to analyze hair evidence in criminal cases.[7,8] They collaborate with other forensic experts, such as DNA analysts and toxicologists, to provide comprehensive and reliable findings.

FUTURE SCOPE OF FORENSIC TRICHOLOGY

Advancements in Hair Analysis Techniques

As technology continues to advance, hair analysis techniques in forensic trichology are expected to become more refined and accurate. Faster and more precise microscopic imaging and DNA sequencing methods will further enhance individual identification capabilities.

Artificial Intelligence Integration

Artificial intelligence (AI) and machine learning have the potential to revolutionize forensic trichology. AI algorithms can analyze vast amounts of hair data quickly, enabling rapid comparisons and identifications. AI integration may also lead to the development of automated hair analysis systems.

Expansion of Hair Database

The establishment of comprehensive hair databases, containing information on hair characteristics from diverse populations, will enhance the efficacy of forensic trichology. Such databases will aid in more accurate racial and ethnic identifications. Hair examination is also useful in cases of torture[9], burns[10], etc. to generate evidence based practice.[11,12]

CONCLUSION

Forensic trichology has proven to be an invaluable tool in criminal investigations, providing crucial information related to individual identification, racial profiling, and exposure to harmful substances. Through microscopic analysis, DNA sequencing, and chemical testing, trained trichologists play a vital role in linking suspects to crime scenes and aiding in convictions.

As technology and research continue to progress, the future of forensic trichology appears promising. Advancements in hair analysis techniques, AI integration, and the expansion of hair databases will further enhance the accuracy and efficiency of this fascinating field within forensic science.

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11. Pragnesh B Parmar. Evidence Based Forensic Medicine: Roadmap to enhance teaching horizon. Forensic Science and Addiction Research, 2019; 4(5): 1-2.
12. Parmar P. Study of students' perceptions on evidence based curriculum of Forensic Medicine. J Indian Acad Forensic Med., 2017; 39(1): 11-15.

Subject Index

Author Index

Guidelines for Authors

Manuscripts must be prepared in accordance with "Uniform requirements for Manuscripts submitted to Biomedical Journal" developed by international committee of medical Journal Editors

Types of Manuscripts and Limits

Original articles: Up to 3000 words excluding references and abstract and up to 10 references.

Review articles: Up to 2500 words excluding references and abstract and up to 10 references.

Case reports: Up to 1000 words excluding references and abstract and up to 10 references.

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The title page should carry

1) Type of manuscript (e.g. Original article, Review article, Case Report)

2) The title of the article, should be concise and informative;

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The second page should carry the full title of the manuscript and an abstract (of no more than 150 words for case reports, brief reports and 250 words for original articles). The abstract should be structured and state the Context (Background), Aims, Settings and Design, Methods and Materials, Statistical analysis used, Results and Conclusions. Below the abstract should provide 3 to 10 keywords.

Introduction

State the background of the study and purpose of the study and summarize the rationale for the study or observation.

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The methods section should include only information that was available at the time the plan or protocol for the study was written such as study approach, design, type of sample, sample size, sampling technique, setting of the study, description of data collection tools and methods; all information obtained during the conduct of the study belongs in the Results section.

Reports of randomized clinical trials should be based on the CONSORT Statement (http:// www. consort-statement. org). When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma. net/e/policy/l 7-c_e.html).

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Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical details can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

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Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, What this study adds to the available evidence, effects on patient care and health policy, possible mechanisms)? Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research). Do not repeat in detail data or other material given in the Introduction or the Results section.

References

List references in alphabetical order. Each listed reference should be cited in text (not in alphabetic order), and each text citation should be listed in the References section. Identify references in text, tables, and legends by Arabic numerals in square bracket (e.g. [10]). Please refer to ICMJE Guidelines (http://www.nlm.nih.gov/bsd/uniform_ requirements.html) for more examples.

Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006; 35: 540-7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, *et al.* Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003; 61: 347-55.

Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone iodine antisepsis. State of the art. Dermatology 1997; 195 Suppl 2: 3-9.

Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000; 71: 1792-801.

Unpublished article

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

Personal author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O,

Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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- Previous publication/ presentations mentioned, Source of funding mentioned
- Conflicts of interest disclosed

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- Numerals at the beginning of the sentence spelt out

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