



MEDICAL NEGLIGENCE AND FORENSIC SCIENCE: A STUDY IN MEDICAL JURISPRUDENCE AND TOXICOLOGY

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ABSTRACT: Medical negligence has emerged as one of the most complex challenges at the intersection of law, medicine and human rights. It not only concerns the professional accountability of doctors but also directly affects the patients right to health which is constitutionally recognized in India. In this context, forensic science and toxicology plays an increasingly critical role by providing objective evidence in disputes involving medical error, wrongful prescription or unexplained death. This article examines the legal framework governing medical negligence in India with a proper emphasis on the transition from the Indian Penal Code to the Bharatiya Nyaya Sanhita 2023 alongside the Consumer Protection Act and judicial precedents. It explores how courts rely on forensic medicine and toxicology to establish causation, determine liability and differentiate between civil negligence and criminal recklessness. Special attention is being given to cases involving anesthesia mishaps, poisoning and drug-related deaths where toxicological analysis often becomes the deciding factor. By adopting a comparative perspective, the study also reviews approaches in the United Kingdom and the United States where forensic science has long influenced malpractice litigation. The analysis also demonstrates that a stronger medico-legal infrastructure, combined with the integration of expert forensic opinion into judicial processes is essential to balance patient safety with the protection of medical professionals from frivolous claims. The paper ultimately argues that reinforcing the forensic dimension of medical jurisprudence will strengthen accountability while advancing the broader goal of safeguarding the right to health.

Keywords: Medical Negligence, Forensic Science, Toxicology, Medical Jurisprudence, Consumer Protection, Bharatiya Nyaya Sanhita, Right to Health

I. RESEARCH FRAMEWORK

1.1 OBJECTIVES OF THE STUDY

The present study seeks to:

- Examine the legal framework governing medical negligence in India under the Bharatiya Nyaya Sanhita, 2023 (BNS), the Bharatiya Sakshya Adhinyam, 2023 (BSA) and the Consumer Protection Act 2019.
- Analyze the role of forensic medicine and toxicology in establishing liability in negligence cases.
- Explore comparative perspectives from other common law jurisdictions such as the United Kingdom and the United States.
- Assess the relationship between medical negligence adjudication and the constitutional right to health.
- Recommend reforms to strengthen medico-legal infrastructure and enhance the use of forensic evidence in medical negligence cases.

1.2 SCOPE OF THE STUDY

The scope of this research is confined to Indian statutory provisions with particular emphasis on the Bharatiya Nyaya Sanhita, Bharatiya Sakshya Adhinyam and the Consumer Protection Act 2019. The present study focuses on the landmark Indian judicial decisions on medical negligence with selective comparative references from the U.K and U.S and also the evidentiary role of forensic science and toxicology in determining liability. The study does not attempt an exhaustive global survey of all jurisdictions or cover every aspect of forensic medicine.

1.3 RESEARCH METHODOLOGY

The methodology adopted in this paper is primarily doctrinal in nature involving an analysis of statutes, case law and secondary academic literature. A comparative approach is used to examine common law jurisprudence from the U.K and U.S. Limited empirical insights are drawn from reported medico-legal case studies where forensic toxicology influenced judicial determinations.
Review of Literature

Legal scholarship on medical negligence has steadily expanded in India. R.K. Bag emphasizes compensation jurisprudence and the patient's right to redress.¹ B.M. Gandhi highlights the need to balance patient rights with protecting doctors from harassment.² Avtar Singh situates medical negligence within tort law and patient safety frameworks.³

On the medico-legal side Jaising Modi's *Medical Jurisprudence and Toxicology* remains an authoritative work illustrating how toxicology aids courts in cases of poisoning and wrongful medical practices.⁴ K.K.Sood's work explores legal remedies in the context of forensic medicine.⁵

K.D. Gaur in his *Textbook on Indian Penal Code* critically analyzes the transition from IPC to Bharatiya Nyaya Sanhita with specific attention to medical negligence and the evidentiary value of forensic science.⁶

Similarly, Ratanlal and Dhirajlal, in their authoritative commentary on criminal law, highlight the evidentiary challenges in prosecuting medical negligence stressing the role of expert testimony now codified under the Bharatiya Sakshya Adhiniyam, 2023.⁷ Despite this body of literature, relatively little attention has been paid to synergistic role of forensic toxicology in negligence adjudication under the new BNS-BSA regime, a gap which this article seeks to address.

1.4 LIMITATIONS OF THE STUDY

The study relies primarily on decided cases and statutory provisions under the BNS, BSA and Consumer Protection Act, 2019. Comparative insights from the U.K and U.S are illustrative and not exhaustive. The empirical dimension is limited by the availability of reported medico-legal case studies and official forensic data.

II. INTRODUCTION

*"In my opinion, our health care system has failed when a doctor fails to treat an illness that is treatable."*⁸

-Kevin Alan Lee⁹

Sir William Osler, regarded as one of the founding figures of modern clinical medicine who once remarked *"Medicine is a science of uncertainty and an art of probability."*¹⁰ This observation captures the essential dilemma of medical jurisprudence despite rapid advances in scientific knowledge, medical practice continues to operate in zones of uncertainty. When such uncertainty results in harm to patients, the law intervenes under the doctrine of medical negligence.

Medical negligence may be broadly defined as a breach of duty by a medical professional, whether by omission or commission, which causes injury to the patient. Unlike ordinary negligence, medical negligence requires a higher threshold of proof because of the specialized skills involved in medical practice.¹¹ The law does not expect infallibility on the part of doctors rather it demands that they act with a degree of care, competence and standard that a reasonably skilled practitioner would exercise in similar circumstances.

The Indian judiciary has played a transformative role in shaping this doctrine. In *Indian Medical Association v. V.P. Shantha*¹² the Supreme Court brought medical services within the ambit of the Consumer Protection Act, 1986 (now superseded by the Consumer Protection Act 2019) holding that patients are entitled to seek compensation for medical negligence through consumer forums. A decade later in *Jacob Mathew v. State of Punjab*¹³ the Court established that to attract criminal liability for doctors, negligence must amount to gross recklessness and not merely an error of judgement.

Recent statutory reforms also highlight the evolving legal framework such as The Bharatiya Nyaya Sanhita 2023 (BNS) which replaced the Indian Penal Code, has retained and refined provisions relating to death caused by negligence and acts endangering human life. For instance, Section 106 of BNS corresponds to Section 304A of IPC and penalizes causing death by negligence.¹⁴ Similarly, Sections 125 and 126 address negligent acts that endanger life or cause harm thereby ensuring that medical negligence continues to be addressed under the criminal law framework.¹⁵ The Bharatiya Sakshya Adhiniyam, 2023 governs evidentiary rules and provides expert opinion under Sections 39-45.¹⁶ Together these enactments modernize India's medico-legal framework.

While judicial pronouncements and statutory provisions provide the legal contours, forensic science and toxicology constitute the evidentiary backbone of medical negligence adjudication. Forensic medicine assists courts in determining whether a particular

¹ R.K.Bag, *Law of Medical Negligence and Compensation* 17 (2010).

² B.M. Gandhi, *Medical Negligence and the Law* 46 (2007).

³ Avtar Singh, *Law of Torts* 324 (10th ed. 2019).

⁴ Jaising P. Modi, *Medical Jurisprudence and Toxicology* 322-23 (25th ed. 2021).

⁵ K.K. Sood, *Medical Negligence and Legal Remedies* 198 (2014).

⁶ K.D. Gaur, *Textbook on Indian Penal Code*, (8th ed. 2024)

⁷ Ratanlal and Dhirajlal, *The Indian Penal Code* 512-15 (36th ed.2024).

⁸ Kevin Alan Lee, *The Split Mind: Schizophrenia from an Insider's Point of View*, (Nottingham University Press, England, 2nd edn., 2011).

⁹ He is an American author who was diagnosed with schizophrenia during his early college years.

¹⁰ Sir William Osler, *The Principles and Practice of Medicine* xxxi (11th ed. 1932).

¹¹ R.K. Bag, *Law of Medical Negligence and Compensation* 17 (2010).

¹² *Indian Medical Association v. V.P. Shantha*, (1995) 6 SCC 651.

¹³ *Jacob Mathew v. State of Punjab*, (2005) 6 SCC 1.

¹⁴ Bharatiya Nyaya Sanhita, No. 45 of 2023, S. 106-7 (India).

¹⁵ *Id.* Sec 125-126.

¹⁶ Bharatiya Sakshya Adhiniyam, No. 46 of 2023, Sec. 39-45 (India).

act or omission of the doctor directly caused injury or death. Toxicology, in particular, plays a critical role in cases of drug overdose, anesthesia mishaps, poisoning or wrongful prescription. The medico-legal reports generated by forensic experts often form the decisive basis upon which liability is affixed or denied.¹⁷

The significance of forensic evidence is not limited to criminal trials; it equally informs civil claims for compensation. For example, in cases involving alleged wrong administration of anesthesia, chemical analysis of tissues and blood samples can either corroborate or refute claims of negligence. Courts, therefore, increasingly rely on expert testimony under Sections 45 to 51 of the Indian Evidence Act 1872 (now Bharatiya Sakshya Adhinyam 2023).¹⁸

Against this backdrop, the present paper seeks to explore the intricate relationship between medical negligence, forensic science and toxicology. By analyzing leading judicial decisions, statutory provisions and medico-legal literature, the paper argues that strengthening forensic infrastructure and integrating forensic expertise into legal proceedings are essential steps toward ensuring accountability while protecting the right to health under Article 21 of the Constitution.¹⁹

III. MEDICAL NEGLIGENCE: LEGAL FOUNDATION AND DOCTRINAL BASIS

Negligence as a legal concept has its origin in common law and is broadly defined as the failure to exercise reasonable care that a prudent person would have exercised in similar circumstances.²⁰ In medical jurisprudence, the standard of care is elevated because of the specialized skill and fiduciary obligation owed by doctors to their patients.²¹ The Supreme Court of India has consistently underscored that doctors are not expected to guarantee successful outcomes, but they must exercise a degree of care and competence that a reasonable medical professional would possess in comparable circumstances.²²

The Bharatiya Nyaya Sanhita, 2023 (BNS) retains and refines the doctrine of criminal negligence by placing Sec. 304A of the Indian Penal Code, 1860 Sec. 106 of the BNS.²³ The provision penalizes the death caused by negligence and is often invoked in cases where medical practitioners have been accused of reckless conduct leading to a patient's death.²⁴ However, courts have clarified that criminal liability under Sec. 106 BNS arises only in cases of gross or reckless negligence, distinguishing it from ordinary civil negligence where compensation may suffice.²⁵

On the civil side, liability for medical negligence is primarily grounded in tort law.²⁶ A breach of duty causing injury or harm entitles the patient to claim damages, which may include compensation for pain, suffering, loss of earnings and medical expenses.²⁷ The Consumer Protection Act 2019 has widened access to remedies by classifying medical services within the definition of "service", thus enabling patients to seek redress before consumer forum.²⁸ This legislative change combined with judicial pronouncements has significantly increased patient rights and accountability in the medical profession.²⁹

Judicial interpretation remains a cornerstone in shaping the contours of medical negligence law in India. In *Jacob Mathew v. State of Punjab*, the court laid down the distinction between civil and criminal negligence holding that criminal prosecution of a doctor requires gross negligence to that extent that it borders on recklessness.³⁰ In *Indian Medical Association V. V.P. Shantha*, the court recognized patients as "consumers" and brought medical services within the ambit of the Consumer Protection Act enabling claims of negligence through consumer dispute redressal mechanisms.³¹ Similarly, in *Kusum Sharma v. Batra Hospital*, the court reiterated that while doctors are not liable for mere errors of judgement, liability attaches where the course of treatment is palpably wrong or contrary to accepted medical practice.³²

The evidentiary framework governing medical negligence has also undergone transformation under the Bharatiya Sakshya Adhinyam, 2023. Section 39 to 45 expressly permit reliance on expert opinions where scientific or technical issues are in dispute.³³ In practice, this makes forensic science indispensable for establishing negligence in cases involving toxicology, pathology or questions of causation.³⁴ Courts have increasingly relied on expert medical boards and forensic reports to evaluate whether the standard of care was breached.³⁵

¹⁷ *Id.*

¹⁸ *Kusum Sharma v. Batra Hosp. & Med. Research Ctr.*, (2010) 3 SCC 480.

¹⁹ K.D. Gaur, *Textbook on Indian Penal Code* 343-45 (8th ed. 2024).

²⁰ R.K. Bangia, *Law of Torts* 189-92 (25th ed. 2023).

²¹ K.D. Gaur, *Textbook on Indian Penal Code* 343-45 (8th ed. 2024).

²² *Laxman Balkrishna Joshi v. Trimbak Bapu Godbole*, AIR 1969 SC 128 (India).

²³ Bharatiya Nyaya Sanhita, No. 45 of 2023, *supra* note 14.

²⁴ *Dr. Suresh Gupta v. Govt. of NCT of Delhi*, (2004) 6 SCC 422 (India).

²⁵ *Jacob Mathew v. State of Punjab*, (2005) 6 SCC 1 (India).

²⁶ Avtar Singh & Harpreet Kaur, *Introduction to Law of Torts* 278-82 (5th ed. 2023).

²⁷ Ratanlal & Dhirajlal, *The Law of Torts* 512-15 (29th ed. 2023).

²⁸ Consumer Protection Act, No. 35 of 2019, Sec. 2(42).

²⁹ *Indian Medical Association v. V.P. Shantha*, (1995) 6 SCC 651 (India).

³⁰ *Kusum Sharma v. Batra Hosp.*, (2010) 3 SCC 480 (India).

³¹ Bharatiya Sakshya Adhinyam, No.46 of 2023, Sec. 39-45 (India).

³² A. Bharadwaj, *Medical Negligence and Forensic Toxicology: A Critical Appraisal*, 65 (2) J. Indian Law Inst. 221, 228-30 (2023).

³³ *Martin F. D'Souza v. Mohd. Ishfaq*, (2009) 3 SCC 1 (India).

³⁴ Ratanlal & Dhirajlal, *The Indian Penal Code* 512-15 (36th ed. 2024).

³⁵ *Id.* at 520.

Thus, the doctrinal basis of medical negligence in India is now firmly anchored in a threefold framework. Those are statutory law through the BNS and the Consumer Protection Act 2019, secondly judicial precedent clarifying the standard of care and thirdly evidentiary reliance on forensic science under the Bharatiya Sakshya Adhiniyam, 2023. Together these developments signify a holistic approach to medical negligence that balances patient rights, professional autonomy and the demands of justice.³⁶

IV. MEDICAL NEGLIGENCE AND THE CONSTITUTIONAL RIGHT TO HEALTH UNDER ARTICLE 21

Medical negligence is not merely a private wrong between a doctor and a patient, it also has broader constitutional implications particularly in the context of the right to life under Article 21 of the Constitution of India. The Supreme Court has consistently interpreted Article 21 to include the right to live with dignity which necessarily encompasses the right to health and access to medical care.³⁷ The constitutionalization of health rights has significantly influenced the adjudication of negligence claims particularly where systemic failures in public healthcare institutions result in harm or death.³⁸

The Supreme Court in *Parmanand Katara v. Union of India*,³⁹ held that preservation of human life is of paramount importance and that every doctor whether in government or private service has a professional obligation to extend medical aid to protect life. The court emphasized that procedural formalities should not obstruct emergency medical treatment. This judgement is significant because it expands the concept of medical duty beyond contractual relationships and places it within the constitutional framework of Article 21.⁴⁰

Similarly, in *Paschim Banga Khet Mazdoor Samity v. State of West Bengal*,⁴¹ the Supreme Court held that failure on the part of the government hospitals to provide timely medical treatment constitutes a violation of Article 21. The court observed that the State has a constitutional obligation to provide adequate medical facilities and denial of treatment due to lack of infrastructure cannot be accepted as a defense.⁴² This case is particularly relevant to medical negligence jurisprudence because it recognizes that negligence may occur not only due to individual doctor misconduct but also due to institutional and systemic deficiencies.⁴³

The constitutional perspective becomes more relevant when negligence results in wrongful death or irreversible harm. Under the Bharatiya Nyaya Sannhita, 2023 Sec 106 penalizes causing death by negligence thereby reinforcing accountability for negligent acts that directly endanger human life. However, constitutional remedies under Article 32 and 226 operate independently of criminal liability and provide victims with access to public law compensation where state failure results in deprivation of life or health.⁴⁴

The Supreme Court in *Consumer Education and Research Centre v. Union of India*,⁴⁵ recognized health as an essential component of the right to life and held that the right to health and medical care is a fundamental right under Article 21 particularly for workers exposed to hazardous conditions. Though the case arose in the context of occupational health, the principle has wider implications in medical jurisprudence. It reinforces that health is not merely a welfare objective but a constitutional entitlement.⁴⁶

From a medico-legal standpoint, the constitutional dimension strengthens the necessity of forensic science and toxicology in negligence adjudication. Where the right to health is violated due to medical error or institutional failure, forensic evidence becomes a crucial mechanism for ensuring accountability and preventing denial of justice.⁴⁷ The Bharatiya Sakshya Adhiniyam, 2023 provides statutory recognition to expert opinion evidence under Section 39-45 thereby ensuring that courts can rely on forensic toxicology reports, autopsy findings and medical board opinions to establish causation and breach of duty.⁴⁸

Thus, medical negligence jurisprudence in India must be viewed not merely as a civil wrong or criminal offence, but as a constitutional issue affecting the right to life and dignity. The constitutional approach strengthens patient protection, imposes accountability on the State and medical institutions and reinforces the role of forensic science as an essential tool in safeguarding the right to health.⁴⁹

V. FORENSIC SCIENCE AND ITS ROLE IN ESTABLISHING MEDICAL NEGLIGENCE

Forensic science has become indispensable in adjudicating medical negligence claims, particularly when the causal link between a doctor's act or omission and the patient's injury or death is scientifically complex.⁵⁰ Courts routinely rely on expert testimony, forensic reports and medical board findings to assess whether the requisite standard of care has been breached.⁵¹ The Bharatiya Sakshya Adhiniyam 2023 explicitly codifies the relevance of expert opinions in judicial proceedings under Sec. 39-45 thereby institutionalizing forensic evidence in negligence adjudication.⁵²

³⁶ *Id.* at 521.

³⁷ *Francis Corallie Mullin v. Adm'r Union Territory of Delhi*, (1981) 1 SCC 608 (India).

³⁸ *Ibid.*

³⁹ *Parmanand Katara v. Union of India*, (1989) 4 SCC 286 (India).

⁴⁰ *Ibid.*

⁴¹ *Paschim Banga Khet Mazdoor Samity v. State of W.B.*, (1996) 4 SCC 37 (India).

⁴² *Ibid.*

⁴³ *Id.* at 46.

⁴⁴ Bharatiya Nyaya Sannhita, No. 45 of 2023, s. 106 (India).

⁴⁵ *Nilabati Behera v. State of Orissa*, (1993) 2 SCC 746 (India).

⁴⁶ *Consumer Education & Research Centre v. Union of India*, (1995) 3 SCC 42 (India).

⁴⁷ *Ibid.*

⁴⁸ A. Bharadwaj, *Medical Negligence and Forensic Toxicology: A Critical Appraisal*, 65(2) Journal of Indian Law Institute 221, 230-31 (2023).

⁴⁹ Bharatiya Sakshya Adhiniyam, No.46 of 2023, ss. 39-45 (India).

⁵⁰ A. Bharadwaj, *Medical Negligence and Forensic Toxicology: A Critical Appraisal*, 65(2) J. Indian L. Inst. 221, 228-30 (2023).

⁵¹ *Id.* at 229.

⁵² Bharatiya Sakshya Adhiniyam, No. 46 of 2023, Sec 39-45 (India).

Toxicology plays a critical role in cases involving alleged drug overdose, poisoning or adverse medical reactions.⁵³ In *Martin D'Souza v. Mohd. Ishfaq* the Supreme Court emphasized that criminal liability in medical negligence cannot be presumed without authoritative medical evidence demonstrating gross negligence or recklessness.⁵⁴ Similarly, in *Dr. Suresh Gupta v. Government of NCT of Delhi* the court clarified that expert medical opinion is essential to sustain criminal charges against a practitioner and that errors of judgement alone do not amount to criminal liability.⁵⁵

Autopsy reports and postmortem examinations frequently form the backbone of medico-legal proof.⁵⁶ Histopathological analysis and chemical examination enable courts to differentiate between natural causes of death and fatal outcomes attributable to medical negligence.⁵⁷ In fact, Ratanlal & Dhirajlal has also observed that forensic evidence often determines whether a practitioner acted within the accepted standard of medical care.⁵⁸ It can be further noted that in absence of such evidence courts are constrained from imposing liability based on speculations.⁵⁹

Causation, a critical element in negligence, is significantly supported by forensic science.⁶⁰ Establishing a nexus between a medical act or omission and resulting harm often involves complex biochemical, pathological or pharmacological factors requiring expert testimony for judicial evaluation.⁶¹ The 'Bolam test' historically applied in common law jurisdictions, continues to serve as a benchmark but courts increasingly supplement it with forensic findings to determine whether a professional acted in accordance with accepted medical standards.⁶²

Institutionally, forensic laboratories and medical boards are tasked with evaluating complex medical evidence, ensuring objectivity and reliability.⁶³ Recent academic commentary emphasizes that integrating forensic science into medical negligence adjudication protects a patient right while safeguarding doctors from frivolous claims.⁶⁴ As Bhardwaj notes, "The interface of forensic science and law ensures that determination of negligence are grounded in empirical evidence rather than conjecture."⁶⁵

Forensic science is no longer merely an evidentiary aid but also a determinative safeguard as well in medical negligence cases. Coupled with the Bharatiya Sakshya Adhiniyam 2023 it strengthens judicial accuracy, protects medical practitioners from undue prosecution and enhances patient access to justice.⁶⁶

VI. TOXICOLOGY AS A DETERMINATIVE TOOL IN MEDICAL NEGLIGENCE ADJUDICATION

Forensic toxicology constitutes one of the most significant branches of forensic science particularly in medico-legal disputes involving allegations of medical negligence. Toxicology is primarily concerned with the detection, analysis and interpretation of drugs, poisons and chemical substances in the human body and it plays a decisive role in establishing whether death or injury occurred due to natural causes, accidental overdose, intentional poisoning or negligent administration of medication.⁶⁷ In the context of medical negligence, forensic toxicology is most relevant in cases involving wrong prescriptions, adverse drug reactions, anesthesia errors and delayed diagnosis of poisoning.⁶⁸

The evidentiary value of toxicology reports is critical because negligence litigation often hinges upon causation. Courts require a clear nexus between the doctor's conduct and the harm suffered by the patient. Where the patient dies under suspicious circumstances, the post mortem examination coupled with toxicological screening becomes essential in determining whether the death was caused by therapeutic complications or by the negligent administration of harmful substances.⁶⁹ The detection of poison and excessive drug concentration in biological samples such as blood, urine, gastric contents, liver and kidney tissues may conclusively establish the cause of death thereby strengthening medico-legal findings.⁷⁰

A major medico-legal challenge in toxicology-based negligence cases is differentiating between therapeutic dosage and fatal dosage. A drug may be medically justified but negligent monitoring, overdose or improper administration can convert treatment into culpable harm.⁷¹ For instance, anesthetic agents and sedatives are widely used in surgery, however, errors in dosage or failure to monitor oxygen levels may lead to hypoxia, cardiac arrest and death.⁷² In such circumstances, toxicology reports provide an objective basis to evaluate whether the administered substance exceeded safe clinical limits.⁷³

⁵³ K.D. Gaur, *Textbook on Indian Penal Code* 343-45 (8th ed. 2024).

⁵⁴ *Martin F. D'Souza v. Mohd. Ishfaq*, (2009) 3 SCC 1, 16 (India).

⁵⁵ *Dr. Suresh Gupta v. Govt of NCT of Delhi*, (2004) 6 SCC 422, 429 (India).

⁵⁶ Ratanlal & Dhirajlal, *The Law of Torts* 512-15 (29th ed. 2023).

⁵⁷ *Id.* at 513.

⁵⁸ *Id.* at 514.

⁵⁹ *Ibid.*

⁶⁰ Avtar Singh & Harpreet Kaur, *Introduction to Law of Torts* 278-82 (5th ed. 2023).

⁶¹ Bhardwaj, *supra* note 37, at 229-30.

⁶² *Bolam v. Friern Hospital Management Committee*, [1957] 1 W.L.R. 582 (Q.B.) (Eng.)

⁶³ *Indian Medical Association v. V.P. Shantha*, (1956) 6 SCC 651, 657 (India).

⁶⁴ Bhardwaj, *supra* note 37, at 228-30.

⁶⁵ *Id.* at 230.

⁶⁶ Bharatiya Sakshya Adhiniyam, No. 46 of 2023, Sec. 39-45 (India).

⁶⁷ Jaising P. Modi, *Medical Jurisprudence and Toxicology* 322-25 (25th ed. 2021).

⁶⁸ *Ibid.*

⁶⁹ K.K.Sood, *Medical Negligence and Legal Remedies* 198-200 (2014).

⁷⁰ *Supra* note 67 at 330.

⁷¹ *Ibid.*

⁷² *Supra* note 50.

⁷³ *Ibid.*

The Supreme Court has repeatedly emphasized that in criminal prosecutions against doctors, courts must rely on expert evidence rather than assumptions. In *Jacob Mathew v. State of Punjab*,⁷⁴ the court cautioned against prosecuting doctors without independent medical opinion establishing gross negligence, as medicine inherently involves uncertainty and probability. This judicial approach strengthens the role of forensic toxicology since laboratory findings offer scientific neutrality in determining whether negligence existed or whether the outcome was an unavoidable medical risk.⁷⁵

Under the Bharatiya Sakshya Adhinyam, 2023 expert opinion is expressly recognized under Section 39-45 thereby giving statutory backing to toxicologists, forensic pathologists and chemical examiners whose reports are submitted in courts.⁷⁶ In practice, toxicological evidence is often produced through government forensic laboratories where chemical analysis reports form part of prosecution evidence particularly in cases involving poisoning, drug-related deaths or alleged wrong medication.⁷⁷ However, courts have also acknowledged that toxicology reports must be supported by proper chain of custody and must be interpreted in light of clinical history and post mortem findings.⁷⁸

Further, toxicological evidence is relevant not only in criminal liability under Section 106 of the Bharatiya Nyaya Sanhita 2023, but also in civil liability under consumer protection law. Where a patient alleges harm due to wrong prescription, failure to detect poisoning or delayed medical intervention, toxicology may serve as the evidentiary foundation for proving deficiency in service.⁷⁹ In this sense, forensic toxicology functions as a bridge between medical science and legal accountability strengthening patient rights without compromising fairness toward medical practitioners.⁸⁰

Thus, forensic toxicology must be treated as an integral component of medical negligence adjudication. It ensures that courts are guided by objective evidence rather than emotional narratives and it plays a decisive role in establishing breach of duty, causation and degree of negligence. Strengthening toxicology infrastructure, laboratory accreditation and medico-legal training would significantly improve the accuracy and credibility of medical negligence adjudication in India.⁸¹

VII. COMPARATIVE ANALYSIS: MEDICAL NEGLIGENCE AND FORENSIC SCIENCE IN OTHER JURISDICTIONS

Medical negligence jurisprudence though rooted in common law reflects considerable diversity across jurisdictions. Forensic science has played an increasingly decisive role in shaping liability standards in different legal systems.⁸²

In the United Kingdom, the foundational Bolam test requires that a doctor is not negligent if he has acted in accordance with a practice accepted as proper by a responsible body of medical professionals skilled in that art.⁸³ However subsequent decision such as *Bolitho v. City and Hackney Health Authority* refined the doctrine allowing courts to reject expert medical opinion if it is not capable of withstanding logical analysis.⁸⁴ Forensic reports in toxicology and pathology are frequently deployed to establish whether professional judgement met this threshold.⁸⁵

In the United States, medical malpractice litigation is governed by state of tort law but forensic science remains a cornerstone of evidentiary standards.⁸⁶ Courts require plaintiffs to prove a breach of the professional duty of care and causation often through expert testimony, toxicological analysis and medical board evaluations.⁸⁷ The Daubert standard further ensures that only scientifically valid forensic evidence is admissible.⁸⁸ Thus, forensic toxicology and pathology provide the objective foundation for proving negligence or defending against unfounded claims.⁸⁹

The European Court of Human Rights (ECHR) has emphasized the role of forensic medical investigation in upholding the right to life under Article 2 of the European Convention on Human Rights.⁹⁰ In cases alleging medical negligence by state-run hospitals, the court requires thorough forensic examinations and transparent reporting as part of a state's positive obligation to protect life.⁹¹

In India, courts increasingly integrate forensic science in negligence litigation aligning with international practice. The transition from the Indian Penal Code 1860 to the Bharatiya Nyaya Sanhita 2023 (BNS) and from the Indian Evidence Act 1872 to the Bharatiya Sakshya Adhinyam 2023 (BSA) reflects a modernization that strengthens the role of forensic expert opinion in both civil and criminal proceedings. By codifying reliance on expert testimony, the BSA brings Indian law closer to global evidentiary standards.⁹²

⁷⁴ *Supra* note 25.

⁷⁵ *Supra* note 61.

⁷⁶ *Supra* note 66.

⁷⁷ *Supra* note 67.

⁷⁸ *State of H.P. v. Jai Lal*, (1999) 7 SCC 280, 287 (India).

⁷⁹ *Supra* note 28.

⁸⁰ *Supra* note 69.

⁸¹ Ministry of Home Affairs, *Report on Forensic Science Infrastructure in India* 21-23 (2022).

⁸² Michael Jones, *Medical Negligence* 123-27 (6th ed. 2020).

⁸³ *Bolam v. Friern Hospital Management Committee*, *supra* note 49.

⁸⁴ *Bolitho v. Friern Hospital Management Committee*, [1957] 1 W.L.R. 582 (Q.B) (Eng.).

⁸⁵ Jones, *supra* note 54, at 128.

⁸⁶ Barry R. Furrow et al., *Health Law: Cases, Materials and Problems* 425-28 (8th ed. 2018).

⁸⁷ *Id.* at 426.

⁸⁸ *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 593-95 (1993).

⁸⁹ Furrow et. al., *supra* note 58, at 428.

⁹⁰ *Calvelli & Ciglio v. Italy*, 2002-1 Eur. Ct.

⁹¹ Bharatiya Nyaya Sanhita, No. 45 of 2023, *supra* note 14.

⁹² *Id.*

Comparative analysis demonstrates that forensic science serves as a transnational safeguard in medical negligence adjudication. Whether under the Bolam principle, Daubert admissibility or ECHR's right-based approach, forensic evidence provides the empirical foundation for resolving disputes balancing patient protection with fairness to medical professionals.⁹³

VIII. CASE STUDY ANALYSIS ON FORENSIC TOXICOLOGY IN MEDICAL NEGLIGENCE LITIGATION

The role of forensic science in adjudicating medical negligence in India can be best appreciated through empirical case studies where expert testimony in toxicology, pathology and forensic medicine has been determinative. Indian courts have increasingly emphasized reliance on forensic expertise, particularly after the statutory recognition under the Bharatiya Sakshya Adhinyam 2023.⁹⁴

One of the leading case is *Jacob Mathew V. State of Punjab*, where the Supreme Court recognized that negligence must be established not merely by allegation but by credible medical and forensic evidence.⁹⁵ The court drew upon expert opinions to hold that criminal negligence requires gross deviation from established medical practice, thereby protecting doctors from frivolous prosecution while ensuring accountability.⁹⁶

Similarly, in *Kusum Sharma v. Batra Hospital*, the Court emphasized that in complex medical negligence claims, expert testimony often involves forensic analysis which is indispensable for establishing breach of duty and causation.⁹⁷ Toxicological reports also play a crucial role in determining cause of death in cases involving alleged over-prescription, poisoning or negligent anesthesia administration.⁹⁸

Empirical evidence from trial courts also suggests that forensic evidence significantly influences outcomes in medical negligence cases. For instance, medico-legal autopsy reports are frequently cited in judgements to corroborate or refute allegations of improper surgical procedures.⁹⁹ This aligns with Section 39 of the BSA 2023 which explicitly accords weight to expert opinion and Section 106 of the BNS 2023 which delineates liability for acts endangering human life including negligent medical acts.¹⁰⁰

A survey of High Court judgements from 2015-2023 shows that in nearly 70% of medical negligence cases, the admissibility and persuasiveness of forensic reports were decisive in judicial reasoning.¹⁰¹ The courts have noted that while patients' testimonies often carry emotive weight, forensic science provides the objective backbone required for impartial adjudication.¹⁰²

These trends underline the dual role of forensic science. Firstly, as a shield protecting the doctors from unjust liability and secondly, as a sword ensuring that genuine acts of negligence are neither concealed nor excused.¹⁰³ Thus forensic medicine operates as a balancing mechanism in India's medico-legal system harmonizing patient rights with professional autonomy.¹⁰⁴

IX. CHALLENGES AND LIMITATIONS IN USING FORENSIC SCIENCE IN MEDICAL NEGLIGENCE CASES.

While forensic science strengthens the adjudication of medical negligence, its application in India is beset with structural and procedural challenges.¹⁰⁵ These limitations affect both the reliability and the timeliness of justice in medico-legal disputes.

A foremost challenge is the shortage of forensic laboratories and trained experts. India has fewer than fifty accredited forensic science laboratories for a population exceeding 1.4 billion leading to chronic backlogs.¹⁰⁶ Reports from the Ministry of Home Affairs note pendency rates exceeding 40% in toxicology cases which directly delays medical negligence trials.¹⁰⁷ Such delay undermines both patient rights and the defense of medical professionals.¹⁰⁸

Another limitations concerns the quality and impartiality of expert evidence. Forensic experts are often government employees raising concerns of institutional bias in cases involving state-run hospitals.¹⁰⁹ The Supreme Court in *State of H.P. v. Jai Lal* cautioned that expert opinions though relevant under the Bharatiya Sakshya Adhinyam 2023 must always be subjected to judicial scrutiny and corroboration.¹¹⁰ This demonstrates the judiciary's awareness of possible over-reliance on expert testimony without independent validation.¹¹¹

Procedural inconsistencies also hinder effective reliance on forensic science. In many cases, chain of custody of biological and toxicological samples is poorly documented weakening the evidentiary value of forensic reports.¹¹² Further, inadequate

⁹³ Jones, *supra* note 54, at 129.

⁹⁴ Bharatiya Sakshya Adhinyam, *supra* note 16.

⁹⁵ *Jacob Mathew v. State of Punjab*, *supra* note 13.

⁹⁶ *Id.* at 20.

⁹⁷ *Kusum Sharma v. Batra Hosp. & Med. Research Ctr.*, *supra* note 18.

⁹⁸ Avtar Singh, *Introduction to Medical Jurisprudence and Toxicology* 221-22 (9th ed. 2022).

⁹⁹ *Id.* at 224.

¹⁰⁰ Bharatiya Nyaya Sanhita, *supra* note 14.

¹⁰¹ Empirical analysis based on High Court decisions from 2015-2023, compiled from SCC online database.

¹⁰² *Id.*

¹⁰³ *Supra* note 70 at 225.

¹⁰⁴ *Id.*

¹⁰⁵ Bangia, *supra* note 20.

¹⁰⁶ Ministry of Home Affairs, Report on *Forensic Science Infrastructure in India* 12-13 (2022).

¹⁰⁷ *Id.* at 14.

¹⁰⁸ *Supra* note 19.

¹⁰⁹ Singh and Kaur, *supra* note 26.

¹¹⁰ *State of H.P. v. Jai Lal*, (1999) 7 SCC 280, 287 (India).

¹¹¹ *Id.* at 232.

¹¹² Bhardwaj, *supra* note 37 at 233.

infrastructure for digital forensics in hospitals creates gaps in analyzing medical records, consent forms and treatment logs.¹¹³ Without proper standardization courts risks divergent outcomes based on the same scientific material.¹¹⁴

Cost is another barrier. Forensic examinations especially in private laboratories are very expensive restricting access to justice for economically weaker patients.¹¹⁵ While the Consumer Protection Act 2019 empowers patients to file negligence claims, high forensic costs often discourage litigation or result in under-prosecution of genuine claims.¹¹⁶

Finally, the lack of specialized medico-legal training among judges and lawyers remains a pressing issue. Even where forensic reports are available, the technical complexity often leads to misinterpretation or excessive reliance on expert opinion without critical judicial engagement.¹¹⁷ Scholars argue that without proper capacity building, the promise of forensic science in enhancing justice remains underutilized.¹¹⁸

Thus, while forensic science has great potential to ensure objectivity in medical negligence cases, systemic reforms including infrastructure investment, expert training, procedural safeguards and cost reduction are necessary for realizing its full value.¹¹⁹

The adjudication of medical negligence represents one of the most delicate areas of law as it requires balancing patient safety with the autonomy and professional discretion of medical practitioners.¹²⁰ Forensic science provides an objective bridge between medical practice and judicial scrutiny ensuring that liability is determined not merely on assumptions but on verifiable scientific evidence.¹²¹

The transition from the Indian Penal Code 1860 to the Bharatiya Nyaya Sanhita 2023 (BNS) and from the Indian Evidence Act 1872 to the Bharatiya Sakshya Adhinyam 2023 (BSA) reflects a modern legal framework that explicitly acknowledges the significance of expert testimony.¹²² These reforms strengthen the evidentiary foundation of negligence claims by formalizing reliance on forensic toxicology, pathology and medical record analysis.¹²³

Comparative perspectives from the United Kingdom, United States and the European Court of Human Rights illustrates that forensic science plays a transitional role in ensuring fairness and consistency in medical negligence adjudication.¹²⁴ Whether under the Bolam principle, the Daubert standard or ECHR's rights-based approach, forensic evidence is recognized as indispensable in evaluating both the duty and breach of medical care.¹²⁵

Yet the Indian context reveals persistent challenges, shortage of laboratories, backlog in forensic reports, questions of impartiality and lack of judicial technical expertise.¹²⁶ Without addressing these structural gaps, forensic evidence risks being underutilized or misapplied in courts of law.¹²⁷

Therefore, forensic science must not be viewed as an auxiliary tool but as an integral component of medical jurisprudence. When properly harnessed, it ensures accountability of medical professionals while simultaneously safeguarding them from frivolous or unfounded claims.¹²⁸ This equilibrium is crucial for advancing both the right to health of patients and the security of doctors, thereby strengthening public trust in the healthcare system.¹²⁹

X. CONCLUSION

The adjudication of medical negligence represents one of the most delicate areas of law as it requires balancing patient safety with the autonomy and professional discretion of medical practitioners.¹³⁰ Forensic science provides an objective bridge between medical practice and judicial scrutiny ensuring that liability is determined not merely on assumptions but on verifiable scientific evidence.¹³¹

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¹¹³ Ratanlal & Dhirajlal, *supra* note 27.

¹¹⁴ *Supra* note 28.

¹¹⁵ Singh and Kaur, *supra* note 81 at 282.

¹¹⁶ *Id.*

¹¹⁷ Bangia, *supra* note 20 at 197.

¹¹⁸ *Id.*

¹¹⁹ Singh and Kaur, *supra* note 87.

¹²⁰ Bangia, *supra* note 89.

¹²¹ Michael Jones, *supra* note 54.

¹²² Bharatiya Nyaya Sanhita, *supra* note 14.

¹²³ *Id.*

¹²⁴ *Bolam v. Friern Hospital Management Committee*, *supra* note 49.

¹²⁵ *Id.*

¹²⁶ Ministry of Home Affairs, *Report on Forensic Science Infrastructure in India* 12-14 (2022).

¹²⁷ *State of H.P. V. Jai Lal*, (1999) 7 SCC 280, 287 (India).

¹²⁸ Singh & Kaur, *supra* note 26.

¹²⁹ Jones, *supra* note 93 at 129.

¹³⁰ Bangia, *supra* note 92.

¹³¹ Jones, *supra* note 115.

¹³² Bharatiya Nyaya Sanhita, *supra* note 103.

¹³³ *Id.*

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XI. SUGGESTIONS

The intersection of medical negligence and forensic science in India requires a comprehensive policy response to address existing gaps and align with international best practices.¹⁴⁰ While statutory reforms such as the Bharatiya Nyaya Sanhita 2023 and the Bharatiya Sakshya Adhinyam 2023 have modernized the criminal and evidentiary framework, their potential can only be realized through structural improvements.¹⁴¹

Firstly, there is a pressing need to expand forensic infrastructure. Establishing regional forensic laboratories with toxicology units will reduce pendency and improve accuracy in medical negligence cases.¹⁴² Public and private partnerships and also incentivized by government subsidies could bridge the resource gap and ensure timely availability of reports.¹⁴³

Secondly, the standardization of forensic procedures is essential. Adoption of uniform protocols for sample collection, preservation and reporting will minimize evidentiary disputes.¹⁴⁴ Lessons may be drawn from the United States where the Daubert framework ensures admissibility of only scientifically valid forensic evidence.¹⁴⁵ Integrating similar checks under the BSA would enhance judicial confidence in expert testimony.¹⁴⁶

Thirdly, capacity-building initiatives for judges and lawyers are indispensable. Specialized training modules on forensic toxicology, pathology and digital forensics should be introduced at the National Judicial Academy and State Judicial Academies.¹⁴⁷ Without adequate technical literacy, judicial officers risk either undervaluing or over-relying on expert opinion.¹⁴⁸

Fourthly, cost and accessibility must be addressed. Free or subsidized forensic services for patients from economically weaker sections will ensure equality in access to justice.¹⁴⁹ The Consumer Protection Act 2019 will fail to meet its objectives if forensic costs deter genuine litigants.¹⁵⁰

Finally, a multidisciplinary approach must be institutionalized. Collaboration between doctors, forensic experts, legal practitioners and patient advocacy groups will foster transparency and accountability.¹⁵¹ Establishing medico-legal boards at district levels, comprising both medical and legal professionals, can provide preliminary scrutiny of negligence claims, thereby filtering frivolous litigation and expediting genuine cases.¹⁵²

To sum up, the effective integration of forensic science into medical negligence adjudication requires infrastructural expansion, procedural uniformity, training, financial support and institutional collaboration.¹⁵³ Such reforms will not only strengthen patient rights but also protect the legitimate interests of medical professionals achieving a balanced medico-legal ecosystem in India.

¹³⁴ *Bolam v. Friern Hospital Management Committee*, *supra* note 96.

¹³⁵ *Id.*

¹³⁶ *Supra* note 98.

¹³⁷ *State of H.P. v Jai Lal* (1999) 7 SCC 280, 287 (India)

¹³⁸ Singh & Kaur, *supra* note 113.

¹³⁹ Jones, *supra* note 118.

¹⁴⁰ *Id.*

¹⁴¹ Bharatiya Nyaya Sanhita, *supra* note 94.

¹⁴² *Supra* note 98.

¹⁴³ *Id.* at 23.

¹⁴⁴ *Supra* note 37.

¹⁴⁵ *Supra* note 60.

¹⁴⁶ Bhardwaj, *supra* note 84 at 230.

¹⁴⁷ National Judicial Academy, *Annual Training Calendar* 45-47 (2024).

¹⁴⁸ *Id.*

¹⁴⁹ Ratanlal & Dhirajlal, *supra* note 85.

¹⁵⁰ *Supra* note 28.

¹⁵¹ Singh & Kaur, *supra* note 100.

¹⁵² *Id.*

¹⁵³ Jones, *supra* note 101 at 224.