

Role of Forensic Evidence on Criminal Justice Outcomes

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Abstract - Forensic science's role in criminal justice and its disciplinary and legal context are the subjects of this article. Plus, it will try to find out why forensic science is still in its infancy when it comes to managing India's criminal justice system, even though our country has made great strides in technological sophistication in recent years. Redesigning and modifying the Indian legal system to include goal-oriented forensic investigations and trials is necessary to ensure that victims of terrible crimes get swift justice and remedies. The scope of the study is limited to these areas; computational and cyber forensics are not covered. On the contrary, forensic entomology, forensic chemistry, forensic art, forensic DNA analysis, and forensic applications are the main points. Because of technological developments spurred by reforms in the criminal justice system, crime investigation methods have evolved significantly throughout the last decade. The application of scientific methods and instruments in crime detection helps police authorities establish a key link between the crime and the suspected perpetrators. The credibility of the accused's guilt or innocence may be determined by these verifiable pieces of evidence. Crime rates are on the rise in today's technologically advanced society. The disturbing increase in crime rates has prompted the constant expansion and revision of laws. It is important to enhance current investigation methods that may be a tremendous asset in case processes in order to stay up with the ever-evolving crooks. Lodgement of First Information Report (FIR), police investigation, judicial procedures, and ultimate judgment are the several processes that comprise the criminal case proceedings. Numerous pieces of evidence, including scientific findings, point to a major importance for each of these mediums. In an effort to assemble data on the credibility of forensic evidence, this study compiles and synthesizes previous studies that have examined its relationship to different stages of criminal investigations.

Keywords: Criminal, cyber forensics, accused, DNA analysis

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INTRODUCTION

The practice of legal medicine by the Chinese in the sixth century is considered the genesis of forensic science. The use of medical evidence in court cases is expected to rise in the next hundred years as a result of expanding scientific and medical understanding. Much of what we know about chemistry now was just beginning to be acknowledged in the 18th and 19th centuries, when other forms of scientific proof were evolving. Historic scientific advancements have been produced in the forensic sciences throughout the last several years. Forensic science has recently emerged as an area committed to solving criminal cases, coinciding with the notable advancements in science and technology. As a result, there are now excellent chances to resolve any legal issue by bolstering the early stages of scientific inquiry. By assisting law enforcement, prosecutors, and judges,

forensic science contributes to the functioning of the criminal justice system.

As a rule, forensic service providers are unable to meet the demand for their services due to a lack of accessible resources. Forensics should be used strategically to help the courts and police serve the community better. This can be achieved, for instance, by reducing crime overall, completing criminal investigations more quickly, and achieving a high level of crime detection. The goal of forensic science is to aid law enforcement and judicial investigations in their pursuit of justice by applying scientific principles to tangible evidence. The importance of forensic science goes well beyond its use in identifying criminals and generating proof of their guilt or innocence. Forensic evidence plays a significant role in criminal law because it may provide crucial details on the commission and perpetrator of crimes. The

trial makes use of the evidence if it is gathered throughout the evidentiary procedure.

Accepted by the court as evidence, the defendant's guilt or innocence may be determined by considering this evidence. How the evidentiary procedure is structured determines the admissibility of evidence, which might include testimonies of eyewitnesses, images, tangible artifacts, or even DNA. Authorities in charge of investigating and settling cases are encouraged to use forensic evidence rather than relying on suspect or witness admissions. Reason being, as eyewitnesses are still human and thus capable of lying, the goal of maintaining the truth throughout a criminal prosecution cannot be ensured by relying only on their evidence. In a nutshell, forensic science is when experts in the field use their expertise to help the legal system and police enforcement. When dealing with a criminal case, it's important to keep in mind that the law is only one part of the puzzle; to solve more complex crimes, it's necessary to draw on other scientific disciplines, such as forensic science. In order for the criminal justice system to carry out its functions, particularly during investigations and in the prosecution of complicated and difficult crimes, it is essential to grasp the significance of forensic evidence.

A piece of physical evidence is anything that has been brought before a court to prove or disprove a claim. It is also created while an investigation is underway. Documents, fingerprints, DNA samples, witness statements, images, and surveillance video are all part of it. We call these pieces of evidence. Legal professionals' remarks will not be considered evidence. Neither attorney is allowed to testify as a witness in a case that they were challenging. Legal professionals' arguments should be considered evidence as they are constantly offered to evaluate the evidence. The Indian Evidence Act of 1872, which is more of a system of laws than an act in and of itself, provides more context for this concept of evidence². Forensic evidence is proof that has been verified by scientific means, such as tests or observations. Scientific evidences are another name for them. Biometric data contains a wide range of items, such as fingerprints and DNA samples.

LITERATURE REVIEW

Baskin, Deborah & Sommers, Ira. (2012). This research looked at how forensic evidence affects the handling of robbery and assault cases. From the moment of the police incident report to the ultimate criminal disposition, the research tracked cases in five jurisdictions using official record data. According to the findings, only about one-third of robbery and assault cases really had forensic evidence gathered. The results of the robbery and assault cases were unaffected by the forensic evidence. The likelihood of a conviction is the same in cases with and without physical evidence. The presence of victim and/or witness statements, however, was shown to foretell progression through different phases of the criminal

procedure. Finding victims and witnesses and getting them to testify seems to improve case solveability. Factors related to the gravity of the crime can influence how a case develops.

Patel, Ankita & Vaya, Shivarathna & Jasani, Nirali & Vasan, Margi & Sharma, Shweta. (2016). The crimes are increasing in today's technological environment. In response to the disturbing increase in crime rates, laws are being continuously amended and increased. To stay up with the ever-evolving criminal landscape, it is crucial to enhance current investigation methods, which may greatly benefit court proceedings. There are a number of steps involved in the criminal case process, including filing a FIR, an investigation by the police, court procedures, and a final judgment. Scientific evidence is only one of several sorts of evidence that point to a major role for all of these platforms. In order to provide information on the dependability of forensic evidence, this study aims to analyse the research works that have been conducted linking forensic evidence and different processes in a criminal investigation.

Mccartney, Carole. (2013). This book traces the history of forensic identification technology and how it has changed the face of law enforcement. It follows the development and increasing use of forensic identification technology in the criminal justice system, with an emphasis on fingerprinting and forensic DNA typing. In addition, it reveals how these new technologies are hastening changes to investigation procedures and how human rights, such privacy and anti-discrimination rights, are being jeopardized in some domains. There is an in-depth analysis of how forensic evidence is used in criminal investigations and trials.

Simmross, U.. (2014). All parties involved in criminal trials, including forensic scientists, have long debated the best methods to interpret scientific evidence. A lot of people have been paying attention to this since the late 90s, when the case assessment and interpretation (CAI) model was first introduced, and much more so after 2009, when the National Academies of Science study "Strengthening Forensic Science in the United States" was released. However, if stakeholders from, say, inquisitorial criminal systems are under-represented, there is a risk of overcompensation after the talks. Case evaluations that include complicated logic and judicial considerations of evidence might undoubtedly benefit from a probability ratio-based approach. Nevertheless, this method should be seen as an option rather than a universal norm, as it may catch certain nations unawares and impacts the idea of stakeholder roles more deeply in some than in others. This is addressed in the following essay, along with some suggestions that seem appropriate for bolstering the assessment of forensic findings via the idea of methodological diversity, as opposed to an

exclusive and obligatory dedication to a single technique.

DNA TESTING

In and of itself, DNA testing is a crucial component of forensic evidence. Here is a way to explain it: The familiar name DNA may be expanded to Deoxyribo Nucleic Acid. Because it is unique to each individual's body, it is considered an important component of the human body. An organic substance is what it is. Although it may be derived from various sources, it is most often found in human blood. These DNAs are incredibly significant since they are specific and identical, meaning that everyone has their own expectations for people with these traits. The fact that it is unbreakable and can't be altered is one of its greatest advantages. For several reasons, including but not limited to obtaining information on children, rape cases, and others, these types of DNA testing are often used. Their value in civil disputes is sometimes justified, and their impact on the criminal justice system is undeniable. As a result, they are particularly useful while the court is making a ruling. It is currently common practice in the courts to conduct DNA tests, which helps to explain their significance. The criminal justice system relies on it heavily. Because they are precise and well-defined, their findings have a significant impact on the court's ruling. Even if it has only been presented with optimistic intentions, it does have some negative impacts as well, opening new doors of scientific evidence. However, their whereabouts remain unknown.

Extensive study is required to uncover this facet of DNA testing, and the technology has to be improved so that its shortcomings may be identified and mitigated. Even if we don't yet know these details. Our criminal justice system now has more tools at its disposal because to developments in forensic science. The evidence-based age has begun. Blood is one of the most common DNA testing sources, but there are many others, including skeletal remains, fingerprints, and even hair. Though new facets of DNA testing technology have not been found yet, the technique's breadth is restricted. However, it may also be misused; for example, rape victims are required to have their blood samples taken by doctors within 96 hours of the occurrence, but in practice, this is often not done or cannot be processed in time.

The lack of a system of checks and balances and the inability of executives to execute the law on an as-needed basis are the main reasons for this. In addition, the time-consuming nature of the process and the limited availability of labs are the primary causes of these occurrences. Since the courts simply cannot hear every case, responsible machinery must operate at peak efficiency. 3 These challenges may be solved with the help of technical breakthroughs. More labs and teams dedicated to the same goal,

together with an effective system for gathering evidence, may help improve the situation. In More organized crime-scene teams and evidence gathering protocols have been put in place in many jurisdictions, leading to better initial evidence collection. Just in the last few years, this kind of mechanism has shown significant progress. Because of its singularity, another innovation in fingerprint technology is providing tremendous assistance to the criminal justice system.

ADMISSIBILITY OF FORENSIC EVIDENCE IN COURT

When it comes to situations of sexual assault, scientific evidences might provide crucial information to the authorities involved. Items or information obtained by scientific procedures that are used as evidence in judicial proceedings are called scientific evidence. Crime scene investigators have access to a wealth of forensic material. In order to determine a great number of concerns with a fair conclusion, scientific evidences are crucial. A crucial dilemma that a judge may face whenever presented with scientific evidence is the question of whether or not the evidence is worth believing. Whenever a novel scientific idea is to be presented as evidence in a legal proceeding, the matter takes on a much weightier dimension. In order to bolster a case in court, one must provide admissible evidence. In addition to being relevant to the matter at hand, evidence must also be legitimate and have undergone proper preservation in order to be admitted into evidence, which requires a clear chain of custody to be established.

The use of forensic evidence is crucial in cases involving sexual assaults because it aids the judicial system in its pursuit of justice by giving factual information. Everything found on the accused, such as clothing, medical records, and other items, is considered forensic evidence. In order to aid the court, many forms of forensic evidence are at their disposal. The court of law is able to administer justice more openly and fairly because of this. Justice for the accused may be served more accurately and transparently with the use of forensic evidences. The legal system may use these pieces of evidence to get a better verdict in a certain amount of time. Scientific evidence is notoriously difficult for courts to assess as it is subject to constant change. This is especially true when forensic evidence is at issue. Before a piece of evidence may be examined at trial, the court must thoroughly assess its legitimacy. We have a very convoluted system for determining whether evidence is admissible in court. Forensic evidence's credibility is subject to judicial interpretation at all times, so its use is not static. When new technology enters the market, the issue becomes more difficult since judges and lawyers need to be informed about it. In order for

forensic evidence to be considered acceptable in a court of law, it must be presented with the pertinent facts of the case. When a piece of evidence is deemed relevant, it means that the court has verified its validity, transparency, and correctness. The evidence must be authentic and uphold the criteria established by the court.

ADMISSIBILITY OF EXPERT EVIDENCE

The standard operating procedure in our legal system is to seek outside expertise when dealing with forensic evidence. This is how "amicus curie," or "friend of the court," comes into play: with subject-matter specialists. Since they are well-versed in their respective disciplines, the opinions of specialists have weight. The courts have requested assistance, and forensic evidence plays a crucial part in this process. The courts have consistently shown a lack of confidence in the forensic evidence, making decisions based on general assumptions rather than particular pieces of evidence. In cases where they determine that expert testimony is necessary, the courts will not hesitate to seek it out. Until the courts are certain of the evidence's veracity and correctness, they will not examine it. In our nation, the courts have implemented a system of checks and balances to ensure that forensic evidence is admissible. 6 Since the beginning, the criteria for determining whether forensic evidence is admissible have revolved on three things: dependability, correctness, and transparency.

If the evidence does not align with the facts of the case law, the courts will not pursue it. In some cases, the courts may refuse to accept facts unless they are directly related to the matter at hand. Regardless of whether the fact is important in nature, the courts will not accept it if it does not comply with the statutory process, namely the requirements of the Indian Evidence Act, 1872. Forensic evidence in our nation will therefore always be evaluated based on three criteria: dependability, correctness, and transparency. Only forensic evidence will be examined by the court if it successfully meets all of these criteria. When it comes to making decisions based on forensic evidence alone, without consulting relevant specialists, the courts have historically shown a lack of enthusiasm. In a similar vein, the Supreme Court of India affirmed the High Court of Punjab and Haryana's conviction in the seminal case of *Magan Bihari Lal v. State of Punjab*.

The expert's view will be carefully considered, according to the court. The use of forensic evidence alone to support a conviction goes against international norms of due process and justice. According to our highest court's ruling in *Forest Range Officer v. P. Mohhamad Ali*, forensic evidence shall only be considered for admission if expert aid is sought. Only after that should a conclusion be drawn. The court's understanding, however, will be unaffected. Before proceeding with a decision in the case, the court has itself established the concept that

an expert opinion is required. Despite this, the Indian Evidence Act makes no such reference. However, this principle has been refined via previous court decisions.

CONCLUSION

Legal proceedings often make use of forensic evidence. Scholars have conducted a lot of study on forensic evidence, but much of it has focused on the results. Reason being, from the very beginning, with the arrest, all the way to the very end, with jurisdiction, a mountain of data has to be analysed in order to conduct a thorough investigation of each step. To each level, the studies arrive to various results, but they all agree on the critical importance of forensic evidence. Forensic evidence is most valuable when it gives a fair, accurate, and transparent account that is founded on logic. The victim and the accused are connected in a direct manner via the case law. Given the above, it's easy to see how forensic evidence is vital to the criminal justice system, but it also presents challenges to courts about the validity and trustworthiness of its interpretations. The victims of the case are increasingly demanding forensic evidences due to the fact that they produce outcomes that are both transparent and accurate.

A small number of studies have looked at cases from arrest all the way to sentence, and the majority of those that have focused on a single or two decision phases have been quite inconclusive in their examination of the impact of forensic evidence on case processing results. This is because there are a lot of steps in an investigation—from arrest to laboratory testing, adjudication, and sentencing—that make it difficult to trace and collect a large amount of data. The existing research finds conflicting results at various phases of the judgment process, with some suggesting that forensic evidence plays a negligible influence. When conducting an investigation, scientific evidence plays a crucial role since it may provide conclusive proof connecting the culprit to the victim or the location of the crime. The research by Peterson et al. did not provide credence to such a theory. One major factor that led to this verdict was the low degree of individualizability of the physical evidence. In the years leading up to 1985, the primary tangible evidence that may establish a connection between a criminal and a crime were fingerprints and weapons. Reviewing this body of work makes it quite evident that forensic evidence's application to criminal justice cases has intricate concerns about its gathering, its influence on verdicts, and the interpretation it undergoes by forensic experts, courts, and juries.

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