THROUGH CRIME SCENES TO LABORATORIES, HOW FORENSIC EVIDENCE IS UTILIZED AND MISPLACED THROUGHOUT THE CRIMINAL JUSTICE SYSTEM

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ABSTRACT

Forensic science is a powerful field of information and abilities which can be profoundly useful and helpful for criminal examination. This study aims to know the usage and losing of forensic evidence in criminal justice system from crime scene to laboratory analysis and in the later criminal justice proceedings. The study design of this research is quantitative and descriptive in type, conducted in Karachi, Sindh, Pakistan. The purposive sampling technique used to collect the data on a closed ended questionnaire. The study reveals that the investigation officers do not possess the basic knowledge of investigation. In our medicolegal system imprecise, violent and insensitive techniques of investigation are being employed. The less qualification and training of the stakeholders handling the forensic evidences affects to the conviction rates. In Sindh the forensic laboratories are incapable to deal with forensic evidence.

Keywords: Pakistan, Forensic Investigation, Admissibility, DNA, Court, Crime Scene, Criminology

INTRODUCTION

It is possible to define forensic science as the analysis and application of science to regulatory issues. This fusion of science and law offers fresh approaches and methods for discovering

the truth. The adjective "forensic" comes from the Latin word "forēnsis," which means "gathering," and refers to a public space where Roman congressmen and other people held judicial proceedings and engaged in discussion for a variety of purposes. These gatherings assumed their roles in research, analysis, and the creation of uniform regulations (Conner, 2008). Inquiry into crime scenes and the gathering of evidence for use in the preliminary for the arraignment of wrongdoers in a formal courtroom are two functions of the integrative field of study known as legal science. Investigating passive consent with peaceful agreements in relation to weapons of mass destruction uses scientific research methods.

FUNDAMENTALS OF FORENSIC SCIENCE

Forensic science is defined as "the utilization of science to those hoodlum and customary rules that are supported by the police work settings in a wrongdoer esteem framework" in the introduction. In forensic science, methods and data from numerous scientific fields are used to legal problems. It involves using a variety of academic fields, such as physical science, physics, cybercrime, software engineering, and designing for proof analysis. Physical science is used, for instance, to appreciate the example of a blood splash, to build up the origin of an unidentified suspect, and to decide how pharmaceuticals are created (Crispino, 2008). In this way, the role of science in criminal justice and the broader body of laws is fundamentally fundamental but sometimes misunderstood. Without forensic science, a criminal investigation would be a disjointed puzzle. Hoodlums can never be sentenced without the aid of quantifiable science, unless an observer is available. Forensic science examines the evidence to produce facts that can be used in court, whilst analysts and legal requirement organizations are occupied with the collection of proof, whether it be physical or computerized. Thus, assassins, criminals, drug dealers, and assailants would roam free in a society lacking criminological expertise. The duties of a legal researcher in a criminal investigation are significant since they entail the careful evaluation of a piece of evidence while making sure that it hasn't been tampered with. A variety of legal experts and tools are used in the analysis of a criminal demonstration. As an illustration, legal pathologists are adept at determining the cause of a death by conducting post-mortem examinations (Pyrek, 2010).

IMPORTANCE OF CURRENT GENETIC MATERIAL AND FORENSIC SCIENCE

In its landmark decision, the High Court of Pakistan (announced in Supreme Court Monthly Review 2021 PLD 362 Supreme-Court) examined in-depth the role that science, modern scientific techniques, and tools play in our legal system. Before looking at the incidental evidence, it may be helpful to emphasize the role that science, modern scientific techniques, and tools play in our legal system. Courts must be aware of science and its established practices in order to assist persons in this inventively complex culture. The boundaries of deductively sound information should be respected by the courts in making legitimate decisions. An authorized authority, and especially an initial adjudicator, acts as a custodian of

the logical proof and should, as a result, have a superior understanding of science. Courts should be open to advancements in legal science and embrace new strategies and gadgets to resolve a dispute, provided that the said procedure and gadget is grounded and widely acknowledged by established researchers as a reliable and solid strategy or device. As science advances, so will criminological methods, apparatuses, and gadgets. The Qanun-e-Shahdat Order, 1984's (QSO) Article 164 is the portal that opens to modern forensic science entering our courts. According to Article 164, courts may allow the creation of any evidence that might have become available as a result of modern tools and methods. Proviso 2 to Article 164, which was added in 2017, states that a conviction based on modern tools and techniques may be valid. Article 164, when read in conjunction with Article 59, entomb alia, allows modern forensic science to be admitted into courts through the respected and reputable logical opinions of experts as evidence, so demonstrating reality (Article 59 of QSO: 'Opinions of experts).

SIGNIFICANCE OF FORENSIC SCIENCE IN LAW SYSTEM

The Latin term "forenses," which denotes a dispute, is where the word "forensic" gets its root. A conversation from ancient Rome made reference to a public area where formal meetings and discussions took place. In this way, the term "legal science" and its true meaning are defined in reference to the general body of laws. Measurable Science covers the gathering, safeguarding, and examination of evidence sufficient for the formal courtroom arrest of a wrongdoer (Ribaux, 2010). So, it is clear that scientific research will be used in the criminal equity framework (Fradella et al., 2007). The overarching body of legislation typically explains how quantitative evidence is used in criminal prosecution. This is due to the limited space available for there isn't much room for inclination or treachery when rational methods and tactics are applied. This is the rationale behind the widespread acceptance of DNA profiling and other criminological evidence in courts all over the world. Surprisingly, the very earliest criminological process to be used dates all the way back to the Chinese and includes finger and palm print ID (650 A.D.).

The application of science to the law or legal affairs is simply one of many factors that emphasize the significance and importance of studying the phenomena of deviance with regard to crimes and criminal nature investigations. Science and law often make unusual bedfellows. By creating tests that provide someone with an associate's degree with an unbiased response to the posed topic, scientific knowledge will advance human understanding (Chaomei Chen, 2014).

With the research process, a person regularly examines physical evidence and meticulously documents data that supports or refutes the scientific method. The law, on the other hand, begins with at least two opposing parties who have radically opposite viewpoints and uses the

courtroom as a platform to debate factual issues within the context of statutory, case, and constitutional law.

Forensic evidence, including findings and opinions, is a crucial component of both criminal and civil processes. Forensics are subject to comparable legal standards, participate in both criminal and civil proceedings, and must be present during the proceeding in which they are participating. Expert testimony is valued for its high quality and if the witness is familiar with the relevant legal precedents, among other factors.

PURPOSE OF THE STUDY

The study aims as following:

- To know the usage of forensic evidence in the criminal justice system.
- To identify that how forensic evidence is lost in the criminal justice system.
- To examine the losing of forensic evidence from crime scenes to laboratory analysis.

RESEARCH QUESTIONS

The research study based on questions from the targeted people related to field of investigation, prosecution, advocates, forensic experts and presiding officers:

- Do the Investigation officer are not aware of basic knowledge, and our medicolegal system frequently employs investigational techniques that are imprecise, insensitive, and frequently violent?
- Are our investigation agencies are not properly trained about forensic protocols and their worthiness in establishing and proving the case in a befitting manner?
- Do in heinous offence cases, lack of forensic science education and training adversely affects police investigators and competent investigations?
- Are investigators are not qualified in Criminal Investigation Techniques affecting the Conviction Rate?
- Do the forensic laboratories in Sindh are incapable to coupe up to deal impartially with forensic evidence in heinous offences
- Does DNA evidence qualify as substantial evidence under QSO 1984?

LITERATURE REVIEW

Legal sciences are used by preliminary legal advisers—both criminal protection legal advisors and examiners—to strengthen and invalidate the proof they present in court (Horswell, 2005a). As an example, the prosecution may utilize the evidence discovered at the crime site to get DNA evidence that places the defendant at the scene of the crime if there are no known witnesses to the incident (Miller and Wright, 2013). Even forensics might be able

to pinpoint the precise day and hour a criminal event took place. Forensics can be utilized to identify the deceased and narrow the pool of probable murder suspects when dealing with human remains. Evaluation of the person's physical characteristics and/or the dental work on the remains are frequently used to identify the body. The likelihood that the remains belonged to a girl who was approximately 25 years old, approximately 5'5" tall, and 125 pounds usually becomes smaller as a result of forensic examination.

Moreover, forensics may reveal the cause of death, giving detectives details about the murder weapon to look for and a starting point for their hunt for a suspect. The authorities may start by checking the registration database to see if anyone in the region had a registered.45 pistol, for instance, if it had been determined that the victim had died from a gunshot wound to the head and the bullet wound matched a.45 caliber firearm. The victim, the getaway car used in armed robberies, the suspect, the scene of the crime, the suspect's car, and the weapon used in the robbery (Horswell, 2005a). This classification just indicates the order of the locations and implies neither priority nor importance for the scene (Miller and Wright, 2013). Bring to light the numerous procedural concerns that could come up in court regarding the admissibility of forensic evidence. Such issues, which might range from the early postpartum period to breaks in the chain of custody, may compromise the admissibility of the evidence in the case. Even the most significant challenges with forensic evidence are procedural and managerial in character, according to case law analysis. Because of unexplained delays in delivering collected evidence to the forensics lab, inconsistencies in the retrieved evidence, and substantial breaks in the chain of custody, a number of occurrences, for example, failed to successfully use forensic evidence (Chapter 10, "Crime Scene Reconstruction") (Miller and Wright, 2013).

The courts must operate within the currently applicable legal framework because there is no separate legal framework that deals with DNA evidence. The Qanun-e-Shahadat Order of 1984's (the "QSO") Articles 59 and 164 are taken into consideration while evaluating DNA evidence. In contrast to the second section, which lays out the conditions for the inclusion of various forms of proof made possible by advances in science and technology, the earlier provision declares that expert opinion on subjects like science and art falls within the scope of "relevant evidence". In accordance with the current legal system, a technician who performs an experiment to examine DNA evidence is regarded as an expert whose testimony can be used in court. This legal framework, which is identical to the one governing the admissibility of medical opinions, creates the false impression that DNA is a new category of medical evidence and that a DNA expert is equivalent to a physician. We might not completely profit from the use of DNA if it is only considered from one angle. The primary difference between medical opinion and Genetic evidence is that the latter accurately identifies perpetrators while the former does not (2006 SCMR 1786). It would therefore be more reasonable to assess it from a different legal standpoint. Yet, as we shall see, there is

still more ground to be covered because the courts have not applied the law in a progressive enough manner.

Forensic findings and opinions are a significant source of evidence in both civil and criminal proceedings. Forensics are subject to comparable legal standards, participate in both criminal and civil proceedings, and must be present during the proceeding in which they are participating. Expert testimony is valued for its high quality and if the witness is familiar with the relevant legal precedents, among other factors (Garland and Stuckey, 2000). The present technical advancements and forensics are both advancing quickly, along with recent science. As a result, forensics develops into an easy, trustworthy, and affordable method of elucidating crimes (Giannelli P.1996).

Due to the unique nature of each person's DNA, DNA is a useful tool for law enforcement investigations (except for identical twins). By analyzing particular DNA sequences, or loci, a crime lab can provide an identifying profile that can be used to locate a suspect. A crime lab can produce a profile that can be used to identify a suspect by examining specific DNA locations or sequences. An unethical judiciary seeks the truth. The development of DNA forensics helps investigators uncover the truth and helps police and prosecutors stop violent crimes (Dahm, 2008). DNA evidence makes it possible to produce facts that exonerate the innocent and aids the prosecution in demonstrating an accused person's guilt.

There are numerous technologies available for DNA analysis in situations when it is pertinent. They fit into one of four groups: Men or women who have been identified as bearing the stain of the crime are under suspicion, personal confirmation, or personal removal; (Jennifer, 2012). Next-generation applications include genealogy, genealogical database research, and DNA phenotyping; Bloodless Match uses database/archived comparative matches to identify an unidentified culprit using crime color; Identifying related crimes and serial crimes by comparing crime scenes is known as related crime matching. The case studies that follow serve as examples of various applications (Whithall, 2008). The overall cost of forensic DNA analysis is still quite low, even though there are some cases when each cost is seen as "helpful" in solving a crime that would otherwise go unsolved (Van der Beek, 2015).

RESEARCH METHODOLOGY

The study design of this research is quantitative and descriptive in type. The study is conducted in Karachi, Sindh, Pakistan. The purposive sampling technique used to collect the data from the Lawyers, Prosecutors, Investigators, Forensic Experts, and Judges on a closed ended questionnaire through survey method. The sample size of this study is 150 participants. The data were analyzed descriptively. In this context, software Statistical Tools for Social Sciences (SPSS) was utilized. The results of this study are explained in the tabular form.

RESULTS

This study with the title "Through Crime Scenes to Laboratories, How Forensic Evidence is Utilized and Misplaced Throughout the Criminal Justice System" has revealed very important findings. The data of this study has been analyzed descriptively using SPSS.

Table: 01: *Investigation officer are not aware of basic knowledge, and our medicolegal system frequently employs investigational techniques that are imprecise, insensitive, and frequently violent*

Participants	Supported	Not Supported	Not participated
Lawyers	73.3%	26.7%	--
Prosecutors	60%	26.7%	13.3%
Investigators	76.7%	23.3%	--
Forensic Experts	83.3%	16.7%	--
Judges	80%	20%	--

The above-mentioned table no. 01 reveals that overall strongest support was observed by forensic experts which is 83.3%. While highest non supporters are Lawyers and prosecutors which were 26.7%. On the other end, 80%, 76.7%, 73.3% Judges, Investigators, and lawyers respectively are in the support and they endorse that investigation officers do not possess the basic knowledge of investigation. Besides, in our medicolegal system imprecise, violent and insensitive techniques of investigation are being employed. Such factors, such as lacking in the basic knowledge and faulty techniques are becoming cause of the losing of the forensic evidence at our system.

Table 02: *Investigation agencies are not properly trained about forensic protocols and their worthiness in establishing and proving the case in a befitting manner*

Participants	Supported	Not Supported	Not participated
Lawyers	76.7%	16.7%	6.7%
Prosecutors	50%	40%	10%
Investigators	16.7%	73.3%	10%
Forensic Experts	26.7%	70%	3.3%
Judges	80%	20%	--

It is revealed by the table no. 02 that 80% presiding officers of the courts considers that investigation agencies are not properly trained about the forensic protocols and their worthiness in establishing and proving the case in a befitting manner. However, 73.3% participants of investigator category are not of the above-mentioned point of view they consider that the agencies of investigation are properly trained relating to the forensic protocols and they are capable of proving in a befitting manners. The Cumulative, percentage in the support of the statement that 'Investigation agencies are not properly trained about forensic protocols and their worthiness in establishing and proving the case in a befitting

manner' is high. Hence, it is proved by the data that our investigation agencies are not fully trained about the forensic protocols.

Table 03: *In heinous offence cases, lack of forensic science education and training adversely affects police investigators and competent investigations*

Participants	Supported	Not Supported	Not participated
Lawyers	76.7%	6.7%	16.7%
Prosecutors	80%	16.7%	3.3%
Investigators	16.7%	76.7%	6.7%
Forensic Experts	30%	63.3%	6.7%
Judges	70%	6.7%	23.3%

The table no. 03 shows the lack of forensic evidence and training especially involving in the offences of heinous nature. In this case strongest supporter was observed from the Prosecutor category of the participants which is 80%. While highest non supporters are investigators which is 76.7%. In this regard, other participants like Lawyers, Judges, and Forensic Experts are 76.7%, 70% and 30% are in the support that in heinous offence cases, lack of forensic science education and training in cases involving horrific crimes adversely affects police investigators and competent investigations. Hence, that data further explains that special measures should be adopted for forensic science education in the cases of heinous crimes. Otherwise, due to lack of such type of education, the forensic evidence is lost during the investigation and trial stages.

Table 04: *Investigators are not qualified in Criminal Investigation Techniques affecting the Conviction Rate*

Participants	Supported	Not Supported	Not participated
Lawyers	80%	16.7%	3.3%
Prosecutors	60%	33.3%	6.7%
Investigators	70%	26.7%	3.3%
Forensic Experts	43.3%	53.3%	3.3%
Judges	76.7%	23.3%	--

The aforementioned table no. 04 has identified the perception of the participants about the qualification and training of the investigators in criminal investigation techniques. It is furthermore, identified that is this lacking in the qualification and training of the criminal investigation techniques affects to the conviction rates. We observed the Lawyers are the strongest supports and their percentage is 80%, following 76.6% supporting percentage by the judges. Prosecutors percentage of the support stands as 60. Even the investigators of 70% are in the support of this point of view. It can be assumed from the findings of the data that training and qualification of the investigators in handling the forensic evidence in the criminal cases is of importance and ultimately affects to the conviction rates.

Table 05: *Forensic laboratories in Sindh are incapable to coupe up to deal impartially with forensic evidence in heinous offences*

Participants	Supported	Not Supported	Not participated
Lawyers	80%	3.3%	16.7%
Prosecutors	26.7%	70%	3.3%
Investigators	56.7%	36.7%	6.7%
Forensic Experts	10%	83.3%	6.7%
Judges	66.7%	23.3%	10%

The table no. 05 is related with the capabilities and capacity of the forensic laboratories in the province of Sindh, Pakistan. The results show that the forensic laboratories in the province of Sindh are not capable and they do not have capacity to deal impartially with forensic evidence in heinous offences. In this case strongest acceptance was observed by Lawyers which is 80%, while 83.3% highest non supporters is observed by forensic experts. Besides, 66.7% of Judges and 56.7% of Investigators respectively are of the same point of view about the forensic laboratories of Sindh. Hence, the data of this research identifies that our forensic laboratories in the province of Sindh, Pakistan are not in position to deal with the forensic evidences in the crimes of heinous nature. Ultimately, the evidences are lost and the cases of the litigants are destroyed.

Table 06: *DNA Evidence Qualify as a Substantial Evidence under QSO 1984*

Participants	Supported	Not Supported	Not participated
Lawyers	93.3%	6.7%	--
Prosecutors	90%	10%	--
Investigators	30%	46.7%	23.3%
Forensic Experts	100%	--	--
Judges	93.3%	-	6.7%

We identified the substantiality of DNA evidence under Qanoon-e-Shahdat Order (QSO) 1984 and the results of the same are mentioned in the above given table no. 06. In this evaluation strongest acceptance was observed by Forensic Experts which is 100%, while 46.7% were highest non supporters observed by Investigators. Additionally, 93.3% Lawyers as well as Judges are among the stronger supports of the substantiality of DNA evidence under Qanoon-e-Shahat Order 1984. It can be assumed on the basis of the revealed findings by the data of this study that DNA evidence is a substantial under the pertinent laws of Pakistan. Hence, it has forensic admissibility as well.

DISCUSSION

This study about the forensic evidence has been conducted with objectives to identify the usage and the manners of losing of it from crime scenes to the laboratory. The study has

identified very important perspectives of losing the evidences in the criminal trials. Such results of this study are being endorsed by the previous literature as well.

In majority, the participants of this study are of the view that investigation officers do not possess the basic knowledge of investigation. Besides, in our medicolegal system imprecise, violent and insensitive techniques of investigation are being employed. Such factors, such as lacking in the basic knowledge and faulty techniques are becoming cause of the losing of the forensic evidence at our system. This finding is in the line with the study conducted by Horswell (2005). Moreover, the participant of this study considers that investigation agencies are not properly trained about the forensic protocols and their worthiness in establishing and proving the case in a befitting manner. The study reveals that a lacking forensic evidence and training especially involving in the offences of heinous nature. It is further explained by the findings of this study that special measures should be adopted for forensic science education in the cases of heinous crimes.

The study has provided an elaborative point of view of the participants on the perception of the participants about the qualification and training of the investigators in criminal investigation techniques. It is furthermore, identified that is this lacking in the qualification and training of the criminal investigation techniques affects to the conviction rates. The study findings assume that that training and qualification of the investigators in handling the forensic evidence in the criminal cases is of importance and ultimately affects to the conviction rates.

Very significant find of this study is related with the capabilities and capacity of the forensic laboratories in the province of Sindh, Pakistan. The results show that the forensic laboratories in the province of Sindh are not capable, and they do not have capacity to deal impartially with forensic evidence in heinous offences. Ultimately, the evidence are lost and the cases of the litigants are destroyed. It has identified from the results of this study that DNA evidence is a substantial under the pertinent laws of Pakistan. Hence, it has forensic admissibility as well. The findings of the DNA evidence is furthermore, in line with previous studies such as (Dahm, 2008) and (Jennifer, 2012).

CONCLUSION

This study concludes that the investigation officers do not possess the basic knowledge of investigation. Besides, in our medicolegal system imprecise, violent and insensitive techniques of investigation are being employed. The investigation agencies are not properly trained about the forensic protocols and their worthiness in establishing and proving the case in a befitting manner. The study reveals that a lacking forensic evidence and training especially involving in the offences of heinous nature. The less qualification and training of the stakeholders handling the forensic evidence affects to the conviction rates. Very

significant find of this study is related with the capabilities and capacity of the forensic laboratories in the province of Sindh, Pakistan. It has identified from the results of this study that DNA evidence is a substantial under the pertinent laws of Pakistan. Hence, it has forensic admissibility as well.

FUTURE PERSPECTIVES

Public research institutions will receive essential support from the President's initiatives so they can rebuild their bases, computerize their DNA research programs, and improve the capacity and storage of forensic evidence. This will strengthen the analytical capacity of public crime laboratories.

It's true that some open abuse research facilities need assistance in acquiring equipment and supplies to guide the essential DNA research cycles of extraction, quantification, intensification, and testing, as well as in adhering to various accreditation standards. This is considered to be part of the provision of fundamental infrastructure support.

Constructing infrastructure while utilizing a system for monitoring lab data, by automating evidence management and control, enforcing procedures to govern the timeliness and accuracy of evidence, and establishing a legal chain of custody, a "LIMS," also known as a laboratory information management system, is used to develop infrastructure.

A robotic frame, such as a B. mechanical DNA extraction unit, must be included in the abuse testing facility's automated equipment in order to streamline the labor- and time-intensive parts of the DNA testing process. Professionals can use computational DNA research frameworks more effectively while reducing contamination and human error. Criminology's understanding of DNA is growing swiftly. Innovative equipment is needed to do DNA research fast, which will enable abuse research businesses to provide quick DNA screening procedures. A research equipment that is simpler, quicker, and less redundant would boost an organization's ability to manage more cases. For the foreseeable future, nearby locations will continue to be the focus of DNA research operations (Tania, 2006).)

Examiners, attorneys, and judges must adequately prepare for the presentation and use of genetic evidence in order to create clear guidelines on cases containing this evidence. Training of Judges, Attorneys, and Prosecutors. Investigators are given specialized training and support so they can handle DNA evidence in cold cases, respond to requests for post-conviction DNA testing, and develop sincere, unique solutions to enhance the significance of DNA evidence in court.

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