Introduction

The importance of physical evidence during the crime investigations has increased over the passage of time. Physical evidence, including DNA, fingerprints, and trace evidence might provide independent and objective leads in criminal investigations of various sorts. Initially there was a limitation that only biological substances having nucleated cells for DNA could be analyzed. But now this limitation has been successfully overcome by implementation of mitochondrial DNA sequencing for forensic tests. Nowadays, we can perform DNA identification test using blood, bones or bloodstains. Even semen, organs, tissues, teeth, hair, nails, spit, piss and certain other biological fluids are also used as specimen (Lee & Ladd, 2001). Most of the scientists and lawyers satisfactorily rely on results of DNA identification test as evidence there is frequent usage of Deoxyribonucleic acid (DNA) technology by the personnel/departments involved in investigative and trial procedures regarding criminal cases. The scientific nature of this evidence while following the scientific conditions makes it highly reliable and irrefutable.
Furthermore, samples taken at the crime scene help in establishing link between different crimes as well as between the crime and the culprit. However, Pakistan lacks in this well-managed DNA intelligence database. We do not have any consolidated database at the national level, no planning has been laid down to utilize the very technology or to reduce its cost. Certain medical laboratories are maintaining independent storehouses for DNA profiles which are generated in-house. These profiles are of suspects, arrestees and sufferers. Therefore, it appears that the current legislation is not enough to develop a DNA profiling system of intelligence in Pakistan (Rasool & Rasool 2020). There is a need for establishment of a dependable legal and scientific infrastructure to fully avail the benefits associated with this technology. However, this facility comes with certain delimitations. Maintaining such an infrastructure requires enormous resources as well as it would be a tough task to avoid misusing the collected data for ensuring privacy of the people. Nevertheless, in the case of Tanvir v The State and another [2020] P L D 774 Lahore High Court declared DNA report is taken as significant as an expert’s opinion, and it may not be valued as primary evidence.

In the present article researchers aim to explore the credibility of DNA testing in Pakistan. Keeping in view the developing state of the country we realize that Pakistan lacks in resources of availing this modern technology. Doctors, judges, lawyers and investigative agencies lack in training and the societal norms do not allow Pakistan’s justice to rely upon DNA evidence as a sole evidence for justice. For this purpose researchers here provide an intensive study of case laws to analyze how Supreme Court holds the evidential value of the DNA report, in what cases DNA report has been considered authentic and valuable and what are the significant conditions attached to the admissibility of DNA report. To achieve this purpose researchers have divided the paper into sections. The first section deals with the legal situation of Pakistan, in the second section the credibility of the DNA report has been discussed and in the third section the admissibility of DNA report in case of sexual assault is discussed.

Literature Review

Lee and Ladd (2001) discuss in their article that how the methods of evidence collection have gained importance as the emphasis has been put on the physical evidence. The recognition of correct sample, documentation, collection and preservation are the different stages of DNA sample collection which can and have, as discussed in their paper, impact the decision of the court. Peter Gill (2001) has also discussed the chances of contamination from the laboratory and how the results are influenced because of it. Therefore, he suggests the rationale that how LCN DNA should be interpreted. In the recent past Pakistan’s researchers have turned towards the field of biological evidence and they have provided both qualitative and quantitative researches to emphasize the importance of DNA evidence. These researches are discussed here as they have helped researchers in streaming down the recent developments in the field and have assisted in forming an understanding of the issue. Qudsia Hasan (2007) along with her fellow researchers has done an important study on the victims of Lahore and analyzes the characteristics of the attackers. The researchers have assessed medico-legals of 123 victims in this paper and found out that 64% of the victims were in their teens and that 76% of them were examined after the elapse of 72 hours. Moreover 98.35% were detected positive for semen and this showed that semen detection is the convincing
factor to confirm the rape. Dr. Shahbaz Ahmad Cheema’s (2017) is another important and relatively recent work discussing admissibility of DNA evidence. Here the researcher has discussed two ways the Supreme Court reacts to the DNA evidence. The reaction is different for legitimacy and sexual offences. It is suggested here to reformulate the legal framework regarding DNA admissibility. Nouman Rasool and Muzamal Rasool (2020) have also worked on similar lines. They have also discussed the issues that are involved in the collection of sample, the lack of resources in Pakistan, the delays in the medical examination and the impact of DNA as evidence in rape cases. It has also been discussed in this paper that how the lack of knowledge and training of the Doctors and lawyers can impact the credibility of DNA as evidence. Rao Munir (2020) and his fellow researchers have worked to contest for the DNA to be considered as the significant evidence in the criminal justice of Pakistan. They discuss the hindrances and court admissibility issues but also provide suggestions to make DNA significant evidence. Moreover, Shabana Kouser Jatoi (2021) and her fellow researchers have also emphasized upon the need of the hour to focus more on scientific evidences than eye-witnesses which are not as reliable as the biological scientific evidences. According to them it may reduce the burden on the police department and enhance the objectivity of the evidence. It is concluded in this research that DNA profiling is admissible as evidence but it requires other convincing evidences to prove the crime. Other than these works the researchers here have taken major help from the recent case laws.

Legal Scenario in Pakistan

The Parliament of Pakistan has inserted section 164-B in The Code of Criminal Procedure, 1898, for allowing DNA tests in the cases of sexual assault under sections 376, 377 and 377-B of Pakistan Penal Code 1860. The provision of conducting DNA tests of a victim and an accused was introduced in the law through the Criminal Law (Amendment) (Offences Relating to Rape) Act, 2016, which was enacted in Oct 2016. In 2020, Pakistan's parliament enacted Zainab Alert, Response and Recovery Act, to protect minors and children. Under this Act, to ensure quick justice, trial should complete within three months. Owing to Pakistan's crime situation quite necessarily this Act ensures death penalty for the criminal who commits sexual offence against a child.

For DNA analysis the expert opinion and usage of modern technology is of utmost value. For this purpose Articles 59 and 164 of Qanun-e-Shahadat, 1984 play significant role in elaborating the criteria. Accordingly, the personnel executing the DNA test is permitted to act as an expert whose opinion is admissible in the court. For this purpose the Supreme Court has laid down certain requirements and benefits of this evidence. In case of Ali Haider Alias Papu v Jameel Hussain and others [2021] P L D 362, Supreme Court explained that admissibility of DNA reports without their author appearing in the court as witness saves time and speeds up the criminal trials. This simple procedure is “per se admissible.” However if considered mandatory by the court then the expert who made the report might be summoned to hold witness. According to Section 510, of the Criminal Procedure Code 1860 DNA test report was not per se admissible but it was certainly admissible if tendered in evidence by examining as witness the expert under whose hand it was prepared as per the QSO. Moreover, according to Section 9 of the Punjab Forensic Science Agency Act, 2007, an expert from the Punjab Forensic Science Agency (PFSA) is considered as an expert in terms of Section 510, of the Criminal Procedure Code 1898.
Hence, DNA test report prepared by an expert of the PFSA is per se admissible. A combined readings of all the above provisions show that the report of the Punjab Forensic Science Agency (PFSA) regarding DNA is per se admissible in evidence under Section 510, of the Criminal Procedure Code.

In the case of Ali Haider alias Papu v Jameel Hussain and others [2021] PLD 362, Supreme Court declared DNA evidence as a gold standard to establish the identity of an accused. Owing to the accuracy and definiteness of DNA test it is considered as one of the strongest corroborative pieces of evidence especially in cases of rape and convictions that might be based on modern techniques and devices. Similarly, in the case of Atif Zareef and others v The State [2021] PLD 550, the Supreme Court declared DNA testing, being scientifically accurate and conclusive, as a gold standard for identification purpose and as strong corroborative evidence. In the case of Salman Akram Raja and another v. Government of Punjab through Chief Secretary and others [2013] SCMR 203, the Supreme Court of Pakistan commented in favor of using DNA test owing to its scientific and reliable nature and its dependable usage internationally for making highly accurate decisions to convict the real culprits and exonerate the innocents. However the usefulness of DNA analysis depends upon the skill, ability and integrity shown by the investigating officers. Evidence should be properly documented, packed and stored to observe the legal and methodical protocols so that it may be admissible in a court of law.

Reliability of DNA Evidence

DNA analysis is used as an evidence to establish connections or relations between different persons or between a person and the crime sight. Biological evidence can be directly transferred or secondarily transferred. Directly transferred, means that biological evidence is transferred by direct deposit, whereas, secondary transfer involves the transfer of semen, hair or tissue through an intermediate object or a person. Secondary transfer may play a certain role but does not necessitate a link between a specific person and crime (Lee & Ladd, 2001). The proper packing of the samples and documentation of the injuries leads to better results. MLO /CMO usually use unsuitable objects to pack vaginal or anal swab that rotten the DNA and sometimes the fungal growth and foul smell has been observed on the evidence material. It has been recommended that paper envelopes should be used for optimal results (Rasool & Rasool, 2020). In sexual assault cases, clothes provide the majority of the forensic evidence. Physical findings on the body of the victim determine the amount of force used against the victim. It also helps to find out whether the act was done with mutual consent or by force. By Application of toluidine blue to the affected areas injuries are highlighted. (Hassan, Bashir, Mujahid, Munawar, Aslam & Marri, 2007) It is undoubtedly acknowledged that credibility of DNA test is essentially dependent on the fact that the prescribed protocol for executing the DNA test has been strictly followed or not. In the case of Tanvir v The State and another [2020] P L D 774 Lahore High Court declared slight mishandling of the scientific procedure involving; collection of sample, taking the sample to forensic laboratory, safe handling of the sample and not following other prescribed steps makes the test report unreliable. Safe custody of the samples is pivotal.. Similarly, the case of People v. O.J. Simpson [1993] was about murder of the ex-wife of a famous U.S. footballer and her friend by the footballer himself. The DNA evidence was resorted to during prosecution. However, the court rejected it as the court found about erroneous handling of the DNA evidence by the Los Angeles Police Department.
In the case of Tanvir v State [2020] PLD 774, the Lahore High Court questioned the credibility of the negative DNA test report as the basic protocol of safe custody and timely delivery of the samples to PFSA was not observed. It was contended by the Lahore high court that if there are other medical evidences to prove penetration, then even negative DNA report has no legal value. The Supreme Court in Ahmad v The State [2020] PLD313 held that medical evidence relating to DNA testing and matching is not a requirement of law. Where rape had been established, it was not necessary to conduct a DNA test to determine that the semen retrieved from the victim's body and shalwar (trousers) was of the accused. The Supreme Court observed that it was not desirable to impose additional conditions to prove a charge of rape, or of attempted rape, and to do so would be a disservice to victims, which may also have the effect of enabling predators and perpetrators. In Wishal Masih v. the State [2017] YLR 2031, the Lahore High Court decided in favor of the decision of the trial court which, despite the negative report of DNA, upheld that the injuries of the vagina of the victim showed forceful penetration. Therefore, the court upheld the medico-legal report despite the negative DNA report. In Muhammad Ayaz Shamas v The State and another [2020] P Cr. L J 914, the negative DNA test report notwithstanding does not mean that no offence was committed as penetration is sufficient to constitute the offence. The PFSA report states that no semen material was found on the anal swabs. The negative report submitted by the PFSA was taken serious notice of by the court as other medical evidences proved the penetration. It was submitted by the Technical Manager (DNA), PFSA that the report was negative because of not observing the requisite protocol for DNA samples to be tested for the case. Furthermore, he informed about the special Sexual Assault Evidence Collection Kits (SAECKs) provided to the Medical Officers in the Punjab for following internationally accepted procedures for collection of forensic evidences, their preservation, and transportation. It was an unfortunate finding that SAECKs were rarely used and following the standard guidelines was even more uncommon, thus often discrediting the critical evidence. Moreover, unsuitable objects were utilized for collection of samples which contaminated the samples and sometimes caused injury or/and infection. The court was informed that SAECKs were not used in more than 91% of sexual assault cases submitted to the PFSA in 2019. It is duty of the all the relevant departments of the government to perform their respective roles so that a credible conclusion is reached at. The PFSA, the Health Department, and the involved Medical Officers are mainly concerned in such cases.

It is the duty of all the government departments to work in tandem so that the desired results may be achieved. In the instant case it is the PFSA, the Health Department and the Medical Officers working under it. Accordingly, In Muhammad Ayaz Shamas v The State and another [2020] P Cr. L J 914 it is directed by high court as under:

i) The Health Department shall ensure provision of SAECKs in sufficient quantities to all hospitals in the Punjab, including those at the District and Tehsil Headquarters. The Medical Officers shall without fail use these kits for collection of forensic evidence in all sexual assault cases.

ii) The Medical Officers shall adhere to the guidelines issued by PFSA for collection, preservation and transportation of samples.

iii) The Medical Officers shall particularly ensure that -
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a) they take detailed and accurate history of the incident from the sexual assault victim, including (but not limited to) the assault activity, time passed after the assault, and activities of the victim after the assault;

b) if medico-legal examination is conducted 5-7 days post-sexual assault incident, cervix samples are collected and submitted;

c) Clothing of victim worn during the incident and possibly bearing semen/sperm stains are submitted for serology-DNA analysis.

d) Reference standard samples in murder-sexual assault cases are collected and submitted to the PFSA.

iv) The DNA samples should be dispatched to the forensic laboratory without delay.

The Secretary, Primary and Secondary Health Department, Punjab, make sure that all above mentioned steps should be followed. Appropriate proceedings shall be initiated against Medical Officers who neglect or fail to comply with it. Owing to financial constraints, it is very difficult for developing countries like Pakistan to maintain accurate DNA database at massive level. There are two major types of cases in Pakistan where DNA evidence is relied upon, one is about legitimacy/paternity issues in civil matters and the other is related to sexual offences in criminal matters. But for the cases related to legitimacy the judges are hesitant as it goes against the social norms.

DNA Evidence and Individual Dignity

Article 14 of the constitution of Pakistan 1973 ensures the self-respect of every individual. One such case is Mst. Laila Qayyum v Fawad Qayum and others [2019] PLD 449, here Supreme Court stated that an independent lady should not be forced to provide the sample as it violates her individual’s liberty. In case of coercion for the collection of sample Art.14 will be violated. Here we understand that law favours paternity instead of illegitimacy. In Ghazala Tehsin Zohra v Mehr Ghulam Dastagir khan and another, [2015] PLD 327 the Supreme Court observed that Article 128(1)(a) of the Qanun-e-Shahadat, 1984 was also aimed at protecting social cohesion and social values in the community. Seemingly, this was the rationale for upholding legitimacy of a child born during the time of two years after end of the marriage of his/her parents while his mother remained unmarried during that period. Otherwise, both the classical Islamic jurists and the framers of the Qanun-e-Shahadat, 1984 may not be expected to be unaware of the length of normal period of gestation in human beings i.e., 9 months. The Qanun-e-Shahadat, 1984 provided that birth of a child within the stipulated time was enough proof for declaring his/her legitimacy. Moreover, if the legitimacy was proven on the grounds given in the said article of Qanun-e-Shahadat, the courts shouldn’t permit any evidence to disprove legitimacy of children. This was a serious question that how to cater for a situation when a husband denies to own a child. Muslim Personal Law offers a settled stance that a father may deny a child soon after his/her birth according to Imam Abu Hanifa and during the time of 40 days only after the child is born according to Imam Muhammad and Imam Yousaf. However, there was no option for such denial after elapsing of the specified time period.
DNA Evidence in Sexual Offences

In the modern times the use of DNA evidence has gained vital importance especially to decide the cases involving sexual violence. It is very important to have a rape victim medically examined immediately but in Pakistan in the cities there are few hospitals in the nearby that offer the facility of the medico-legal examinations but in the rural areas one may have to travel more than 50km to be examined. Along with the problem of the availability of the female doctors and hospitals in the nearby area there are other social issues curtailing the immediate examination and most of the victims of rape cases get examined after 72 hours owing to social pressure, fear of humiliation, mocking attitude of police officers and shame (Hassan et.al, 2007). Moreover, MLO or CMO who are legally authorized to examine the patient work inefficiently and allow the untrained paramedical staff to perform the task on their behalf. This leads to contradictions between police reports and medico-legal documents. In such cases forensic interview plays significant role in identifying biological fluid on the submitted evidence. (Scherer S., Hansen SH & Lynnerup N., 2014)

The initiation of DNA analysis at PFSA has proved revolutionary in absolving the innocent and also in finding the real criminal. In the case of Ali Haider alias papu v Jameel Hussain and others [2021] PLD 362, the punishments decided by the trial court, including death penalty, were upheld. The DNA test reports of the samples from the deceased’s body and dress and the accused ones supported the court to decide that case. The DNA test report also served for corroborating the victim’s evidence to help the High Court dismiss the appeal of the accused in the case of Muhammad Mushtaq v The State and others [2020] M L D 588 and finalize the case to punish the culprit. The clothes of both the victim and the culprit provided the necessary evidence. The observation report of the lady Medical Officer was also crucially significant for this case. DNA profiling has been quite significant for the recent famous case of Zainab rape and murder. More than a thousand of the males of that locality were tested for DNA match and on the basis of match Imran Ali – the culprit was identified. He was condemned to death by the court and was executed in 2019.

DNA aided the search for truth by exonerating the innocent. In Gulzar Shah v The State [2021] M L D 169 wherein the accused was put on trial for raping the minor daughter of the complainant. Record showed that the DNA sample did not match and the victim’s blood was not found on the accused or his clothes which would have been expected if he had raped her. Moreover the victim was heavily bleeding as accused therefore the blood should have been found on his clothes as he was immediately taken into custody before the FIR was lodged---Said fact raised doubt that the accused was the rapist. A similar decision was declared in the case of Muhammad Asif and another v State and another 2018 [M L D] 684, wherein the DNA test report was negative which helped the court to decide the case while acquitting the accused. The female Medical Officer who did postmortem of the deceased stated that she could not say that accused persons had committed sexual intercourse with the deceased as it was evident from the DNA report.

Conclusion
In this paper we have seen that Supreme Court holds DNA evidence as a gold standard to establish the identity of an accused on one hand and rejects negative DNA as evidence in certain cases where penetration has been proved in medico-legal examination. Individual's self-respect and conformity with social norms is also considered while making a judgment. The scientific nature of the state-of-the-art equipment/procedures for collection of forensic evidences makes it indispensable for the personnel in the investigative departments/agencies working for dispensing justice to the public to have basic training regarding the prescribed procedures/protocols. The training may be continually arranged for making improvements while utilizing the advancements in the relevant scientific and technological fields. It is also need of the hour to progressively interpret the Article 164 and 59 of QSO, and Article 510 of Criminal Procedure Code 1898. Furthermore, section 510 of Criminal Procedure Code 1898 needs to be revised for quick dispensation of justice as currently there is no recognized definition of the word "Chemical Examiner". It may be necessarily required from the relevant personnel to use SAECKs Kits while following the PFSA guidelines for collecting, preserving and transporting samples of forensic evidence in sexual assault cases. The government may ensure provision of SAECKs Kits to the concerned personnel to send DNA samples to forensic laboratory without any delay to minimize any the probability of contamination of the evidence. There is a dire need to educate the specialized personnel from medical and legal field to ensure the effective use of DNA technology. Moreover there is a need to enhance the forensic facilities to expedite the testing process and to avoid the queued delay. Furthermore, a National authority is required to regulate all the forensic laboratories that can set rules and standards to maintain uniformity and enhance the validity of the testing system. As discussed earlier social pressure and humiliation is among the major factors of delayed medical examination therefore such measures should be taken that the privacy/identity of the victim should be hidden from the general public. The delay in medical examination can lead to false results and at the same time the suffering of the victim gets manifold when they have to travel from place to place for their legal documentation. To avoid such unneeded stress for the victim it is recommended that Special centers must be established which cater all the requirements at one place and the traumatized victim does not have to travel from place to place for police reporting or psychiatric management. There is no value of DNA evidence in a criminal investigation if it is not appropriately recognized, documented, accumulated and stored. The DNA evidence may be justly made use of for the cause of ensuring justice only if all the prescribed protocols for it are meticulously observed.
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