

THE LEGALITES LEXSCRIPTA

ISSN 3108-2416 (ONLINE)

Editor-in-Chief: - Prof. (Dr.) Aryendu Dwivedi

Volume II Issue I (Jan-March 2026) Page No.: - 458 to 472

DELAY IN DNA PROFILING OR DELAY IN DISTRIBUTION? A DATA ANALYSIS OF UNEVEN FORENSIC SAMPLE ALLOCATION IN RAPE AND POCSO CASES IN INDIA

- Geethanjale L¹, Dr. Ajitha E²

ANALYSIS OF CASES DEALING WITH DNA AS EVIDENCE:

The DNA samples collected from the place of occurrence of the crime or from the victim and the suspect should be examined to know if the crime has been committed or not and if the suspect is the accused or not. To arrive at this conclusion the samples are sent to the Forensic Science Laboratory for obtaining DNA profiles from the samples collected and for comparing the DNA profiles obtained from the suspect and victim to see if both are matching. The main objective of a Forensic Science Laboratory is to analytical support in criminal cases to the investigation agencies and the Court. With the increasing number of crime rates, thousands of DNA cases are yet to be examined. One of the reasons is the lack of infrastructure of the Central and State Forensic Science Laboratories. The Indian Government has taken it initiative in establishing the first advanced forensic DNA laboratory with all the advanced and latest DNA profiling tools at the Central Forensic Science Laboratory, Chandigarh. The foundation for this development was laid by Srimati. Maneka Gandhi, the Former Honourable Minister of Women and Child Development.³

¹ Research Scholar, Department of Law, School of Law, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, Tamil Nadu – 600 062.

² Associate Professor, Department of Law, School of Law, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, Tamil Nadu – 600 062.

³ State of the art Forensic DNA Laboratory, Central Forensic Science Laboratory, Chandigarh <[http://cfslchandigarh.gov.in/\(S\(3s3kbbdm5ktj0dytrbwm4r1r\)\)/Uploads/Media/Original/20191220154354_DNA%20Brochure%20FN.pdf](http://cfslchandigarh.gov.in/(S(3s3kbbdm5ktj0dytrbwm4r1r))/Uploads/Media/Original/20191220154354_DNA%20Brochure%20FN.pdf)> accessed 14 February 2023.

DNA profiling is still in its earliest stage in India. Based on the principle of inheritance, an individual can be identified at the molecular level. By identifying the criminal, DNA profiling done by the Forensic Science Laboratories help the investigation agencies in finding out the offender and the Court in arriving at a decision to punish the alleged accused.⁴ Works of literature are available pinpointing the lacunae in DNA as evidence, but looking into the reason for such lacunae has not been done. To learn about the defects in DNA examination, one should know how many of the cases decided by the Indian Courts have employed DNA tests.

Research question:

How many rape and POCSO cases have used DNA testing in the process investigation?

Data Source:

The Law database – Manupatra has been used to collect cases under the offences of rape and POCSO. The keyword used is “DNA test”; the results were then searched for “Rape” for analyzing the cases regarding rape and “POCSO” for analyzing the cases under the Protection of Children from Sexual Offences (POCSO) Act, 2012 decided by the Supreme Court of India and the High Courts in India. The obtained results are documented pictographically as below:

⁴ ibid.

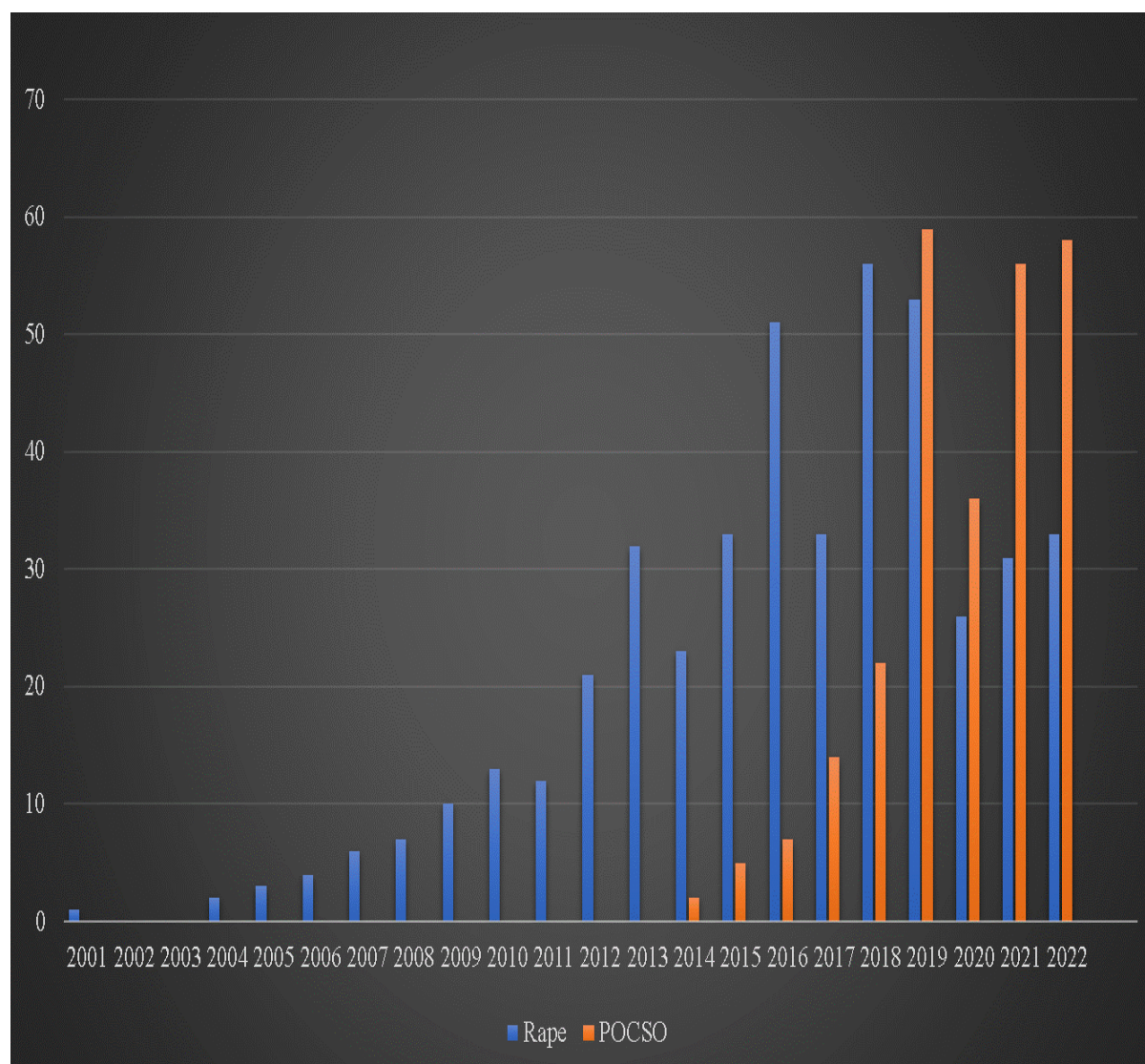


Figure 1: Cases decided by the Supreme Court and High Courts of India, under rape and POCSO from 2001 to 2022

Figure 1 depicts the number of rape and POCSO cases from 2001 to 2022; thus, all the cases are captured from the initial phase to the year 2022. These cases have been analysed to find out how many employed DNA tests and how many did not. They have been divided under the offences under rape and the Protection of Children from Sexual Offences Act, 2012. Under the heading rape, the cases were further classified into rape, rape and murder, rape of a victim under the age of eighteen, and rape and murder of the victim under the age of eighteen. The subordinate heading of rape of victims under the age of eighteen was given because the Protection of Children from Sexual Offences Act, 2012 was implemented in the year 2012 only. The rape and rape with the murder of victims below the age of eighteen before the POCSO Act, 2012 implementation is collected under this heading. Similarly, under the heading of

offence under the Protection of Children from Sexual Offences Act, 2012, the cases were further classified into POCSO, POCSO and murder. In total, 702 cases have been analysed to learn about the trend in which DNA test was employed.

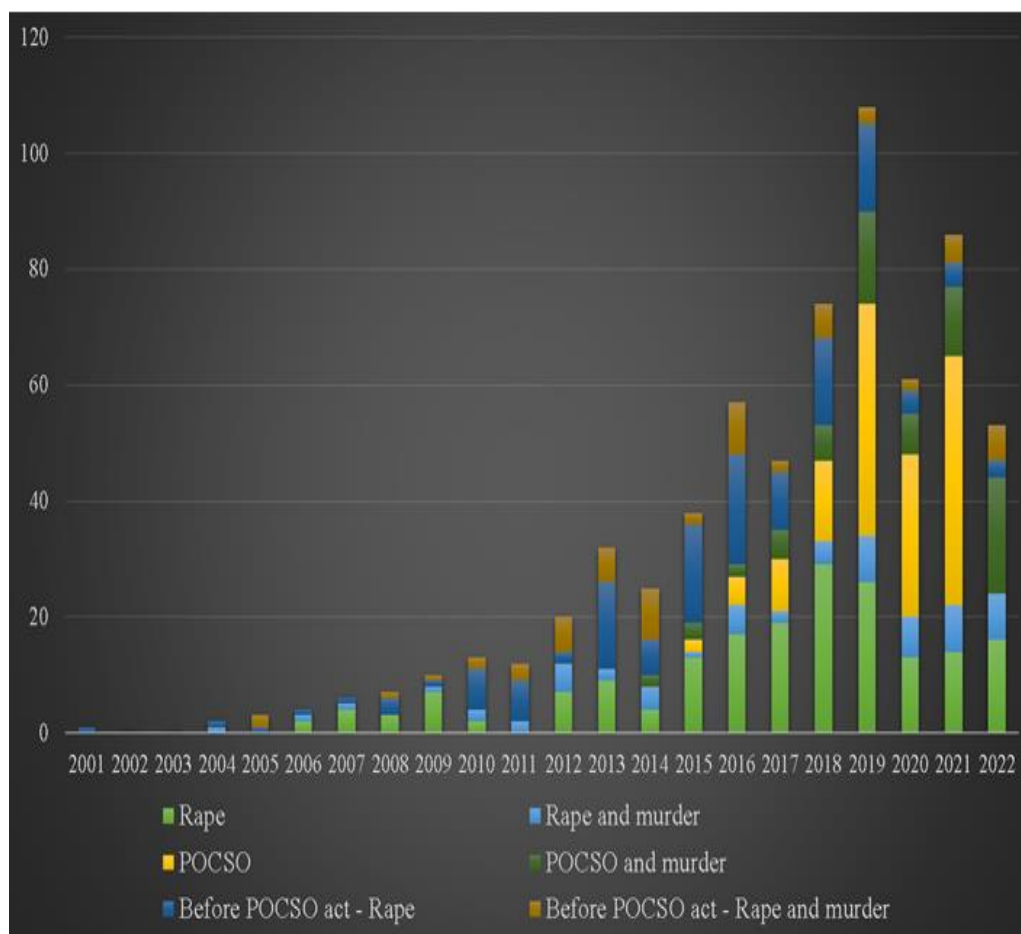


Figure 2: Cases decided by the Supreme Court and High Courts of India under rape, rape and murder, POCSO, POCSO, and murder, rape before the implementation of the POCSO Act, 2012 and rape with murder before the implementation of the POCSO Act, 2012

From the case analysis, the reason for not conducting DNA test is not always the authorities but the parties themselves. The accused or the victim might refuse to submit themselves for the collection of samples for DNA examination.⁵ the Investigation Officers collect the samples in almost all cases except for a few. The sample collection is done as per the procedure in a few

⁵ Chaitanya Barman v. The State of West Bengal and Others MANU/WB/1133/2021;

Swapnan Mondal v. The State; MANU/WB/0480/2021.

cases, like taking a vaginal swab using a match stick.⁶ Once collected, the storage of the samples should be proper to avoid contamination. But the investigation officers use bags and cardboard boxes found in the vicinity.⁷ During the collection of samples, the investigation officer should also look for samples from the crime scene. According to Locard's exchange principle, "Whenever two objects come into contact, an exchange of material occurs between them".⁸ Thus it is very important for the investigation officers to collect not only the samples of the accused and victim but also the other evidence available at the crime scene.

After collecting the sample from the crime scene and from the victim and accused, the samples so obtained should be sent for DNA examination to prove the crime. In the case of *Chhattisgarh and Others. v. Lochan Shrivastava*⁹, the semen sample from the accused was collected, but the investigation officer did not send the sample to the Forensic Science Laboratory for DNA examination.

FORENSIC SCIENCE LABORATORY:

India has seven forensic laboratories one under the Central Bureau of Investigation at New Delhi and six Central Forensic Laboratories in Kolkata, Pune, Chandigarh, Bhopal, Guwahati and Hyderabad.¹⁰ These seven laboratories have their own territorial limit in receiving samples.

Serial number	Central Forensic Science Laboratories	Jurisdiction
1	Kolkata	Orissa, Bihar, Jharkhand, West Bengal, Andaman and Nicobar Islands

⁶ *Ramchander v. State of Uttarakhand*; MANU/UC/0747/2019.

⁷ *Manoharan v. State*; MANU/SC/1526/2019.

⁸ Ewelina Mistek, Marisia A. Fikiet, Shelby R. Khandasammy, and Igor K. Lednev, "Toward Locard's Exchange Principle: Recent Developments in Forensic Trace Evidence Analysis" (2019) 91(1) *Analytical Chemistry* 637 <<https://njj.ojp.gov/library/publications/toward-locards-exchange-principle-recent-developments-forensic-trace-evidence>> accessed 2 April 2023.

⁹ MANU/CG/0829/2017.

¹⁰ Ministry of Home Affairs, <<https://www.mha.gov.in/MHA1/Par2017/pdfs/par2016-pdfs/rs-100816/2686%20E.pdf>> accessed 18 March 2023.

2	Pune	Maharashtra, Gujarat, Goa, Daman and Diu, Dadar and Nagar Haveli
3	Chandigarh	Jammu and Kashmir, Punjab; Himachal Pradesh, Chandigarh (Union Territory), Uttarakhand, Delhi, Haryana
4	Bhopal	Madhya Pradesh, Uttar Pradesh, Rajasthan, Chattisgarh
5	Guwahati	Assam, Manipur, Mizoram, Meghalaya, Sikkim, Nagaland, Arunachal Pradesh
6	Hyderabad	Andhra Pradesh, Tamil Nadu, Kerala, Lakshadweep, Karnataka, Puducherry, Tripura

The jurisdiction of these laboratories are as follows:

Table 1: Jurisdiction of different Forensic Science Laboratories

Source: Ministry of Home Affairs, Government of India

The increase in crime rate and deposition of numerous samples in forensic Science Laboratories is resulting in the accumulation of samples without being tested or delay in preparation of the DNA reports. The burdening of forensic science laboratories with so many cases is evidence from their case statistics. Receiving samples every day for analysis from the investigation agency and then to amplify the DNA profile and coming to a conclusion about the profiles submitted. Below is the case statistics of the Forensic Science Laboratory, Delhi since 1995 with respect of biological samples, number of cases received in total and the number of cases received under the biology and DNA division of the lab and the number of cases pending in total and the number of cases pending in the department of biology and DNA alone.

Serial number	Year	Number of cases received		Number of cases pending	
		Total	Biology and DNA	Total	Biology and DNA

1	1995	1198	617	697	410
2	1996	1673	866	1371	864
3	1997	1812	996	2081	1470
4	1998	1629	582	1863	1107
5	1999	2325	784	1072	392
6	2000	3336	991	1135	180
7	2001	3832	907	1618	48
8	2002	3482	888	1736	136
9	2003	2893	847	1641	304
10	2004	3863	911	2125	362
11	2005	5823	1277	3688	483
12	2006	4653	1161	3716	463
13	2007	5025	1364	3497	639
14	2008	5282	1471	4544	770
15	2009	5732	1530	6406	1041
16	2010	6090	1688	7427	1074
17	2011	8219	1744	7950	679
18	2012	9339	2424	8965	1203
19	2013	10011	2981	9720	2647
20	2014	9868	3272	8637	3840
21	2015	9266	2872	8992	4975
22	2016	11754	2877	7517	3555
23	2017	11903	2725	4353	967

24	2018	13780	3034	5641	190
----	------	-------	------	------	-----

Table 2: Cases pending in the Forensic Science Laboratory, Delhi (1995-2018)

Source: Case Statistics - Forensic Science Laboratory, Delhi

From the above data it can be seen that the number is cases in which DNA examination is pending piles up to thousands every year. This is the reason for the delay in submission of reports of the forensic science laboratories in the Court. Even though the samples are correctly collected, examining such samples by the Forensic Science Laboratory takes time. These delays might be because of the lack of manpower, monitoring agency to track the passage of samples, and infrastructure. These reasons came into light when in cases like the State, by T.N. Pura Police Station, represented by the State Public Prosecutor and Another¹¹, the samples were received by the Forensic Science Laboratory on 01.03.2021; the duration of the examination of the sample is from 29.05.2021 to 27.04.2022, which is almost a year. A writ was filed in the Karnataka High Court in 2020, by a Single Judge and was heard before the Chief Justice of the Karnataka High Court. Few of the reliefs sought among the other in the writ are as follows:

- (i) To expedite the examination of samples and production of final reports by the Forensic Laboratories by issuing directions;
- (ii) To monitor the passage of samples and submission of report by establishing a proper monitoring system;
- (iii) To fill the vacancies in the forensic science laboratories;
- (iv) To direct the State Government to develop proper infrastructure and advanced equipment in the forensic science laboratories;¹²

A report was submitted on the number of cases pending examination in the forensic science laboratories in Karnataka; in total there were 6,994 cases and 35,738 articles pending examination out of which 676 cases and 5338 articles were from the biology department. When the number of cases were broken up according to the nature of offence, 130 cases under the POCSO act and 95 rape cases were not examined. It can be seen that the Director of Forensic

¹¹ 2022 SCC OnLine Kar 1542.

¹² High Court of Karnataka V. The State of Karnataka and Others, Writ Petition No. 2739 of 2021 (GM-RES); MANU/KA/3553/2021.

Science Laboratory has filed the average time taken for completion of analysis of different samples and they were as follows:

- a) Biology – 1 month;
- b) Chemistry – 1 year;
- c) Narcotics – 1 year;
- d) Computer Forensics – 1 and a half year;
- e) Mobile Forensics – 1 and a half year;
- f) Audio – Video Forensics – 1 and a half year;
- g) DNA – 1 and a half year;
- h) Fire Arms - 4 months;
- i) Physics – 1 year;
- j) Photography – 15 days;
- k) Forensic Psychology – 15 days;
- l) Questioned Documents – 1 and a half year;
- m) Toxicology – 3 months.

When enquired about the long time taken for the examination of samples which took more than 4 months; it was stated in the affidavit by the officers of the State that it is due to the lack of manpower and lack of equipment. The number of posts vacant for each position in the Forensic Science laboratories in Karnataka were reported as follows:

- a) Joint Director – 3 of 3 posts;
- b) Deputy Director – 10 of 15 posts;
- c) Assistant Director – 25 of 46 posts;
- d) Senior Scientific Officer – 39 of 88 posts;
- e) Scientific Officer – 138 of 186 posts;

The above said posts were directed to be filled by the State Government within 4 months of the date of the judgment. The sections of the Forensic Science Laboratories were also directed by the Court to be operationalized within a year from the date of judgment.¹³ Thus, the infrastructure and manpower of the forensic science laboratory place an important role in

¹³ Naveen Kumar V. State of Karnataka and Others, Criminal Petition No. 7019 of 2020, High Court of Karnataka at Bengaluru.

producing the DNA reports on time without any delay. With such delay the victim and/or the family of the victim are subjected to trauma over a long period of time.¹⁴

In the writ of High Court of Karnataka V. The State of Karnataka and Others¹⁵, the District Scientific Aid units in each district with one senior scientific officer, two scientific officers and one lab attender were directed to be operationalized within a period of six months from the date of judgment. The Scene of Crime Officer to be appointed in all the police stations in the State of Karnataka and such appointment was directed to be made in six months from the date of judgement.¹⁶ If all the States undertake such actions, the scene of crime officer will always be available to visit the crime scene and she/he has the knowledge and training about collection, preservation and transportation of DNA samples and the District Scientific Aid units in each district will assist the Forensic Science Laboratories in the regional level to complete the examination of samples and production of report in the Court without any delay.

According to the Report of the Comptroller General of India on General, Social and Economic Sectors for the year ended 31 March 2018,¹⁷ the status of the mobile forensic vans were recorded in the test districts. The test districts in which the mobile forensic vans operated were in Ranchi, Hazaribag, Deoghar, Godda, Koderma, East Singhbhum and Dhanbad. Out of these seven districts only in East Singhbhum and in Dhanbad the mobile forensic vans were operational. The other vans had no active kits and were not operating. The mobile forensic units which were operating also did not have active kits. The kits in the operating units were expired. The vans were also used for official works.¹⁸

Apart from the manpower and infrastructure there are other reasons for the delay in submission or the failure to submit the DNA report. In the case of Chottu v. State of U.P.,¹⁹ the Court directed the undergarment of the alleged accused and the vaginal smear and slides of the

¹⁴ High Court of Karnataka V. The State of Karnataka and Others, Writ Petition No. 2739 of 2021 (GM-RES); MANU/KA/3553/2021.

¹⁵ Writ Petition No. 2739 of 2021 (GM-RES); MANU/KA/3553/2021.

¹⁶ High Court of Karnataka V. The State of Karnataka and Others, Writ Petition No. 2739 of 2021 (GM-RES); MANU/KA/3553/2021.

¹⁷ <https://cag.gov.in/uploads/download_audit_report/2017/Report%20of%202020%20GSES%202017-18,%20Jharkhand,%20Eng-05f6c7ef871cbb3.88824404.pdf> accessed 1 April 2023.

¹⁸ Report of the Comptroller General of India on General, Social and Economic Sectors for the year 2018, <https://cag.gov.in/uploads/download_audit_report/2017/Report%20of%202020%20GSES%202017-18,%20Jharkhand,%20Eng-05f6c7ef871cbb3.88824404.pdf> accessed 1 April 2023.

¹⁹ MANU/UP/1089/2013.

deceased to be examined. The Forensic Science Laboratory reported to the Court as the slides have been collected before three years, the DNA profile could not be generated. Both the prosecution and the investigation agency was negligent in sending the samples in this case, they should have got the samples examined at the earliest. This is because the DNA evidence is a valuable one to prove the guilt of the accused.

At times, the DNA profile generated from the samples of the victim cannot be compared with the DNA profile generated from the accused. This is because of the inability to generate a DNA profile from the sample of the accused. Only in rare cases is a second Forensic Science Laboratory test done by collecting fresh samples from the accused. In one such case²⁰, the first Forensic Science Laboratory report stated that the DNA profile could not be generated from the sample of the accused; a second test was ordered. The second test resulted in the matching of DNA profiles generated from the victim's underwear and the accused's blood sample.

Instances of samples not being examined due to the non-availability of chemicals for performing DNA analysis²¹ shows the state of the Forensic Science Laboratories in India. At times, the Forensic Science Laboratory cannot amplify the DNA from the sample due to the putrefaction of the sample collected. In the case of Mahabir Mehto v. State²², the victim was a minor and became pregnant because of the rape committed against her by the alleged accused. The victim delivered the child, and a sample of the child was taken. The sample obtained from the baby was putrefied, and the Forensic Science Laboratory was not able to conduct the DNA test. At this stage, the child was already given for adoption, so a fresh sample from the child could not be obtained. This is the reason why extra care should be taken in collecting, storing and transporting the samples. The examination of the samples for DNA profile is an important link to connect the alleged accused or suspect with the crime. The examination and the report after the examination should be filed on time to prove the guilt of the accused. If the report is submitted after the passing of orders by the Court there is no use. In the case of State of U.P. v. Putai and Others²³, the DNA examination report was filed after passing of orders by the trial Court.

²⁰ Mohd Azizul Versus State; 2022 SCC OnLine Del 2425.

²¹ Ramu Tanti v. The State of Assam and Others; MANU/GH/0514/2021.

²² MANU/DE/1881/2019.

²³ MANU/UP/3561/2018.

To help in expediting the process of DNA examination, the allied Forensic Science Laboratories like the Centre for DNA Fingerprinting and Diagnostics, Hyderabad are established. In the reporting year of 1st April 2021 to 31st March 2022, the Centre for DNA Fingerprinting and Diagnostics has examined the following types of cases:

- a) Identity of Deceased – 11;
- b) Paternity or Maternity – 16;
- c) Biological relationship – 20;
- d) Rape – 3;

In total 50 cases comprising of 642 exhibits were received for DNA examination in the reported year and Telangana State has forwarded the highest number of cases. The Centre for DNA Fingerprinting and Diagnostics is like other forensic science laboratories. The samples are forwarded to the laboratory and the examination of the samples is done to arrive at the DNA profile comparison. After the DNA profile of the victim and clothes, swabs of the victim are generated it is compared with the DNA profile of the accused. In accordance to the matching of the DNA profile, the report is prepared either complete match or there is no match at all. The Centre for DNA Fingerprinting and Diagnostics is also burdened like other Forensic Science Laboratories. The samples are forwarded from different states like Telangana, Tamil Nadu, Uttar Pradesh, Chattisgarh, Andhra Pradesh, Goa, Karnataka, Maharashtra, Delhi, etc., The Centre for DNA Fingerprinting and Diagnostics also provides training to people who are involved in DNA fingerprinting. These training programs are funded by the State and Federal Government agencies. One of the objectives of the Centre for DNA fingerprinting and diagnostics is to develop a DNA marker for different sets of the population.²⁴

From the analyzing the cases in the law database – “Manupatra”, the number of cases in which DNA test was conducted and the number of cases in which the DNA test was not conducted from 2001 to 2022 under the offences of rape and POCSO have been examined and the same has been represented herewith:

²⁴ Annual Report April 2021 to March 2022, Centre for DNA Fingerprinting and Diagnostics, Hyderabad
<http://www.cdfd.org.in/images/English_Annual_Report_2021_2022.pdf> accessed 1 April 2023.

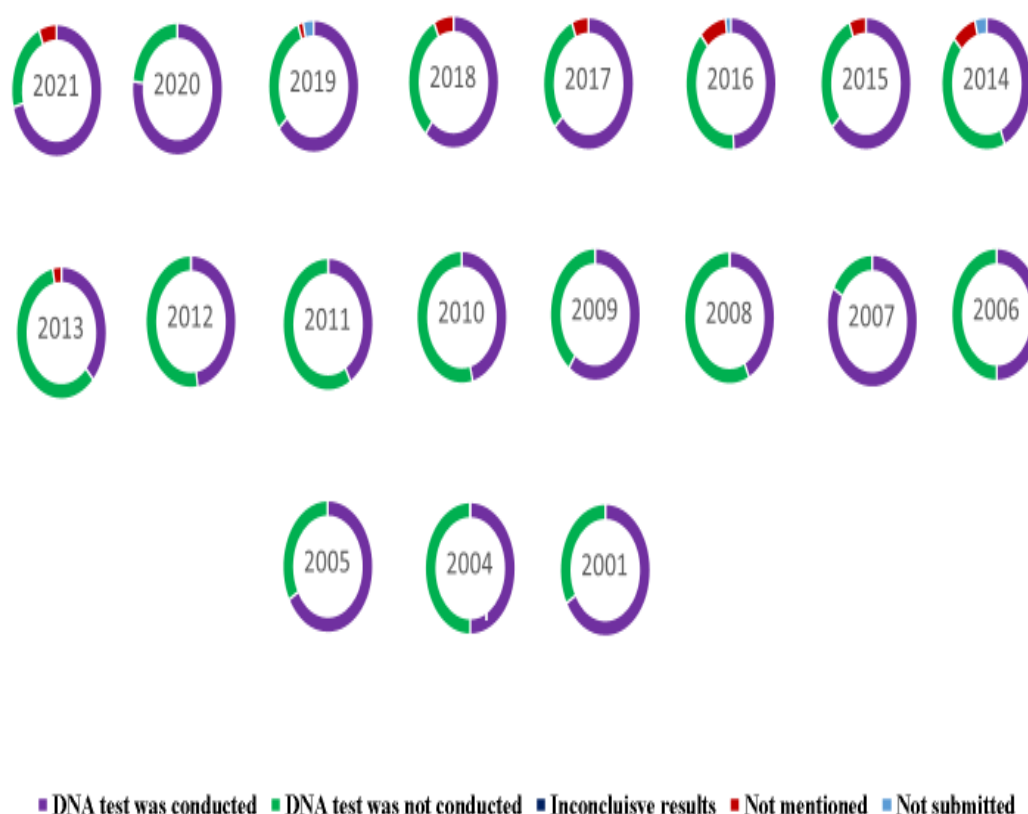


Figure 3: Representation of examination of DNA in Rape cases from 2001 to 2022

Figure 5 shows that the number of rape cases decided by the Supreme Court and High Courts of India, in which DNA test has been conducted has significantly increased from 2001 to 2022. Still, there are few cases in which DNA test is not conducted. It is evident through the analysis that the process of implementing DNA tests is gradual. In some cases, the DNA reports were not mentioned, and, in some cases, the DNA reports were not submitted in the Court as they were against the case of the prosecution. It is for the Court to decide upon the case and for which all the available evidence should be produced before the Court. The DNA report or the expert or the medical officer testifying is neither a prosecution witness nor a defence witness. It frequently appears that these evidences are submitted through prosecution side, which does not give them the authority to discard an evidence from being submitted before the Court²⁵.

²⁵ Jaising P Modi (n 40) 46.

The Protection of Children from Sexual Offences Act, 2012 was brought to punish the offenders who committed rape upon victims under the age of eighteen. The DNA examination in POCSO cases becomes pressing to get justice for the child against whom the penetrative sexual assault is committed. From the case analysis, cases under the POCSO Act, 2012 have been categorized as follows to study the trend as to in how many cases, the DNA examination is done and in how many cases it not done; if done is the report submitted to the Court or is it on record. The following was the trend observed in analyzing the cases under the POCSO Act, 2012 from the year of 2012 to 2022.

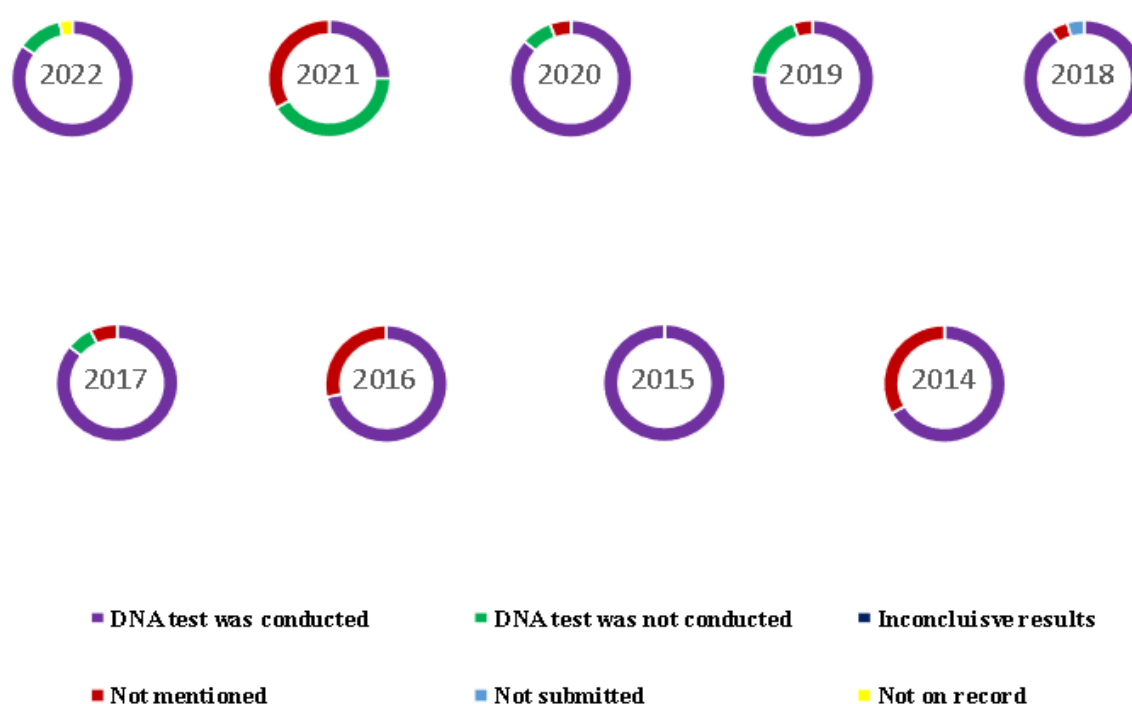


Figure 4: Representation of examination of DNA in POCSO cases from 2012 to 2022

From Figure 6, it can be seen that the number of POCSO cases decided by the Supreme Court and High Courts of India, in which the DNA examination is conducted is increasing with passage of time. Sometimes, these DNA tests are not conducted because the samples have not been collected in all the cases. In a few cases, the DNA samples cannot be collected. For example, in the case of Paramasivam v. The Inspector of Police Station, Mettupalayam²⁶, the victim became pregnant as a result of the alleged crime of rape committed against the victim,

²⁶ (27.10.2022 - MADHC) : MANU/TN/7849/2022.

she became pregnant. When the mother of the victim came to know about the pregnancy, she fed her daughter who was pregnant with pills to abort the foetus. Her attempt to abort the foetus by administering pills available in the local medical shop resulted in profuse bleeding and severe lower abdominal pain to the victim. Thus, when rushed to the hospital, treatment was given and statement of the victim was recorded. But the medical officer who examined the victim did not collect any samples. When cross-examined, the medical officer stated that from the discharged blood DNA test to determine the paternity of the child cannot be conducted. For paternity test, the foetus should at the least be above 5 months. In this case, the foetus was only 2 months old. Thus, DNA test might not be conducted not only because of the delay in the part of the forensic science laboratories but also because of other reasons as stated above.

CONCLUSION:

The paper has thus analyzed the aims of the Forensic Science Laboratories, the reasons for the delay in the submission of DNA report to the Court like the lack of manpower and infrastructure, the number of posts vacant, the number of cases pending for examination of DNA and the aid of District Scientific Aid, Scene of Crime Officer and the Centre for DNA Fingerprinting and Diagnostics, Hyderabad. The case analysis from the Law database to see in how many cases decided in the Supreme Court and High Courts of India, the DNA examination have been conducted and in how many cases it was not conducted, how many cases the reports were not submitted and in how many cases the results of such examination was inconclusive.