



# India - National DNA offender database as tool for criminal surveillance: Need for public debate!!!

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## Keywords:

DNA database, India, National, public debate

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Received: 04 March 2018;

Accepted: 25 April 2018

Doi: 15713/ins.jmrps.130

## Abstract

National DNA Databases are well established in many countries across the world, and their applications have expanded into controversial areas. The UK was the pioneer to start with National DNA Database since 1995, and the database was originally intended for sex offenders which was later extended to any criminal offender. Major motive of introducing forensic DNA databases was to provide investigating and leads to solve crime as part of criminal justice law enforcement purposes. Ethical, technical, and legal standards of DNA databases are set differently across each country. In India, Union Government is working on legislations to build up DNA database for offenders. Therefore, proper strategic planning and more debates on public opinion to address these foreseen challenges are the prime of the time in Indian context to develop an efficient system without impingement on policy and human right issues.

## Introduction

Forensic genetics is gaining importance currently by incorporating the latest genetic knowledge and its technical applications in field of law enforcement. DNA is a useful tool to identify an individual since everyone possesses a unique genetic code unless they have an identical twin. Sir Alec Jeffrey was the pioneer to introduce DNA fingerprinting, and since then, DNA was used in criminal investigations helping to convict the criminals and also seen helpful to release the innocent. This unique string of chemical letters in persons' DNA can act as a barcode to identify each convict making DNA tool specific but it should be used with caution in crime scenes. Science and technology have taken up the forefront of biological identifications with the use of various biometric systems which include fingerprints, iris scans, digital photographs, and DNA profiles. Unlike other systems of biometrics like iris scans and digital photographs, DNA can be kept wherever person goes and is helpful in tracking the individuals in crime scene or meeting places. DNA is also superior in biological identification compared to fingerprints since it acts as a source of biological information on persons' health or physical characteristics and is also shared with relatives and therefore can be used to identify their parents, children, or perhaps distant relatives which helps application of forensic genetics in national criminal surveillance.<sup>[1,2]</sup>

There has been less public debate about the use of DNA data as criminal surveillance even though genetic testing, collection,

storage, and use of DNA data for medical research have been debated worldwide.

## National Offender DNA Database in Criminal Surveillance - Double-Edged Sword!!!

A National DNA Database is basically a government-based database of DNA profiles which was used by law enforcement agencies to identify suspects of crimes. This also consists of active reference sample databases which actively collect DNA from convicted or arrested offenders in statute or regulation.<sup>[1-3]</sup> DNA profiles were stored in nationwide database and were routinely compared against evidence of crime.<sup>[4,5]</sup> DNA database is basically a computer-based record system which actively records the files on DNA details. Two different sources exist, which includes population DNA database and offender DNA database profiles; and the offender data source was seen helpful for identifying the related crime links and also to collect necessary details of DNA samples. This happens when newly entered crime data were collected and entered into respective crime scene DNA profile. Therefore, large collections of DNA profiles were used to solve crimes by matching samples from convicted felons, used to expose the possible suspects, and also seen helpful to prove the innocence of convicted felons.<sup>[1-3]</sup>

DNA database can also act as a double-edged sword with two major controversial areas related to its application like

in the case of arrestees (who are defined as those who are arrested but not convicted) and also in familial searching since DNA database can partially link details on close relatives and therefore links crimes to family members of the suspects.<sup>[4,5]</sup>

### Active reference sample databases

These are databases which actively collect DNA from convicted or arrested offenders, defined in statute or regulation. DNA profiles stored in a nationwide database were routinely compared against crime scene profiles. Nearly around 30 of approximately 190 countries in the world have reached this level. Role of decision makers in active reference sample databases plays an integral role since it is controlled mainly by the top government officials and legislative entities. Furthermore, in addition to crime control, they also overlook privacy and political issues and support of the people.<sup>[4,5]</sup>

### National DNA Database - A Glimpse through International Scenario

The world has adopted National DNA Database as an effective tool, with currently having nearly 54 countries implementing the system and across which there was collection of nearly 70 million offender samples which is expected to grow in near future.<sup>[4]</sup> As per Tim Schilberg national offender sample size statistics in 2014, the size of DNA databases varies across countries which ranges from countries with largest DNA database size (crossing over 1 million) such as China, United States, United Kingdom (UK), and France to lowest database sized countries (below 50,00,000 or less) such as UAE, Kuwait, Slovenia, Bahrain, Oman, and Portugal. China accounts for the world's largest database. It is seen that following international scenario across different countries leaves us with a deep understanding of the most ideal and efficient requisites for setting realistic and efficient goals for those countries who have not yet implemented it or has begun thinking it as a policy or those who are eagerly waiting to pass an enactment so that this tool can be used efficiently for the help of national security.<sup>[5]</sup>

### UK

UK was the first pioneer country to start with the implementation of National DNA Database system since 1995, after the discovery of DNA profiling by Dr. Alec Jeffrey. In the UK, DNA database size was nearly more than 6.9 million which represents nearly 9% of country's population as of 2012. In March 2009, the national database had around 3,50,033 crime scene DNA profiles added, and during this period, one or more subject profiles were matched with 40,687 crime scene profiles. All these matches were not convictions, but it was seen that nearly quarter of the matches lead to conviction. In England and Wales, anyone arrested on suspicion of recordable offense must submit DNA sample. This DNA sample profile was stored in DNA database as permanent record.<sup>[4,5]</sup>

It was seen that, as per the Criminal Justice and Police Act 2001, the law allowed retention of innocent people's DNA records up to 100 years of age. In 2008, European Court ruled UK retention regime unlawful on the basis of breach of privacy. As a result, Protection Freedom Act was later adopted in May 2012 which removed about 1 million records from the database in 2013. Among the problems of UK DNA database expansion, it was seen lately that expansion did not help to solve more crimes, also increased the risk of miscarriages of justice – like false matches or errors and also collecting DNA routinely on arrest and keeping the data for indefinite time, reduced public trust on policing which made a decision against the UK government by the European court which resulted in removing permanently the above one million records from the DNA database resulting in perseverance of privacy and confidentiality.<sup>[4,5]</sup>

### United states of america

United States accounts for the second largest National DNA Database in the world after China as of 2014 data. FBI organized combined DNA index system (CODIS) database called CODIS which holds nearly more than 12 million records as of 2012.<sup>[4-6]</sup> CODIS has multiple levels where DNA profiles were stored and searched at local level, state level, and national level. Data stored at the national level are kept in the national DNA index system, and DNA analysts use CODIS to search DNA profiles obtained from crime scenes and from convicted offenders and arrestees.<sup>[5]</sup>

In the United States, the legislative focus resulted in changing laws from convicted offenders to arrestees. This law allowed for profile destruction of the person if not convicted compared to UK scenario making it more publicly accepted. At present, there are 49 states which followed a collection of DNA from arrestees when compared to three states in 2004. Therefore, the US country approach was seen favorable and did not show any shortcomings when compared to the UK system which directed DNA database expansion.<sup>[4-6]</sup>

### South africa

This country prioritized National DNA Database implementation due to strong legislative will. Sexual assault was a serious burden to nation, and this country was recorded with highest rapes with a woman being raped in every 17 s posing a huge threat to the nation and revealing the magnitude of the problem. As a result, to protect the innocent, President Zuma signed the DNA bill in 2014.<sup>[4,5]</sup>

### Portugal

Portugal was one among the countries with the low size of National level DNA database. The Government of Portugal in 2005 proposed DNA database containing samples of all inhabitants. Despite threats from other countries, this country not seemed to be alarmed of expansion of its database to all citizens, thereby having a large population-based DNA database system.<sup>[3]</sup>

### China - "Largest in offender DNA database"

China accounts to be the largest offender database in the world approaching nearly 25 million samples. This country has incorporated nearly 429 Forensic DNA labs across the country for collection of DNA samples and also to accomplish its futuristic goals on quality and standardization. China has also planned to expand the existing National DNA Database to include missing persons' program which seemed impressive in criminal surveillance. China has successfully identified and rescued 2455 trafficked children through the use of its DNA database. Therefore, this country plays a proactive role in taking protective steps in maintaining national security as a top priority and expanding the current criminal surveillance programs with proper political and legislative support.<sup>[4,7]</sup>

### Expected Explosive Growth of Offender DNA Database Programs

It was seen that, in the year 2000, nearly 6% of the world's population had passed and implemented offender DNA database legislation or policy initiatives with the UK and United States playing the pioneers in the field of DNA databases. By 2010, it was seen that nearly 30% of the world population had passed and implemented offender DNA database legislation or policy with major countries such as China, Germany, France, and Spain joining into the existing DNA database system. In 2015, a steady increase was expected in the growth of offender DNA database samples with the inclusion of nearly 60% of the world population, with more new countries planning to adopt appropriate DNA database legislation or policy. Largest countries with offender DNA database legislation or policy positioned to be passed in future include India, Brazil, Russia, and many Asian countries as of 2015 data. Largest countries have begun or will soon begin offender testing with countries like China holding nearly 20% of the world population. In future, India (17% of world population) and Japan (1.9% of world's population) are also expected to join hands with necessary legislative and policy initiatives for DNA offender database.<sup>[5,7]</sup>

### India - National Offender DNA Database??

With countries like China adopting the system and growing to one of major national offender DNA databases, it is not far for India to adopt the system of National offender DNA database by addressing strictly its legislative and privacy shortcomings.<sup>[4,5,7]</sup>

Currently, the Indian Union Government is working on new version of legislation to set up DNA database of offenders which allows collection and storage of DNA samples of accused for homicide, sexual assault, and rape. In 2007, Human DNA Profiling Bill Draft was prepared by the Department of Biotechnology with the center for DNA fingerprinting and diagnostics.<sup>[3,8]</sup>

At present, the Indian Government is set to introduce DNA Profiling Bill, done to improve the national security of the

country and also to expand its criminal surveillance data which is necessary for a country like India, vulnerable by facing a number of terrorist threats and day-to-day criminal attacks. Once Law, the government authority is authorized to collect large sensitive DNA data of citizens even if they are suspects of criminal cases which go against the violation of human rights. Law enforcement agencies like Central Bureau of Investigations (CBI) in India are pushing the government for the enactment of the bill.<sup>[3]</sup>

### Benefits and Challenges Foreseen

By adopting this system, it can solve crimes like homicide and rapes which are increasing at alarming rates in our country. In case of a number of suspects for crimes, DNA match helps to identify who was actually present in crime scene and also helps to exonerate the innocent. This system can also be made utilized for tracing or detecting terrorist links which help in criminal identification. DNA database system also helps in familial searching, and therefore bigger the data sets, the correlations becomes more feasible. It is seen that this system enhances detection of crime rates in countries like UK where rates were seen increasing from 26% to 40% after DNA samples were uploaded with national database.<sup>[1-5,9,10]</sup>

The foreseen challenges which were debated across various countries include breach of privacy and confidentiality which is done mainly by biological tagging where these data are unethically utilized to track individuals who have not committed crime or whose crime is an act of peaceful protest. Furthermore, these DNA databases were linked to computer records for personal demographic information such as name, ethnics, and track whereabouts which were against the freedom of human rights or human rights violation. It is seen that if anyone invades the National DNA Database system, the genetic information can be helpful to trace the individual and therefore is very crucial in case of terrorist groups or international hackers. Children or dependents separated from an adult for their own protection can be tracked with access to DNA offender DNA database.<sup>[1-5,9]</sup>

### DNA Offender Database for India - Need for Public Dwebate!!!

Rape is one of the highest crimes and is recorded as the fourth most common crime against women with rape rate of 2 per lakh in India as per National Crime Records Bureau; nearly 93 women are being raped in India every day making it a public and political concern.<sup>[11,12]</sup> Adopting the system seems essential and also is helpful in identification of real convicts in homicides and rape cases, useful in tracking offenders and applications in case of huge migrations within and across country, and useful in victim identification in mass disasters and terrorist link identification.<sup>[1,4,5]</sup>

Before adopting the system, India must also overlook the challenges faced by the system utilizing the different country experience. How huge should be the DNA database is important for our country which hold nearly 17% of world's population.

Cost-effectiveness is another challenge our country which needs to face. It is seen that adding one DNA profile to database costs nearly 30–40 pounds and storing one sample costs 1 pound per year as per the UK country experience. As per the US estimates, the cost of collecting and analyzing DNA samples is 40 US dollars (the US Department of Justice) and is seen to decrease as technology advances.<sup>[7,13]</sup> Indian DNA database proposal is unclear with which type of DNA profiling system to be included i.e, population DNA or offender DNA database and whether it has sufficient statistical power including methods to address individual privacy and confidentiality issues. Furthermore, DNA is not a foolproof since false matches happen at times by poor lab procedures. A study on public views on DNA database-related matters revealed that a more censorious attitude toward expansion of National DNA Database was correlated with age and education of the respondents. This brings to the need a deeper public awareness on the benefits and risks of DNA databases.<sup>[1,3,7,13-15]</sup>

Therefore, before adopting and implementing the system, a blueprint needs to be strategically planned and worked out to actually benefit our country's national security and also to help in eliminating these foreseen challenges. Recommendation on adopting US system of CODIS which is more decentralized can be applicable in Indian context along with legislative focus shifted to arrestees; along with profile destruction of the person if not convicted might get more public acceptance. Safeguards with high ethical, technical, and legal regulations are seen essential to prevent abuses and carriage of injustice without violation of human rights.<sup>[3,13]</sup>

## Conclusion

Therefore, DNA database can be used as an effective criminal surveillance tool, and there is an ongoing need for greater public and policy debate on passing and implementation of DNA database Bill with the protection of privacy and individual human rights. Currently with lack of global standards, this paper highlights the need for strategic planning and calls for community engagement and public debate for effective and efficient implementation of this system in our country.

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**How to cite this article:** Joy S, Bastian TS, Selvamani M, Abraham S. India - National DNA offender database as tool for criminal surveillance: Need for public debate!!!. *J Med Radiol Pathol Surg* 2018;5:11-14