

Legal and Ethical Implications of Genomics in India: An Overview

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ABSTRACT

Knowledge of the links between genetics and disease has expanded as a result of analyses of the genome, or full DNA sequence. Discerning the recent developments in the field of genomics, it could be said that within a few years, complete genomes rather than isolated portions will be used extensively in research due to anticipated advancements in "next-generation" DNA-sequencing technology. An in-depth understanding of the human genome, its relationship to diseases, and how it responds to treatments has huge potential for developments in preventive and personalized medicine. Besides the scientific advantages of genetic research, there are legal and ethical implications. Despite the expectation that genetic research data may and will be made anonymous, participants' identities can occasionally be revealed, which may warrant the application of relevant laws. Next-generation sequencing and data sharing are putting many legal safeguards for preserving research participants' privacy to the test. This study examines the ethical and legal concerns that must be solved for the mass genotyping of people to be both affordable and ethically acceptable. In this paper an effort has been made to find out the answers to questions like; are there any principles or guidelines to regulate, the research in genomics; how these researches could affect the rights to informed consent and privacy regarding the sequencing, testing, and disclosure of genomic data about identifiable individuals. Whether the existing laws and regulations for research are enough to address these issues.

Keywords: *Genomics, genome, law, privacy, ethics, consent, India*

Introduction

According to National Human Genome Research Institute, USA, Genomic research examines a person's entire genome, including how their genes communicate with one another and with their environment. The full set of DNA in an organism is referred to as its genome or in other words, the entirety of an organism's DNA is known as its genome, and DNA is the building block of the human body. [1] The human genome comprises over 3 billion DNA base pairs, or letters, and is present in almost every single cell of the body. In the human genome, an average of three proteins are encoded by each of the 20,000–25,000 estimated genes. A human cell's nucleus has 23 pairs of chromosomes, each of which contains a genome. [2] Genomic analysis is the study of all or part of the genetic or epigenetic sequence data of an organism in order to comprehend the structure and function of these sequences and of the resulting biological products. The focus of the research of genomics in health is on the molecular processes that underlie disease, as well as the interactions between this biological data, medical therapies, and environmental factors. Not all aspects of genomics that are pertinent to human health are related to humans. There are interactions of the human genome with the genomes of several other creatures, such as plants, vectors, and viruses.[3] In order to grasp all genetic material, including the genes and microscopic structures that control where a gene is active, how active a gene is, and how it affects overall function, genomics needs to be understood which is a relatively new field of study. All organisms are thought to benefit from the application of genomics to the public health of human populations. Genetics is not synonymous with genomics. While genomics is the study of genes, their functioning, and related technologies, genetics is the study of heredity. The main difference between genetics and genomics is that while genetics focuses on the structure and function of a single gene, genomics investigates all genes and their interactions to understand how they collectively affect the growth and development of the organism.[4] Almost every disease that affects people has genetic roots. The study of genes, or genetics, was formerly solely considered by medical professionals in the context of birth abnormalities and a select few other diseases. Because each of these

diseases is brought on by a mutation in just one gene, they all have relatively simple, predictable inheritance patterns, such as sickle cell anemia.[5]

Researchers and clinicians now possess more powerful tools to investigate how several genetic variables functioning in concert with one another and with the environment contribute to the development of considerably more complex disorders. And this could be possible by the enormous amount of data relating to human DNA produced by genomic research spread throughout the world including India. Genome-based research has already made it possible for medical researchers to create better diagnostic methods, more effective treatment strategies, evidence-based methods for proving clinical efficacy, and better tools for patients and clinicians to make decisions. In the end, it seems there is a probability that therapies will be adapted to a patient's unique genomic profile. On the basis of genome-based research, the majority of new medications which were thought to be at least a decade or more away, recent advances in lipid-lowering medication driven by the genome have drastically reduced that time frame. Additionally, the newly-emerging discipline of pharmacogenomics is advancing quickly and chances are there that more information on genomics will clarify issues beyond hereditary risks.[6]

Genomics in India

Genome India: Cataloguing the Genetic Variation in Indians

With 1.3 billion people and the prominence of many different ethnic and linguistic groups throughout its vast geographic expanse, India has a remarkable amount of genetic diversity. India is a huge country with many different ethnic groups, yet there is no complete list of genetic variations there. This genetic diversity presents a unique opportunity for India to document the genetic profile of the country's population and develop a resource that could help researchers and clinicians to understand the genetic causes of chronic diseases that are currently on the rise in India, such as dialysis. A PAN India endeavour aimed at whole genome sequencing of representative groups across India is the project "*Genome India: Cataloguing the Genetic Variation in Indians*". [7] The target is to sequence the entire genomes of ten thousand people, who represent the diversity of the nation's population and then analyze the resulting data. This will assist in creating a catalogue of the genetic variants in the Indian population and in the building of a genome-wide association chip for the Indian population. The Department of Biotechnology, Government of India, is supporting this mission which is a multi-institution cooperative project and the first of its type in India.[8]

Genome Editing Technologies (GET) Applications in Healthcare

The development of genome editing technology in the recent past has the potential to revolutionize biological research and have a significant impact on human healthcare options as they have accuracy, are reasonably cheap, simple to use, and are surprisingly potent. The ability to examine and modify the genetic information of diverse creatures, including humans, has advanced with the development of genome engineering. Genome editing, also known as gene editing, refers to a range of scientific techniques that enable the modification of an organism's DNA. These technologies allow the addition, deletion, or change of genetic material at particular locations in the genome. There are several methods for genome editing that have been developed. CRISPR-Cas9,[9] which is short for clustered regularly interspaced short palindromic repeats and CRISPR-associated protein 9. [10] The development of CRISPR-Cas9 emerges as a genome-editing tool that can be applied to alter the DNA sequence in a precise and targeted manner and with great simplicity. It has a significant impact on the current rise in the number and range of genome editing tools. Because it is quicker, less expensive, more precise, and more effective than existing genome editing techniques, the CRISPR-Cas9 system has sparked a lot of interest in the scientific community.[11] The CRISPR platform's ease of use compared to older tools has sped up adoption and broadened the scope of its applications in the healthcare industry. In order to make genome engineering technologies more widely available and inexpensive for usage, the Department of Biotechnology, Ministry of Science and Technology, Government of India has been actively fostering research and innovation in this field. Efforts have been made to support research and development initiatives in a variety of fields, including the creation of novel genome editing platforms, tools, procedures, and methodologies as well as the enhancement of existing genome-editing methods.[12]

Ethical and Legal Implications

Modern genome editing technologies and their applications in healthcare could be used to meet specific unmet needs in the human health disciplines and human resource development. It could be of great help to promote the development of new genome editing tools and techniques for basic and translational research for medical applications. To improve the productivity, precision, and safety of current genome editing platforms, and to make it easier to create accessible platforms for new genome editing technology used in healthcare applications, as well as to increase the productivity, accuracy, and security of current genome editing platforms.[13]

Similar to other medical advancements, foundational and translational field research must be supported by evidence from several sources and take into account social, ethical, and legal norms. For instance, stem cell research has become a significant field of biomedical science in recent years. The application of stem cells in regenerative medicine has the potential to enhance human health. It is considered crucial to pursue stem cell research, development, and potential clinical trial applications. [14] All of these come with an inherent risk of exploiting people, especially those from disadvantaged and vulnerable backgrounds. Additional considerations that must be effectively addressed include societal issues about recompense for harms resulting from research and unanticipated negative impacts. All of the concerns above are considered in the National Guidelines for Stem Cell Research (NGSCR)-2017. The document's underlying principle is to address all ethical considerations while preventing the premature commercialization of unproven stem cell therapies. The clinical study participants who received these cells must be completely protected, thus adequate protections must be in place.[15] To guarantee that any research involving human stem cells is carried out ethically and scientifically responsible guidelines have been devised. All parties involved in biomedical research generally, and stem cell research specifically, are obliged to adhere to all applicable regulatory requirements. [16]

The study looks at the interactions between genomics science and the law and regulatory process. The knowledge of the human genome's composition and function has advanced significantly. There is a lot of potential for health and well-being to improve as a result of all of these changes. But at the same time, all of these advancements raise intriguing and challenging legal and ethical questions. For instance, the privacy of a significant amount of sensitive data is one of the crucial issues raised by advancements in genomics, also, discrimination based on genomic data is a possibility. Further, it is also a concern that how to properly assess and react to the medical importance of enormous volumes of genomic data. Thus, the utilization of genetic information in research and other fields became possible but at the same time, it also brought up various additional difficulties, one of the vital among them being the privacy of information. In general, ethical issues are those that raise doubts about what is moral or just. Legal issues are those that relate to the safeguards that laws or regulations ought to provide. One could argue that while the use of genomics has many potential advantages, there are also a number of unanticipated risks. The majority of these pertain specifically to sample collection, processing, storage, and usage. It is important to realize that the donor has the sole right to information regarding his or her safety and health.

The four fundamental ethical principles of beneficence, non-maleficence, fairness, and respect for persons (autonomy) have been established in order to protect the dignity, rights, safety, and well-being of research subjects during the conduct of biomedical and health research.[17] All biomedical, societal, and behavioral scientific research for health involving human participants, their biological material, or their data must adhere to these four fundamental principles, which have been expanded into a total of 12 general principles.[18] Principles of essentiality, right to privacy, non-exploitation, and respect for the right of the participant to consent to participate in the study or to decline it at any moment. To guarantee that risks are kept to a minimum and that the proper treatment is given if any harm arises, ethical principles for research in the social sciences should be applied to all parties involved, including but not restricted to researchers, ethics committees, sponsors, and regulators at research at all levels.[19] The fundamental and general ethical guidelines described in section 1 of the National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, 2017 should be followed in all research involving human subjects. The researcher and the team must uphold the dignity, rights, safety, and general well-being of the study participants. The broad ethical issues are as follows:

Informed consent process

The process of obtaining informed consent safeguards the right of the individual to make a free decision regarding participation in the study. Three steps make up the process i.e., informing potential participants about pertinent information, ensuring that they understand it, and ensuring that participation is voluntary. Informed consent should

be provided in a language that the subject can comprehend and should provide a simple explanation of medical terminology.[20]

Privacy and confidentiality

A person's right to privacy is their ability to decide what information can be gathered, stored, and with whom it can be shared or exposed. In order to protect the participant's information, the researcher, study team, or organization has a responsibility to maintain confidentiality. It incorporates the obligation to safeguard data against improper use, disclosure, and access alteration, loss, or theft. The researcher is responsible for maintaining the privacy of research participants and community data. For instance, genetic data, the presence or absence of HIV, sexual orientation, such as lesbian, gay, bisexual, and transgender (LGBT), or any other information which might be sensitive in nature need to be safeguarded to prevent prejudice or ostracization. Coding or anonymization of personal information is necessary when making use of medical information and/or preserved biological samples for research and these samples and records should have limited access.[21] Data of individual participants or communities may be revealed as provided by law under certain conditions, such as specific court orders, threats to life or property, public health risks that outweigh individual privacy rights, serious adverse events that must be reported to the proper regulatory authority, etc.

Distributive justice

To ensure an equitable distribution of the advantages and disadvantages of research, caution has to be exercised when choosing the individuals or communities that will participate in it. There shouldn't be socioeconomic, racial, or ethnic disparities as a result of research. [22]

Data Sharing, Informed Consent, and Privacy Laws: Legal Concerns

The right to privacy and the right to bodily integrity are the two most significant subject rights in terms of medical research from a legal perspective. The first right focuses on legislation and sample collection techniques for research and the latter right concerns how any information gleaned through such study should be handled. The right to privacy is often referred to as the right to solitude and extends to the freedom to decide who gets to know about one's private life.

Each Indian citizen has a responsibility to promote humanism, the scientific way of thinking, and the spirit of inquiry, as well as to strive for greatness in all domains of idiosyncratic and collective action. [23] Under Entry 65 and 66 of the Union List, Parliament is authorized to adopt rules that support various mechanical and scientific techniques for detecting errors, speeding up investigations, and establishing policies in institutions for higher education. But at the same time with the growth of study and research in genomics, it would not be limited to conducting research on human genomics and addressing concerns like the regulation of genetically modified organisms, the use of gene patents, or informed consent issues, it could extend to gathering details on how genetics should and can affect criminal investigations and decision-making or the use of genomics in assisted reproduction. Thus, it could be said that as the scientific understanding of genomics expands, it now encompasses a wide range of legal fields, including tort laws, family laws, laws of evidence, criminal laws and processes; technology laws; health laws so on and so forth. But whatever it may be the access, control, retention, usage, and ownership of gene privacy will continue to be challenging. In order to check and balance the research and development in science and technology with the inherent rights of a human being statutory interference is required. Although there is no specific law that regulates the legal implications of genomics in India, lately efforts have been made to regulate certain areas, which are related to the application of science and technology in various arenas but that is in bits and pieces. These laws might not be directly linked to genomics but would be discussed in this paper to understand the legal implications, especially when they are related to the collection and storage of data, specifically biological data, in a centralized database.

For instance, the Criminal Procedure (Identification) Act, 2022 authorises the collection of certain, identifiable personal data of people for criminal investigations. In order to aid an investigation, a person need not be convicted of a crime as far as collection of data is concerned it could be collected from anyone; besides that, data may be collected from persons who have been arrested for any offence and from anyone else to aid the investigation [24]. Instead of merely being kept in the case file, it is also kept in a central database that is accessible and could be

preserved for seventy-five years [25], also by lowering the level of the official authorised to collect the data, the degree of safeguards has been compromised. The Act broadens the range of information that can be retrieved which includes biometrics such as fingerprints, palm prints, footprints, or scans of the iris and/ or retina, physical and biological samples, which though not defined could include blood, semen, saliva, etc., and behavioural attributes such as signature or handwriting of an individual and could also include voice samples. It does not limit the measurement [26] to those required for a specific investigation. For instance, the Act of 2022 allows for the collection of a sample of a person's handwriting after they have been detained for reckless and negligent driving. Furthermore, obtaining DNA samples is not expressly prohibited, and using DNA samples is not limited just to determining identity, it may contain information beyond that. Though in the context of biological samples, the Act makes an exception i.e., unless a person is arrested for an offence against a woman or a child, or that entails a minimum sentence of seven years in prison, a person may decline to provide such samples. Although, the first exemption could have wide implications. For instance, it can involve a theft case involving a woman. Now, the provision could be interpreted and a similar clause would go against the equitable treatment of people who steal from men and women under the law. Further, If a person who must consent to the taking of measurements under this Act resists or refuses, it is legal for the police officer or prison officer to take the measurements in accordance with any regulatory requirements.[27] Also, Section 186 of the Indian Penal Code, 1860 will be applied to this type of resistance to or refusal to facilitate the taking of measurements required by this Act. [28] Section 186 of the Indian Penal Code, 1860 imposes criminal culpability for anyone who resists or refuses to permit Act No. 11 of 2022's measurement-taking procedures, which results in the extraction of testimony responses under duress. According to Article 20(3) of the Indian Constitution, such criminalization violates a person's right against self-incrimination and further impinges on the right to life and liberty under Article 21 of the Constitution of India. Self-incrimination was addressed in a case decided by an eleven-judge Supreme Court bench in the case, *State of Bombay v. Kathi Kalu Oghad & Ors.*[29] An illustration of an accused person who might have written something on a piece of paper signed it, or left his thumbprint was utilised and held that self-incrimination must involve the information that has been revealed based on the source's personal knowledge; it cannot just be the mechanical act of presenting documents in court that clarifies any of the issues involved. In *Smt. Selvi & Ors. v. State of Karnataka*, [30] it has been taken into consideration by a three-judge Bench of the Supreme Court, that is, whether gathering evidence through the involuntary administration of specific scientific techniques, such as narco-analysis, polygraph testing, and Brain Electrical Activation Profile (BEAP) tests, could be done in a way that was constitutionally acceptable, if these methods of acquiring evidence lead to a weakening of constitutional protections, such as the prohibition against self-incrimination provided for in Article 20(3) of the Indian Constitution and Section 161(2) of the 1973 Code of Criminal Procedure. Further in the case of *D.K. Basu v. State of West Bengal*, [31] the Supreme Court determined that administering the polygraph and narcos test without the subject's consent will constitute cruel, inhuman, and humiliating treatment under Article 21, which protects the right to life and liberty. The Act No. 11 of 2022 permits the data to be stored for 75 years. Only when a person accused of a crime is ultimately acquitted of all charges or released from custody would the data be destroyed. It's also possible that the data's storage in a central database and future use in criminal investigations won't adhere to the necessity and proportionality requirements.

Further, the permission required for the purpose of collection of DNA from people detained for only those offences that are punished by death or imprisonment for a term of more than seven years is waived by the DNA Technology (Use and Application) Regulation Bill, 2019. On July 8, 2019, Mr. Harsh Vardhan, the Minister of Science and Technology, presented the Bill to the Lok Sabha which is still pending. In accordance with the proposed legislation, DNA technology can only be used to confirm some people's identities under specified circumstances. The purpose of the bill is to create a DNA Regulatory Board that will provide guidance to the central government and state governments on all matters pertaining to the establishment of DNA labs and DNA Data Banks. It also aims to address any issues that may come up while using DNA technology, such as those relating to data security, quality, and accuracy. The Bill restricts the use of DNA technology to identify certain individuals, such as victims, criminals, suspects, those who are awaiting trial, and missing persons. [32]The Parliamentary Standing Committee suggested that a DNA profile be defined as the DNA pattern that establishes solely a person's genetic identification and not other aspects of that person, such as their physical appearance, behaviour, or state of health. [33].The creation of National and Regional DNA Data Banks is provided for. The Committee advised against the establishment of any regional DNA data banks because they do not provide any worth. Every laboratory and data bank is required to keep indices for specific types of data, like the crime scene index. Additionally, after sharing a DNA profile with the National DNA data bank, labs must erase the profile and are not required to save any indices. The information described by the Bill is protected by the right to privacy of individuals since it is personal data that pertains to specific individuals. It is recognized by the apex court of the land that the right to privacy has been a

fundamental right. [34] The Court outlined guidelines for any rule restricting this freedom, including the need for a public purpose, it is been directed that a rational connection between the law and the objective, and the idea that this is the least invasive approach to accomplish the goal must be there if in order to serve the public purpose right to privacy of an individual is getting compromised. Additionally, the invasion of privacy must be a need of the day and should be appropriate to meet the purpose. Several factors could cause the Bill to fail this criterion. Additionally, it might not meet the legal requirements set forth in Article 14 for equality before the law and fairness. [35]. In *Bhabani Prasad Jena v. Convenor Secretary, Orissa State Commission for Women*, [36] the Supreme Court held that the court may exercise discretion only after evaluating the interests of the parties. and after giving careful consideration to whether a DNA test is the only option with regard to the current situation when a clear contradiction exists between the right to protection of an individual not to submit himself to clinical examination and the obligation of the court to determine reality. The Supreme Court in a leading case held that a fundamental component of the right to life is the right to privacy. This is an appreciated constitutional worth. people must be given access to opportunities that are shielded from the public examination as long as they don't act in an unlawful way.[37] In *R. Rajagopal v. State of Tamil Nadu*, [38] the Supreme Court held that Article 21 of the constitution guarantees its citizens a fundamental right to life and freedom, including the right to privacy. A person has the right to protect both his or her personal and that of his or her family's privacy and to advocate for marriage, childbirth, parenthood, and education, among other rights.

Conclusion

To guarantee that the advantages of genetic medicine are finally realized, studies and research must be conducted in India. However, conducting research among the genetically and culturally diverse people of India necessitates special considerations to guarantee that this research is undertaken in a manner that is respectful of cultural diversity. In some circumstances, community engagement can be useful. Through engagement with community advisory councils, the large-scale genomics studies involving indigenous populations of India sought to identify unforeseen issues and guarantee that culturally relevant research could be accomplished. For instance, when collecting samples for genomic study, researchers need to be conscious of the fact that specific tissues and materials may have special cultural importance among particular Indian populations. Studies are needed to determine opinions about the dangers of identifiability brought on by genetic research in the Indian context. When studying illnesses/disorders that have a stigma attached to them in India, such as mental health, HIV/Aids, etc., the hazards related to identifiability associated with participation in genomic research will be of significant concern.

The study of genomics in health is centered on the molecular mechanisms behind disease as well as the interplay between this biological information, medicinal treatments, and environmental factors. Genetic factors are involved in almost every illness that affects people. Researchers and clinicians now have more powerful tools to investigate how several genetic variables functioning in concert with one another and with the environment contribute to the development of considerably more complex disorders. Thanks to genome-based research, medical researchers have already been able to develop better therapy regimens, more effective diagnostic techniques, evidence-based techniques for demonstrating clinical efficacy, and improved tools for patients and doctors to make decisions. Remarkable genetic diversity can be found in India. This genetic variety offers us a rare chance to map the population's genetic profile and create a database that will aid researchers, doctors, and the general public in understanding the genetic roots of chronic diseases that are currently on the rise in India, like dialysis. Since genome editing tools are accurate, reasonably priced, and easy to use, they have the potential to transform biological research and have a huge impact on healthcare options for people. With the advancement of genome engineering, it is now possible to analyze and alter the genetic material of other organisms, including humans. Modern genome editing technologies and their applications in healthcare would be used to address certain unmet needs in the areas of human health and resource development, to encourage the creation of new genome editing tools and techniques for basic and translational medical research, and to enhance the productivity, accuracy, and security of current genome editing platforms. The ability to appreciate how genomics affects things like our susceptibility to disease, the development of individualized medical therapies, and understanding how genes could affect how people think or act is made possible by our growing understanding of how the human genome functions. There is a lot of potential for health and well-being to improve as a result of all of these changes.

All of these advancements raise intriguing and challenging legal and ethical questions at the same time. Besides from an ethical standpoint, there are some guiding principles biomedical and health research involving human subjects are governed by, such as the principle of essentiality, the principle of voluntariness, the principle of non-

exploitation, the principle of social responsibility, the principle of protecting privacy and confidentiality, the principle of risk minimization, the principle of professional competence, the principle of maximizing benefit, and the principle of institutional arrangements; the principle of maximization of benefit; the principle of transparency and accountability; the principle of the totality of responsibility and principle of environmental protection. The right to privacy and the right to bodily integrity are the two most significant subject rights in terms of medical research from a legal perspective. The former right relates to how samples are obtained for research, such as the requirement of written informed consent for the removal of biological material for use in genetic research. The second right involves how any information obtained through such a study should be treated. The right to privacy involves the ability to decide how information about one's private life is shared and is most famously characterized as the right to be left alone. Even though Article 21 of the Indian Constitution guarantees the right to privacy, India lags behind in establishing a specific legal framework to address the advancement of science and technology in the country. Moreover, there is no suitable legislation to address situations involving medical research affecting the right to privacy of an individual. Nowadays, people are becoming more concerned about the ethical and legal issues that are being brought up as a result of advances in biomedical science and technology and their use in the practice of medicine. The latest developments in science and medicine are reasons for celebration and joy, but they also require careful consideration of dangers on one side and benefits on the other. These developments could lead to raising some delicate and challenging ethical and legal questions. These must be handled with the highest care and extreme sensitivity to human values, together with the creation of ethical standards for clinical research as well as proper legislative machinery to regulate the same. It is been found that for continuous development in applying genomic findings to human lives, legal acknowledgment of a person's right to govern his or her genome and the data it contains is imperative and there is an instant need for a specific legislative mechanism that has to be effective and sensitive to individual privacy concerns in one side and could promote the development in science and technology in the other. The rules can neither be static nor exhaustive due to the subject's complexity but they must be updated to reflect the advancements made in science and technology.

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[17] The National Ethical Guidelines for Biomedical and Health Research Involving Human Participants,” (2017). New Delhi: Indian Council of Medical Research. Section 1

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[19] Ibid pg 3-4

[20] The National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, (2017). Section 2.2: “Informed consent protects the individual’s autonomy to freely choose whether or not to participate in the research. The process involves three components – providing relevant information to potential participants, ensuring the information is comprehended by them and assuring voluntariness of participation. Informed consent should explain medical terminology in simple terms and be in a language that the participant understands.”

[21]Section 2.3 of The National Ethical Guidelines for Biomedical and Health Research Involving Human Participants,(2017) states that “Privacy is the right of an individual to control or influence the information that can be collected and stored and by whom and to whom that information may be disclosed or shared. Confidentiality is the obligation of the researcher/research team/organization to the participant to safeguard the entrusted information. It includes the obligation to protect information from unauthorized access, use, disclosure, modification, loss or theft.”

[22] According to Section 2.4 of The National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, (2017)

[23] Article 51 A (h) It shall be the duty of every citizen of India to develop the scientific temper, humanism, and the spirit of inquiry and reform; Article 51 A (j) It shall be the duty of every citizen of India to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement

[24] The Criminal Procedure (Identification) Act, 2022 Section 3 Taking of measurement: “Any person, who has been,—(a) convicted of an offence punishable under any law for the time being in force; or (b) ordered to give security for his good behaviour or maintaining peace under section 117 of the Code of Criminal Procedure, 1973 for a proceeding under section 107 or section 108 or section 109 or section 110 of the said Code; or (c) arrested in connection with an offence punishable under any law for the time being in force or detained under any preventive

detention law, shall, if so required, allow his measurement to be taken by a police officer or a prison officer in such manner as may be prescribed by the Central Government or the State Government

[25] According to Section 4 clause (2) of The Criminal Procedure (Identification) Act, 2022 the record of measurements shall be retained in digital or electronic form for a period of seventy-five years from the date of collection of such measurement

[26] Section 2(1) (b) of the Act of 2022 defines the term measurements as "measurements" includes finger impressions, palm-print impressions, foot-print impressions, photographs, iris and retina scan, physical, and biological samples and their analysis, behavioural attributes including signatures, handwriting or any other examination referred to in section 53 or section 53A of the Code of Criminal Procedure, 1973

[27] Section 6(1) of the Criminal Procedure (Identification) Act, 2022 provides the punishment for the resistance to allowing the taking of measurements i.e., if any person who is required to allow the measurements to be taken under this Act resists or refuses to allow the taking of such measurements, it shall be lawful for the police officer or prison officer to take such measurements in such manner as may be prescribed.

[28] Section 6(2) of the Act No. 11 of 2022 provides that resistance to or refusal to allow the taking of measurements under this Act shall be deemed to be an offence under section 186 of the Indian Penal Code.

[29] AIR 1961 SC 1808: (1962) 3 SCR 10

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[35] Article 14, of the Constitution of India, provides for equality before the law i.e., within the territory of India, the State shall not deny anyone's right to equal protection under the law or equality before the law. Discrimination against people based on their place of birth, race, caste, religion, or gender is prohibited.

[36] CIVIL APPEAL NOS. 6222-6223 OF 2010 (Arising out of SLP(C) Nos. 22905-22906 of 2009)

[37] Ram Jethmalani v. Union of India, (2011) 8 SCC 1.

[38] 1994 SCC (6) 632.