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Legal Reconstruction of DNA Screening Evidence of Schizophrenia in the Criminal Accountability System in Indonesia

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Abstract: The rapid advancement of genetic technologies, such as DNA screening for schizophrenia, presents both opportunities and challenges for the Indonesian criminal justice system. The paper investigates the necessity to restructure current norms to take into account scientific findings while respecting human rights, as well as the legislative framework controlling the use of schizophrenia DNA screening as evidence in criminal proceedings. This study combines an analysis of laws with a normative-empirical legal methodology, court decisions, and literature with insights from interviews with legal and health experts. The results show that the current Indonesian criminal procedure law, specifically Article 184 of the Criminal Procedure Code (KUHAP) and Article 44 of the Criminal Procedure Code (KUHP), does not explicitly recognize DNA-based evidence, creating legal uncertainty and potential human rights violations for defendants with mental disorders. The gap between genetic data protection in health law and criminal procedure regulations exacerbates the risk of misuse and ethical violations. This study recommends a progressive legal reconstruction that integrates DNA screening into the evidentiary system, ensuring clear legal legitimacy, procedural safeguards, and alignment with bioethical principles and international human rights standards. By establishing comprehensive regulations, technical guidelines, and developing institutional capacity, Indonesia can create a scientifically based, transparent criminal justice system that protects the rights of the accused, thus advancing substantive justice in the era of forensic technology.

Keyword: DNA Screening, Schizophrenia, Criminal Responsibility, Legal Reconstruction, Forensic Evidence.

INTRODUCTION

Human rights are a fundamental principle that must be upheld in every law enforcement process (Fadlian, 2020). In the context of criminal law, human rights guarantees are not merely normative but must be realized in fair trial practices. One of the major challenges in the era of technological advancement is how to balance the use of scientific

innovations, such as DNA screening to detect the risk of schizophrenia, with the defense of each person's basic rights (Henky, 2018). DNA testing may be used to help determine a defendant's mental state, which could have an impact on whether the non-imputability concept outlined in Article 44 of the Criminal Code is recognized. However, on the other hand, this practice also touches on sensitive human rights aspects, such as the right to privacy, the right to bodily integrity, and the protection of personal data.

Schizophrenia DNA testing is a form of genetic technology that has long been developed by psychiatrists worldwide. Current technological advances have made it possible to identify a person's genetic condition at an early stage, including the potential for mental disorders such as schizophrenia. Recent genetic research also shows that schizophrenia has a strong biological basis, although it is complex and influenced by many genes, with no single gene being completely determinant (Riley & Kendler, 2006).

Law Number 17 of 2023 concerning Health, through Article 117, emphasizes that genetic data falls under the category of confidential and protected health information. Violation of this provision can result in serious human rights violations, as it concerns the inherent and inalienable rights of individuals.

The right to a fair trial is strongly linked to the use of DNA screening in addition to privacy. The 1945 Constitution's Article 28D, paragraph (1), protects everyone's right to recognition, guaranteed, protected, and treated fairly before the law. If DNA screening results are used as a basis for assessing criminal liability, the legal process must ensure that the use of this scientific evidence is conducted in a transparent, proportional, and accountable manner. The defendant's right to a defense cannot be diminished or eliminated by improper interpretation of the results of a DNA test. Additionally, the right to a fair trial is directly linked to the presumption of innocence idea, which is protected in Article 8 paragraph (1) of Law Number 17 of 2023 respecting Health. To keep genetic data from being used as a weapon for criminal prosecution, Law No. 48 of 2009 respecting Judicial Power must be upheld.

From a legal ethics perspective, the reconstruction of regulations related to DNA screening evidence must accommodate the principles of international human rights and bioethics. The 1948 Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR), ratified through Law No. 12 of 2005, emphasize the protection of the physical and mental integrity of individuals, as well as the prohibition of discriminatory treatment. In the context of DNA screening, this means that every legal policy must ensure that there is no stigmatization of individuals with a genetic predisposition to schizophrenia. The legal system must balance the importance of proof in criminal cases with the obligation to protect human dignity.

The link between human rights and the principle of due process of law also lies in the principle of due process of law, which is a core element in human rights-based law enforcement (Hudha, 2015). Every action leading to the collection of evidence, including DNA screening, must be carried out based on clear, non-discriminatory legal procedures and be subject to judicial review. This aligns with Article 1 paragraph (3) of the 1945 Constitution, which affirms that Indonesia is a country governed by law. Therefore, all policies, including the use of biomedical technology in criminal evidence, must be based on the principle of legality. Without clear regulations, the use of DNA screening has the potential to violate human rights, rather than protect the rights of the accused.

Developments in modern medicine have brought significant progress in the diagnosis and prevention of mental illness, including schizophrenia. One emerging innovation is DNA screening technology, which allows for early detection of genetic predispositions to mental disorders. Through genetic testing, certain biological indicators can be identified to assess a person's risk of developing schizophrenia. This technology is not only used clinically but also

has the potential to support the medical evidence process in legal cases. However, the use of this technology in Indonesian criminal law remains controversial due to the lack of a clear legal basis.

DNA screening, as a scientific method, has been recognized by many developed countries as a tool in assessing the mental state of criminal offenders. Genetic data can provide objective evidence supporting a psychiatric diagnosis, which previously relied solely on clinical examinations and behavioral observations. DNA screening allows for more accurate assessments of mental disorders and reduces subjectivity in the legal process. It is important because a person's mental state significantly influences the determination of criminal responsibility. However, implementing this technology without adequate legal regulation risks human rights violations and legal uncertainty.

In Indonesia, Article 44 of the Criminal Code (KUHP) stipulates that a person who commits a crime while mentally ill cannot be convicted. However, this regulation does not specify the scientific evidentiary standards for determining such mental health. The Criminal Procedure Code (KUHAP), as a procedural law, also does not recognize scientific evidence, such as DNA screening, as valid evidence. Medically, this evidence can indicate a person's mental state, which can influence criminal responsibility. Several large-scale genomic studies have even demonstrated significant associations between several chromosomal loci and the risk of schizophrenia, demonstrating that genetic identification is not only scientifically valid but also reliable as a basis for medical and legal considerations (Bailer et al., 2002).

The Criminal Procedure Code (KUHAP) only recognizes five forms of evidence, as listed in Article 184 of the KUHAP, which excludes the results of psychiatric DNA screening, such as a DNA test for schizophrenia. Medically, this type of evidence can indicate a predisposition to a person's mental condition, which can influence criminal liability. However, the use of genetic evidence, such as DNA screening, also risks fostering a fatalistic view of criminal behavior, making it crucial to establish ethical and normative boundaries for interpreting the results (Alper & Beckwith, 1993).

This gap is even more pronounced when compared with practices in several other jurisdictions that have incorporated genetic technology into their justice systems (Karmana, 2009). Countries such as the United States and the United Kingdom, for example, allow genetic evidence to support arguments about the defendant's mental capacity in the defense. This integration is achieved through strict regulations to protect privacy rights and prevent the misuse of genetic information. Conversely, in Indonesia, the lack of regulations on this matter has led to normative confusion and potential discrimination. Without clear regulations, technological advances have the potential to lead to injustice.

In addition to limited norms, Indonesia also faces ethical and technical challenges in the use of DNA screening as evidence (Thierry, 2023). Genetic data is sensitive information concerning a person's biological identity and has profound privacy implications. Law Number 17 of 2023 concerning Health, through Article 117, actually regulates the protection of genetic data as part of medical confidentiality. However, this regulation has not been directly linked to criminal procedure law, leaving the management of genetic evidence a grey area. This gap has the potential to violate constitutional rights as stipulated in Article 28G of the 1945 Constitution.

The advancement of science demands that the legal system be adaptive and responsive to innovation. A static legal system will struggle to address new issues arising from technological developments, including criminal evidence. The principle of the rule of law, as affirmed in Article 1 paragraph (3) of the 1945 Constitution, requires legal certainty that can protect human rights while realizing justice. Therefore, legal reconstruction is necessary to balance the interests of law enforcement with technological advances and human

rights protection. Without change, Indonesia will continue to lag in efforts to create a modern and just judiciary.

This gap impacts not only legal uncertainty but also the quality of criminal justice. The defendant's right to a fair trial can be violated if relevant scientific evidence is not legally recognized. Conversely, without adequate regulation, the use of DNA screening also has the potential to be misused by law enforcement officials (Sunkari et al., 2022). It creates a dilemma between the benefits of technology and the protection of fundamental rights. Therefore, comprehensive regulations are needed so that every technological innovation can be integrated with legal principles that guarantee justice. These regulations must consider normative, technical, and ethical aspects.

Reconstruction of criminal law and criminal procedure to accommodate genetic technology is an urgent need. Regulations that protect the right to privacy, informed consent, and stringent oversight protocols must be in place when DNA screening is included into the criminal evidence system. It complies with the 1945 Constitution's human rights protection principles, Law Number 39 of 1999 respecting Human Rights, and international agreements like the ICCPR. With this legal reconstruction, Indonesia can build a criminal justice system that is adaptive, transparent, and oriented towards substantive justice. The gap between science and law must be addressed to ensure the law remains relevant in the modern era.

Mental disorders play a crucial role in criminal law because they are directly related to the principle of responsibility. A person who commits a crime while unconscious or as a result of a mental illness is not subject to punishment, according to Article 44, paragraph (1) of the Indonesian Criminal Code. The idea of geen straf zonder schuld—no penalty without fault—is adopted in this piece, meaning that only those capable of taking responsibility can be subject to punishment. However, this article does not provide a detailed explanation of the limitations or standards of proof of mental disorder. As a result, the interpretation of a person's mental state is left entirely to the judge's discretion based on expert testimony.

The absence of objective criteria in Article 44 of the Criminal Code creates problems in judicial practice. The assessment of mental disorders often relies solely on clinical examinations and forensic psychiatrists' testimony, without the support of scientific evidence that can verify biological conditions. In certain cases, differences of opinion between experts can complicate the evidentiary process and create legal uncertainty. Yet, the legal certainty premise outlined in Article 28D, paragraph (1) of the Constitution of 1945, is a constitutional right of every citizen. This situation demonstrates the urgent need for more accurate and scientifically accountable evidentiary instruments.

DNA screening technology can provide additional evidence to support the diagnosis of mental disorders such as schizophrenia (Hackler et al., 2020). Genetic research has identified several DNA markers that correlate with susceptibility to this disorder. When DNA screening results are used in conjunction with psychiatric examinations, a more comprehensive assessment of the defendant's mental state will be possible. However, to date, there is no regulation in the Criminal Procedure Code (KUHAP) that recognizes genetic technology-based evidence as valid evidence. It creates a gap between advances in medical technology and the criminal procedure system. Medically, this evidence can reveal tendencies in a person's mental state, which can influence criminal liability. Experience in the United States legal system shows that scientific evidence, such as forensic DNA, has proven crucial in strengthening justice and even overturning death sentences against innocent defendants (Jay & Cole, 2009).

The absence of clear regulations regarding the use of DNA screening raises doubts in criminal justice practice (Murewanhema et al., 2023). Law enforcement officials, including judges and prosecutors, tend to be cautious about accepting genetic evidence for fear of violating the principle of legality. The Criminal Code's Article 1, paragraph (1), which

declares that no act may be punished without a legal provision, outlines this idea. In the context of evidence, a similar principle applies, requiring the use of evidence to have a valid legal basis. Without regulatory regulations, DNA screening lacks legal force, even if it can scientifically support the proof of mental state.

Besides legal issues, ethical issues are also a concern in the use of genetic evidence. DNA sampling concerns an individual's right to privacy and bodily integrity, as guaranteed in Article 28G paragraph (1) of the 1945 Constitution. Law Number 17 of 2023 concerning Health, Article 117, also emphasizes that genetic data is part of medical information that must be kept confidential (White et al., 2024). If DNA screening is implemented without strict regulations, there is a risk of misuse of genetic data, which could harm the defendant's human rights. Therefore, the use of scientific evidence must be in line with the principles of human rights protection.

The idea of a fair trial is also impacted by the lack of regulations. The 1945 Constitution's Article 28D paragraph (1) ensures that everyone has the right to a fair trial and equal treatment under the law. If genetic evidence is not recognized, defendants with mental disorders may be deprived of the opportunity to prove their scientific inability to be held responsible. Conversely, if such evidence is used without legal oversight, defendants risk violations of their rights to privacy and data security. This situation demonstrates the need for norms governing the proportional and accountable use of DNA screening (Rohland, 2015).

Philosophically, the recognition of scientific evidence in determining mental health is in line with the goal of just sending. Criminal law emphasizes not only retribution but also humanitarian considerations, particularly for perpetrators who are unable to be held responsible. With the support of genetic evidence, the legal system can make more appropriate decisions that reflect the defendant's circumstances. However, clear regulations must be set in place to prevent scientific bias or misinterpretation. These regulations should also include oversight mechanisms to prevent data misuse.

Therefore, legal reform regarding the role of mental disorders in criminal liability must include regulations on the use of scientific evidence. The Criminal Code (KUHP) and the Criminal Procedure Code (KUHAP) must be revised to accommodate technology-based evidence, such as DNA screening, within the framework of criminal procedural law. This is crucial for achieving legal certainty, protecting human rights, and integrating science into the justice system. This reform will also improve the quality of criminal justice in Indonesia, making it more adaptable to technological developments. This step will ensure a balance between legal certainty and substantive justice.

Article 184 paragraph (1) of the Criminal Procedure Code contains minimal regulations pertaining to the evidentiary system in Indonesian criminal procedural law. According to this article, there are five categories of admissible evidence: expert testimony, letters, hints, witness testimony, and defendant testimony. This definition is closed, so any evidence not listed cannot be considered legally valid. This provision was enacted in 1981, when the development of forensic technology, including DNA analysis, had not yet become a significant part of criminal justice practice. Consequently, modern technology-based evidentiary instruments lack an explicit legal basis for use in trials.

However, this approach must be based on ethical principles and caution to prevent the misuse of scientific evidence. This is in line with a case in Italy, where a murder defendant received a reduced sentence after being found to carry a genetic variant associated with aggressiveness. Although the decision was criticized for being unsupported by strong scientific evidence and risking setting a false legal precedent (Forzano et al., 2010).

The provisions of Article 184 of the Criminal Procedure Code (KUHAP) are a major obstacle to the recognition of scientific evidence in Indonesian criminal courts. Although DNA results can be included as expert testimony, their status remains only as supporting

evidence and not as stand-alone evidence (Imperiale et al., 2014). It distinguishes the Indonesian legal system from several other countries that have recognized scientific evidence, such as DNA, as primary evidence in criminal cases. These limitations result in the suboptimal use of science to assist the judicial process. This situation raises questions about whether a rigid evidentiary system is still relevant in the digital age. The lack of norms regarding scientific evidence in the Criminal Procedure Code (KUHAP) has a serious impact on the defense of defendants with mental disorders (Haris & Tantimin, 2022). DNA screening to detect a tendency toward schizophrenia, for example, cannot be presented as valid evidence, despite its medical significance. This situation makes it difficult for legal counsel to objectively prove their clients' mental state. As a result, courts rely more heavily on subjective expert testimony unsupported by biomolecular evidence. Objective evidence, however, can assist judges in making fairer, more fact-based decisions.

The absence of regulations regarding scientific evidence creates legal uncertainty for law enforcement officials. Judges and prosecutors often face dilemmas when evidence consideration is not formally recognized in the Criminal Procedure Code, even if it is relevant and scientifically valid. The principle of legality requires that every action in the judicial process must have a clear legal basis. Without adequate regulations, the use of scientific evidence can be seen as violating this principle. It impacts on the legitimacy of decisions and has the potential to give rise to legal disputes.

In addition to normative issues, this legal vacuum also impacts on the fulfillment of the human rights of the defendant. The 1945 Constitution's Article 28D, paragraph (1), guarantees the right to a fair trial. The right of the defendant to raise a defense will be violated if DNA testing, which can demonstrate a defendant's mental state, is not accepted. based on scientific evidence is hampered. It can result in a disproportionate verdict because it ignores evidence that could influence criminal liability. Thus, this legal vacuum is not only a procedural issue, but also a matter of substantive justice.

The need to amend the Criminal Procedure Code (KUHAP) to incorporate scientific evidence as a type of evidence is urgent, as evidenced by a comparison with legal procedures in other nations (Zainuddin et al., 2022). The United States and the United Kingdom, for example have long accommodated DNA evidence as a primary, stand-alone form of evidence. This integration is achieved through regulations that guarantee authenticity, accuracy, and the protection of individual rights. Indonesia, with its increasingly advanced health and forensic technology, needs to follow suit to keep its legal system abreast of developments. This revision also aligns with global demands to make science an integral part. The recognition of scientific evidence in criminal procedure must be accompanied by strict procedural regulations (Hafizah et al., 2022). These regulations must cover sampling mechanisms, genetic data management, and evidentiary procedures in court. These rules are essential for upholding the integrity of the legal system and safeguarding the defendant's right to privacy, which is protected by Law Number 17 of 2023 respecting Health Article 117 and Article 28G paragraph (1) of the 1945 Constitution. Without strict oversight, scientific evidence has the potential to be misused and violate human rights. Therefore, implementing regulations must be drafted in detail and oriented towards human rights principles.

The gap in norms in the Criminal Procedure Code regarding scientific evidence requires comprehensive legal reconstruction. This revision must balance legal certainty, technological advancement, and the protection of individual rights. By recognizing scientific evidence, such as DNA screening, the criminal justice system will be more adaptable to scientific developments. It will also increase public confidence in legal justice because decisions are made based on more objective data. Reforming criminal procedure law is a strategic step towards realizing a modern and just justice system in Indonesia.

If DNA screening for schizophrenia is used in criminal law, the results could be used to demonstrate that a perpetrator has a mental disorder that impacts their criminal responsibility. However, this approach must be based on ethical principles and caution to prevent the misuse of scientific evidence. Several cases have shown that certain genotypes, such as MAOA-L, have been used as a defense in criminal courts to reduce sentences, although this has sparked intense ethical and scientific debate regarding individual responsibility (McSwiggan et al., 2017).

Law Number 17 of 2023 concerning Health provides more modern regulations for healthcare services, including mental health and genetic data management. Article 117 stipulates that genetic data is confidential health data and must be protected. It includes the obligation of medical personnel and healthcare institutions to maintain the confidentiality of this information from misuse. This provision represents a significant step forward in addressing the challenges of the digital era, which is rife with the use of advanced medical technology. However, this regulation does not yet address aspects of criminal procedure law, particularly in the context of genetic data as evidence in court.

The separate provisions between health law and criminal law create a normative gap that results in legal uncertainty. On the one hand, the Health Law recognizes genetic data as an essential part of medical services and requires its protection (Anugrah & Desril, 2021). However, on the other hand, the Criminal Procedure Code (KUHAP) does not provide legal recognition for evidence derived from genetic technology, such as DNA screening. This situation creates a dilemma for law enforcement officials when they must use medical evidence to assess the criminal responsibility of defendants. This gap also poses the risk of privacy violations if data is used without a clear legal basis. Harmonization between criminal law and health law is crucial because the two are interconnected in cases involving medical aspects. In criminal cases involving mental disorders, genetic data can be a crucial instrument for assessing the defendant's mental state (Fajrin & Triwijaya, 2019). Without integrated regulations, medical examination results will only serve as supporting evidence without binding legal force. It contradicts the principle of due process of law, which demands certainty and clarity of procedures in the presentation of evidence. Therefore, regulations are needed to govern the mechanisms for using genetic data in the judicial process.

Legal integration is also necessary to prevent the misuse of highly sensitive genetic data. Genetic information is not only related to an individual's health but also has implications for biological identity and family relationships. Article 117 of the Health Law emphasizes the need for protection, but there are no technical regulations governing how such data can be used as evidence without violating human rights. Without harmonization, the use of DNA screening technology has the potential to raise ethical and legal issues, posing a serious challenge to efforts to modernize the evidentiary system in Indonesia.

Harmonization of criminal law and health law also supports the principle of justice in the criminal justice process. With clear regulations, the use of scientific evidence can help judges make more accurate, fact-based decisions. Without clear regulations, judges are forced to rely on subjective interpretations, which can lead to injustice. Furthermore, integrated regulations will guide investigators, prosecutors, and legal counsel in presenting medical evidence in court. It aligns with Article 28D paragraph (1) of the 1945 Constitution, which guarantees the right to fair legal certainty.

The urgency of harmonization also arises from global demands to adopt forensic technology in the criminal justice system. Developed countries have integrated health regulations with criminal procedure law to accommodate scientific evidence, such as DNA. Indonesia, as a nation governed by the rule of law, cannot afford to lag in adopting this best practice. If left unchecked, legal ambiguity will hinder the use of science to uphold justice.

Therefore, revising the Criminal Procedure Code and implementing regulations of the Health Law is a strategic step (Anugrah & Desril, 2021).

In its implementation, legal harmonization must adhere to human rights principles. The use of genetic data as evidence must be based on informed consent and supervised by authorized institutions. Furthermore, data security mechanisms must be in place to prevent information leaks that could harm individuals. It aligns with Article 28G paragraph (1) of the 1945 Constitution, which guarantees the right to personal protection and honor. With clear regulations, the integration of technology and law can be achieved without compromising basic human rights.

Harmonization of criminal law and health law is an urgent need to create a modern, fair, and scientifically responsive justice system. With integrated regulations, the use of DNA screening in criminal cases can be conducted legally and in a controlled manner (Rusyadi, 2016). This not only provides legal certainty but also improves the quality of court decisions. At the same time, protecting human rights remains a top priority. Therefore, this harmonization is a crucial step towards an adaptive and progressive Indonesian legal system.

The imbalance between scientific developments and rigid legal provisions creates a serious gap in judicial practice. Developments in medical technology, particularly DNA screening to detect predispositions to mental disorders such as schizophrenia, represent a significant scientific advancement. However, Indonesian criminal procedure law still adheres to conventional rules that limit evidence to only five types as stipulated in Article 184 of the Criminal Procedure Code. This discrepancy creates serious problems when academically valid scientific evidence is not legally recognized. Consequently, law enforcement is slow and less responsive to the needs of modern justice.

Progressive legal reconstruction is necessary so that the law can adapt to the dynamics of science and technology (Isima, 2022). Progressive legal principles require reforms oriented toward substantive justice, not merely procedural formalities. In the context of DNA screening, legal reconstruction must provide space to accommodate technology-based evidence as part of valid proof. This step is not only about expanding the categories of evidence but also making certain that the legal procedure is conducted in conformity with the fundamentals of protecting human rights. This is consistent with the 1945 Constitution's Article 28D, paragraph (1), which protects everyone's right to just legal certainty.

The principle of legal progressivity demands the courage to make normative breakthroughs. Legal norms that fail to adapt to current developments will lose relevance and legitimacy. Therefore, a revision of the Criminal Procedure Code (KUHAP) is inevitable, including scientific evidence such as DNA screening as evidence. This reform must also be accompanied by procedural regulations to ensure that the use of technology remains within the framework of protecting individual rights. Thus, legal reform not only adds instruments but also strengthens the integrity of the judicial system.

Legal reconstruction in this context must also consider ethical and bioethical aspects. The use of genetic data as evidence has implications for the right to privacy, as stipulated in Article 28G paragraph (1) of the 1945 Constitution and Article 117 of Law Number 17 of 2023 concerning Health. Any collection and use of genetic data must be accompanied by informed consent and safeguards for confidentiality. Progressive regulations must address this challenge by establishing strict protection mechanisms. Without such regulations, legal reform has the potential to give rise to new human rights violations.

The urgency of legal reconstruction is also related to the demands of globalization and international legal practices. Many countries have integrated technology-based scientific evidence into their judicial systems to support the principle of science-based justice. Indonesia, as part of the international community, must adapt to keep up with the utilization of legal technology. This harmonization is also in line with international instruments such as

the ICCPR, which guarantees the right to a fair trial. Therefore, Indonesian legal reform must move toward global standards that prioritize a balance between technology and human rights.

Legal reconstruction cannot be carried out in isolation but must involve reforms within the criminal procedure and health law frameworks. This integration will create consistency in the norms governing the use of DNA screening in criminal justice processes (Manik et al., 2023). Without this synergy, regulations will remain mere norms that cannot be implemented. Therefore, reforms must be implemented through revisions to the Criminal Procedure Code (KUHAP) and the development of implementing regulations for the Health Law that clarify procedures for the use of genetic data. This comprehensive approach will strengthen legal legitimacy and improve the quality of justice.

Progressive legal reconstruction is not merely an option but an urgent necessity to realize a modern and adaptive legal system. Recognizing DNA screening as evidence in criminal cases is one form of reform capable of improving the quality of substantive justice. This reform will move the Indonesian legal system toward a new paradigm based on science, without neglecting humanitarian values and the protection of human rights. Thus, the law can return to its function as a means of social engineering that is responsive to changing times. This reconstruction is key to true justice in the technological era.

Based on the background and phenomena of the problems described above, the researcher is interested in conducting research entitled: "Legal Construction of Evidence for Schizophrenia DNA Screening in the Criminal Responsibility System in Indonesia." Regarding the problems raised in this research, there are several crucial issues that require further study, particularly regarding the legality and implementation of DNA screening in the Indonesian criminal justice system. These issues include how to regulate the use of DNA screening as evidence in the Indonesian criminal evidence system; why a reconstruction of legal norms is necessary to integrate DNA screening for schizophrenia into criminal accountability; and what the ideal concept of legal reconstruction regarding the use of DNA screening in the Indonesian criminal justice system is.

Theoretical Framework

The theories used in this research are divided into three levels: grand theory, middle-range theory, and applied theory. A grand theory is needed to provide a philosophical basis that explains why the law must adapt to scientific developments, especially in the era of medical technology such as DNA screening. Middle-range theory plays a role in providing a more specific basis regarding the principles of criminal responsibility and justice, two things that are at the heart of the problem when scientific evidence is used to assess the perpetrator's ability to be responsible for a crime. Meanwhile, applied theory is used to support practical arguments regarding the application of the law of evidence as well as ethical and human rights principles related to the use of genetic data.

The combination of these five theories was chosen so that this research not only provides normative criticism of legal vacuum, but also offers solutions that are systematic, applicable, and based on values of justice. Grand theory will guide the paradigm of progressive legal reform; middle-range theory will strengthen the scientific basis related to the principles of justice and criminal responsibility; while applied theory will ensure that the discussion reaches the technical, procedural, and human rights protection levels. Thus, these five theories form a complete conceptual framework, support the formulation of research hypotheses, and form the basis for formulating the concept of ideal legal reconstruction.

1. Basic Theory (Grand Theory): Progressive Legal Theory – Satjipto Rahardjo.

Satjipto Rahardjo's Progressive Legal Theory rejects the rigid positivistic view of law and emphasizes that law must be dynamic, humanistic, and responsive to social change. In this perspective, law is not limited to written rules but must be a tool for achieving

substantive justice and human well-being. In the context of criminal procedure law, this theory serves as the normative basis for revising the Criminal Procedure Code (KUHAP) to recognize modern scientific evidence such as DNA screening. This progressive approach encourages the integration of law and science, particularly in handling cases involving mental disorders. Thus, law is positioned as a social instrument that is adaptive, moral, and relevant to the needs of contemporary society.

2. Middle-range Theory

a. Theory of Criminal Responsibility - Johannes Andenaes

Johannes Andenæs's Theory of Criminal Responsibility emphasizes that punishment can only be imposed on individuals capable of moral and rational responsibility, in line with the principle of geen straf zonder schuld. In this context, mental disorders are an important factor that can eliminate or reduce criminal responsibility as stipulated in Article 44 of the Criminal Code. Andenæs also emphasized the importance of a proportional approach and the need for a corrective and preventive legal system for perpetrators with mental disorders. Therefore, the use of scientific evidence, such as DNA screening, is relevant to assessing mental capacity objectively and scientifically. The theory encourages reform of Indonesian criminal law to be more adaptive to developments in science and technology and to better uphold the principles of justice and human rights protection.

b. *Justice Theory* - John Rawls

John Rawls, in A Theory of Justice (1971), asserted that justice as fairness is the primary principle in creating a just society, through two principles: equality of basic liberty and the difference principle. This principle emphasizes that inequality can only be justified if it benefits the least advantaged, including vulnerable groups in the legal system. In the context of criminal law, Rawls's theory demands the protection of the defendant's rights and the fair and proportional use of evidence, such as DNA screening. The concepts of original position and veil of ignorance serve as moral foundations for legal policy to be free from biased personal interests. Therefore, Rawls's theory is relevant as a normative basis in reconstructing criminal procedural law that is fair, transparent, and guarantees human rights.

3. Applied Theory

a. Theory of Evidence - Paul Scholten

Paul Scholten's Theory of Evidence emphasizes that criminal evidence must be based on the principle of legality and only use legally valid evidence. The *numerus clausus* system of evidence adopted by the Criminal Procedure Code reflects Scholten's view that the type of evidence must be determined in a closed manner to ensure legal certainty. However, technological advances such as DNA screening challenge this system because it has not been explicitly recognized as separate evidence. According to Scholten, the recognition of new evidence must be through legal revision, not judicial interpretation, to prevent human rights violations. Therefore, this theory serves as an important basis for encouraging the reconstruction of criminal procedural law that is adaptive while still guaranteeing legal certainty and justice.

b. Bioethics and Human Rights Theory - Beauchamp & Childress

Beauchamp and Childress's (1979) bioethical theory formulated four key principles: autonomy, beneficence, non-maleficence, and justice to address ethical dilemmas in modern medical practice. In the context of criminal procedure, these principles are crucial in the use of DNA screening to respect privacy rights, ensure benefits, prevent harm, and ensure justice. Autonomy demands informed consent, while beneficence and non-maleficence require safe and beneficial use. The principle of justice emphasizes equal access to forensic technology for all defendants to avoid legal inequality. Therefore, reform of criminal procedure law must comprehensively regulate the procedures, oversight, and ethics of DNA use to uphold humanitarian values.

METHOD

Using an empirical and normative juridical methodology, this study looks at positive legal norms and exploring practitioners' perspectives on the use of DNA screening in criminal evidence. This research is descriptive and analytical, with the aim of not only describing the legal conditions and practices in the field, but also evaluating and formulating a reconstruction of criminal procedural law that is adaptive to scientific evidence. The data sources used consist of primary data through interviews with legal and health experts, as well as secondary data, including legislation, legal literature, and court decisions. Data collection techniques were performed through literature studies and semi-structured interviews, designed to explore the obstacles and needs for reform of criminal evidence law. All data were analyzed qualitatively and descriptively using a content analysis approach and empirical interpretation, resulting in a legal synthesis based on the principles of justice, legal certainty, and human rights protection.

RESULTS AND DISCUSSION

Regulations on the Use of DNA Screening as Evidence in the Criminal Evidence System in Indonesia

The criminal evidence system in Indonesia is essentially regulated by the Criminal Procedure Code (KUHAP), specifically According to Article 184, paragraph (1), letters, hints, expert testimony, witness testimony, and the defendant's testimony are all considered forms of admissible evidence. However, developments in forensic technology, such as DNA screening, have not been explicitly listed in this article as separate evidence. In practice, DNA screening results are often categorized as expert testimony or letters. The situation creates a legal loophole, as DNA testing requires special legitimacy and regulation due to its sensitive nature, particularly in criminal cases involving mental health conditions such as schizophrenia. Without a clear legal framework, the use of DNA screening results has the potential to violate human rights and undermine the credibility of the judicial process.

The use of DNA technology in the judicial system has actually been recognized in various regulations outside the Criminal Procedure Code. Law Number 17 of 2023 concerning Health, in Article 79 paragraph (1), states that every individual has the right to the protection of genetic data and personal health information. This protection emphasizes that the collection and use of genetic data, including DNA, must be carried out with written consent and clear, informed consent. In the context of criminal evidence, this requires specific procedures governing how DNA screening is conducted, recorded, and used as evidence without violating a person's constitutional rights. This affirmation demonstrates that DNA screening cannot be readily used without consent and a legal framework integrated into criminal procedure law.

Furthermore, According to Article 29 of Law Number 39 of 1999 respecting Human Rights, everyone is entitled to the protection of their family, privacy, honor, dignity, and sense of security. Therefore, the use of DNA screening concerning mental conditions such as schizophrenia must be approached with great care to avoid violating basic human rights principles. Moreover, the results of such screening have the potential to be used to determine a person's capacity for criminal responsibility, which could lead to acquittal or conviction. Without a fair and equitable legal mechanism, the use of DNA screening risks becoming a tool of stigmatization or discrimination, particularly against individuals with mental disorders. Therefore, strict, detailed, and human rights-based regulations are absolutely necessary within the legal framework of evidence.

International instruments also establish principles for the protection of genetic and mental health data in law enforcement. Article 17 of the International Covenant on Civil and

Political Rights (ICCPR), which was adopted by Law Number 12 of 2005, states that no one's private life may be arbitrarily or illegally interfered with, including medical information. The application of DNA screening in criminal proceedings must comply with this principle, particularly when it concerns the identification of schizophrenia as a protected personal medical condition. Therefore, although DNA screening has high potential as scientific evidence, its use must be compliant with the principle of prudence and oversight by independent institutions. In this regard, legal regulations are insufficient to ensure compliance with these standards.

On the other hand, Regulation of the Head of the Indonesian Institute of Sciences (LIPI) Number 2 of 2016 concerning the Code of Ethics for Genetic Research stipulates that the collection, analysis, and storage of DNA data must be done with due regard for scientific integrity and the rights of research subjects. Although this regulation is primarily academic in nature, its principles are relevant in the context of criminal procedural law. DNA screening for schizophrenia requires ethical standards and valid scientific procedures, including laboratory accreditation and the competence of forensic experts handling the data. It is important to prevent screening results from being misused or interpreted in the legal process. Without technical regulations integrated with the criminal justice system, this evidence is vulnerable to losing its validity.

From the perspective of legal protection for defendants, Constitutional Court Decision No. 65/PUU-VIII/2010 emphasized the importance of recognizing relevant scientific evidence, as long as it meets the principles of legality and accountability and does not violate the suspect's fundamental rights. This decision opens the way for recognizing new forensic technologies, such as DNA screening, as long as their use does not conflict with the basic principles of the Criminal Procedure Code. However, this recognition has not been accompanied by normative revisions to the regulation of valid evidence, creating ambiguity in its application. It is a crucial argument for the urgent need to reconstruct criminal procedural law to accommodate technological advances that support material justice. With reconstruction, the use of DNA screening will have an explicit legal basis and can be objectively tested in court.

Several countries have adopted a more progressive legal approach to regulating DNA-based evidence, including genetic data related to mental disorders. In Indonesia, there are no explicit regulations regarding the use of DNA screening for the diagnosis of schizophrenia in criminal law enforcement. This absence of norms hinders law enforcement officials in ensuring that scientific data is used lawfully and does not violate the rights of the accused. Given that mental health significantly impacts criminal liability, evidentiary instruments such as DNA screening need to be given special space within the criminal procedural law system. Without clear and technical regulations, the risk of ethical violations and legal malpractice in the judicial process will continue to lurk.

Considering various national and international regulations, it can be concluded that the regulation of the use of DNA screening in the criminal evidentiary system in Indonesia remains incomplete. Recognition of this scientific evidence needs to be clarified in the revision of the Criminal Procedure Code, particularly in the development of technology-based evidence and forensic medicine. Furthermore, an oversight mechanism involving ethics and data protection institutions is needed to prevent abuse in judicial practice. Ideal regulations should integrate technical, medical, and legal aspects into a single system that ensures justice and human rights protection. Therefore, reformulating legal norms regarding DNA-based evidence is urgently needed to address the challenges of the technological era in the modern criminal justice system.

Reconstruction of legal norms is needed to integrate DNA screening for schizophrenia into criminal liability.

The Indonesian criminal law system currently does not explicitly regulate the use of DNA screening as evidence to detect mental health conditions, such as schizophrenia, with relation to criminal responsibility. According to Article 184 paragraph (1) of Law Number 8 of 1981 concerning the Criminal Procedure Code (KUHAP), there are only five categories of evidence that are accepted: Expert testimony, letters, hints, defendant testimony, and witness testimony. DNA screening, although capable of producing strong scientific evidence, has not been explicitly included in this category of evidence. This creates legal uncertainty, particularly in cases involving defendants with mental disorders that can be identified through genetic analysis. This lack of clarity creates a legal loophole that risks injustice to individuals with psychiatric conditions such as schizophrenia.

Recognition of a defendant's mental health has a significant impact on the concept of criminal liability. Article 44, paragraph (1) of the Criminal Code states that a person who commits a crime while mentally disturbed cannot be punished. However, this article does not provide technical guidelines for objectively assessing or proving mental disorders. This is where DNA screening becomes urgent as a scientific tool that can strengthen medical diagnoses in determining legal capacity. Without legal reform that normatively regulates the use of DNA screening, the evidentiary process in cases involving defendants with schizophrenia risks relying on subjective interpretations that are not always based on science.

According to Article 58, paragraph (1) of Law Number 17 of 2023 respecting Health, each person has the right to genetic information as part of health services. This article can serve as a legitimate basis for DNA screening results, including those related to the detection of schizophrenia, as valid data generated in a medical context. However, this law does not directly regulate their use in criminal justice processes. Therefore, a reconstruction of legal norms is needed that can bridge health regulations with criminal procedural law so that DNA screening results can be legally and structuredly integrated into the evidentiary system. Overlapping regulations between the legal and health sectors have the potential to hinder substantive justice for defendants with mental disorders.

Human rights instruments also reinforce the urgency of legal reform. Law Number 39 of 1999 concerning Human Rights affirms in Article 5 paragraph (3) that every person belonging to a vulnerable group, including people with mental disabilities, has the right to special treatment and protection. In criminal cases, defendants with schizophrenia are classified as vulnerable individuals whose rights must be guaranteed, including the right not to be punished if medically proven incapable of taking responsibility for their actions. Without a legal framework governing genetically based evidence of mental health conditions, the protection of the human rights of vulnerable individuals is weakened. Reconstructing legal norms is crucial to ensure the fulfillment of these rights in a legitimate legal process.

In judicial practice, scientific evidence such as DNA screening can support expert testimony, but it still lacks an independent position or is explicitly regulated under the Criminal Procedure Code. This raises doubts among investigators, prosecutors, and judges regarding the validity and legality of using DNA screening results as a basis for considering criminal responsibility. Without an adequate legal basis, the use of modern forensic technology will be limited to supporting evidence, not primary evidence. In fact, in some cases, DNA screening can reveal a genetic predisposition to serious mental disorders such as schizophrenia, which significantly impacts a person's mental capacity at the time of committing a crime. Therefore, the legal framework needs to be updated to reflect scientific developments and the needs of modern legal practice.

The reconstruction of legal norms must also include aspects of genetic data protection to prevent misuse. Article 58 paragraph (3) of Law Number 17 of 2023 concerning Health

emphasizes that an individual's genetic data is confidential and may only be used with valid consent. In the context of criminal justice, this principle must be upheld through strict procedures to ensure that DNA testing does not violate the defendant's right to privacy. In other words, updated legal norms must regulate the limitations, procedures for collection, authorization, and security of genetic data at every stage of the investigation and trial. The absence of specific regulations opens up opportunities for human rights violations and systemic misuse of technology.

In addition to data protection, legal reconstruction also needs to clarify the role and competency standards of forensic experts and psychiatrists in providing opinions based on DNA screening results. Currently, there are no laws and regulations that comprehensively regulate the integration of forensic genetic expert opinions and criminal liability. Therefore, the development of new norms should involve collaboration between medical, legal, and academic institutions to formulate ethical and procedural standards that are scientifically and legally accountable. This regulation will increase the credibility of the judicial process and ensure the accountability of experts in providing opinions that have legal implications.

The intended legal reconstruction must emphasize the position of DNA screening as valid evidence in the context of mental disorders, not simply as a supplement to expert testimony. It can be achieved through revising Article 184 of the Criminal Procedure Code by adding a new category or subcategory of biotechnology-based scientific evidence. This step is crucial to make the evidentiary process more objective, efficient, and responsive to advances in medical technology. The integration of DNA screening into criminal procedure law is not merely a technical necessity, but rather a manifestation of the legal system's adaptation to multidisciplinary challenges. This reconstruction also reflects the state's commitment to realizing substantive justice for all citizens, including those with mental disorders.

The Concept of Ideal Legal Reconstruction Regarding the Use of DNA Screening in the Indonesian Criminal Justice System

The ideal legal reconstruction concept for the use of DNA screening to detect schizophrenia determining the legal status of scientific evidence under national criminal procedure legislation must be the first step in the criminal justice system. The Criminal Procedure Code (KUHAP) lists five categories of admissible evidence in paragraph (1) of Article 184: expert testimony, correspondence, hints, defendant testimony, and witness testimony. Although DNA screening is not specifically described as a type of scientific evidence, depending on the context, it may be classified as expert testimony or letters. However, the lack of explicit regulations regarding modern scientific evidence, such as biomolecular or neurogenetic, indicates a significant legal gap. This gap underscores the urgency of reconstructing evidentiary norms to accommodate developments in forensic technology.

If DNA screening for schizophrenia is used in the criminal law evidentiary process, the results could be used to demonstrate that the perpetrator has a mental disorder that impacts their criminal responsibility. A recent systematic review showed that individuals with schizophrenia often experience significant psychotic disorders at the time of committing a crime, which directly impacts their ability to understand and control their actions (Tsimploulis et al., 2018).

Practically, integrating DNA screening into the criminal evidentiary system could be achieved by adding new forms of evidence in the revised Criminal Procedure Code (KUHAP). The concept of scientific evidence has long been used in the judicial systems of other countries, such as the United States and the United Kingdom. In the Indonesian context, a possible approach is to add a new paragraph or article that recognizes forensic laboratory

results or genetic testing as independent evidence, rather than merely supplementing expert testimony. The proposal aligns with the principle of legal certainty stipulated in Article 28D paragraph (1) of the 1945 Constitution, as well as the principle of criminal procedure law that demands substantive justice in the presentation of evidence. This addition would also close the interpretive gap that currently weakens the position of scientific evidence in criminal proceedings.

Regarding criminal accountability, DNA screening for schizophrenia could be a crucial factor in proving the defendant's mental state. A person cannot be prosecuted for a crime if it can be demonstrated that they had a mental illness at the time of the offense, according to Article 44, paragraph (1) of the Criminal Code (KUHP). However, there are no detailed provisions regarding what evidence is valid to prove such a disorder. By reconstructing legal norms so that DNA screening is accepted as valid evidence to assess mental capacity, the legal system can provide a more objective and scientific assessment. It also guarantees the principle of non-maleficence by preventing the criminalization of individuals who should not be held legally responsible.

Ideally, DNA screening in criminal justice proceedings should be regulated through implementing regulations in the form of Government Regulations or Supreme Court Regulations. These regulations should include technical standards for screening implementation, authorized laboratory institutions, provisions regarding the validity of results, and a defense mechanism for results detrimental to the defendant. Furthermore, it is necessary to regulate guarantees regarding the confidentiality of screening results and limitations on their use outside the case in question. Such instruments are crucial for maintaining a balance between effective evidence and protecting human rights. These implementing regulations must also align with the Health Law and the Personal Data Protection Law to avoid overlapping norms.

Legal reconstruction also needs to consider the institutional dimension, namely the need to increase the capacity of law enforcement agencies to understand and utilize scientific evidence. Many law enforcement officers still lack the technical competence to interpret DNA screening results, particularly those related to schizophrenia, a complex neuropsychiatric disorder. Therefore, legal reform must be accompanied by training and certification for law enforcement officials, including judges and prosecutors, to enable them to understand and objectively assess scientific evidence. Training institutions such as the Supreme Court Training Agency and the Attorney General's Office need to be actively involved in this program. Institutional reform will strengthen the effectiveness of the normatively formulated legal reconstruction.

Legal reconstruction of the use of schizophrenia DNA screening in the criminal accountability system cannot simply be achieved through changes to legal norms; it must encompass a systemic and multidisciplinary approach. The integration of law, forensic science, bioethics, and personal data protection must be realized within a comprehensive and applicable regulatory framework. With clear legal norms, strict procedures, effective oversight, and competent human resources, the Indonesian criminal justice system can transform to become more adaptive to scientific advances without sacrificing human rights. This reconstruction will also strengthen the legitimacy of the evidentiary system in the public eye and increase trust in judicial institutions. Therefore, the ideal legal concept does not stop at the formulation of articles but must be lived out in fair, transparent, and science-based legal practices.

CONCLUSION

The use of schizophrenia DNA screening in the criminal justice system urgently requires legal reconstruction. The gap in norms in the Criminal Procedure Code (KUHAP)

and the Criminal Code (KUHP) regarding modern scientific evidence creates legal uncertainty and potential human rights violations. Therefore, it is necessary to reform criminal procedural law by explicitly recognizing scientific evidence, including genetic screening results. This reform must also be accompanied by guarantees of personal data protection, strict implementation procedures, and independent institutional oversight. In this way, the criminal evidence system in Indonesia will be able to respond to the challenges of advances in forensic technology fairly and proportionally.

The ideal concept of legal reconstruction not only emphasizes the formulation of new norms but also demands synergy between law, forensic science, bioethics, and human rights. The integration of bioethical principles such as autonomy, justice, beneficence, and non-maleficence is a crucial foundation for protecting the rights of the accused. Capacity building of law enforcement officials is also needed to enable them to understand and apply scientific evidence accurately and responsibly. With comprehensive regulations and a multidisciplinary approach, Indonesia's criminal justice system can transform to become more modern, transparent, and humane. Science-based law enforcement will be a crucial foundation for realizing substantive justice for all citizens.

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