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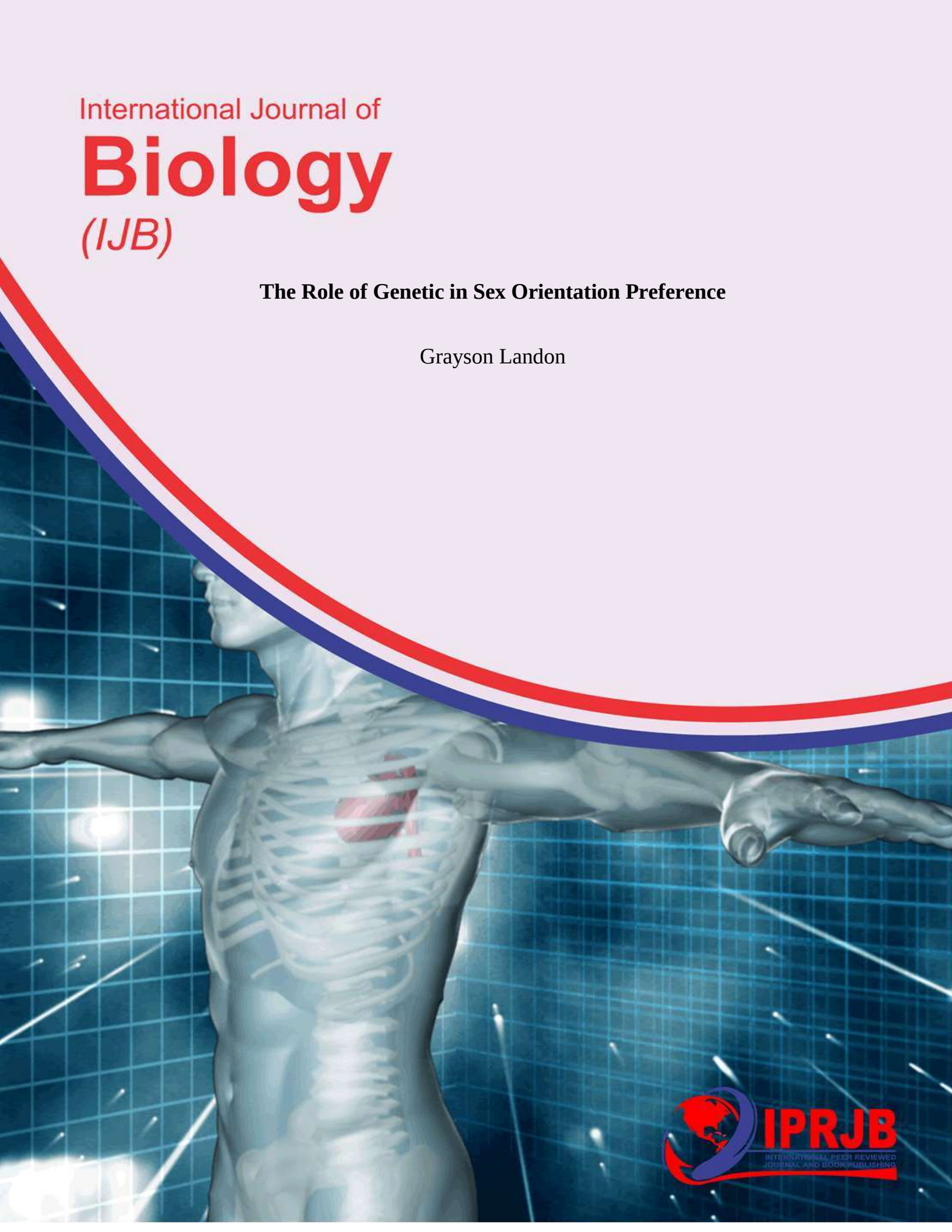

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Abstract

Purpose: The aim of the study is to examine the role of genetic in sex orientation preference.

Methodology: This study adopted a desktop methodology. This study used secondary data from which include review of existing literature from already published studies and reports that was easily accessed through online journals and libraries.

Findings: The study found that genetic markers and variations related to hormone regulation and neural development have been identified as potential contributors, indicating a genetic influence on sexual orientation. Epigenetic factors such as modifications in gene expression, may also be involved in shaping sexual orientation. However, it is important to note that genetics alone cannot fully determine sexual orientation, as it is influenced by a combination of genetic, biological, hormonal, and environmental factors.

Unique Contribution to Theory, Practice and Policy: The study was anchored on evolutionary theory of sexual orientation proposed by and epigenetic theory of sexual orientation propounded by Dr. William Rice, an evolutionary biologist. The study recommended the integration of genetic knowledge into therapeutic practices can help reduce stigma and promote self-acceptance among individuals with diverse sexual orientations. It is also crucial to promote policies that protect the rights and well-being of individuals with diverse sexual orientations and address discrimination and prejudice.

Keywords: *Genetic, Sex, Orientation Preference*

INTRODUCTION

Sexual orientation preference refers to an individual's enduring pattern of emotional, romantic, and/or sexual attractions to men, women, both genders, or none. In developed economies such as the USA, there has been a growing acceptance and recognition of diverse sexual orientations. According to a study published in the Journal of Homosexuality (Carpenter, 2018), the prevalence of non-heterosexual orientations has been increasing over time in the USA. For instance, the National Survey of Family Growth found that the percentage of adults identifying as lesbian, gay, or bisexual (LGB) increased from 3.5% in 2011-2013 to 4.1% in 2013-2015. Additionally, the General Social Survey reported that the percentage of individuals identifying as LGB rose from 2.3% in 2008 to 4.5% in 2018. These statistics indicate a trend towards greater acknowledgment and visibility of non-heterosexual orientations in the USA.

Similarly, in the UK, there has been a significant shift in attitudes towards sexual orientation preference. A study by Stonewall (2017) found that 7% of the British population identified as lesbian, gay, or bisexual, with young people more likely to identify as non-heterosexual. The study also highlighted a decrease in the percentage of people who feel uncomfortable with same-sex relationships, dropping from 55% in 1987 to 16% in 2017. Moreover, the Marriage (Same Sex Couples) Act 2013 legalized same-sex marriage in England and Wales, further reflecting the increasing acceptance of diverse sexual orientations in the country.

The recognition and acceptance of diverse sexual orientations vary significantly due to cultural, social, and legal factors. In Japan, attitudes towards sexual orientation preference have been gradually evolving. However, there is still limited acceptance and understanding of non-heterosexual orientations. According to a survey conducted by Dentsu Diversity Lab (2019), which included over 60,000 participants, 78.4% of respondents in Japan expressed discomfort with same-sex relationships. This indicates a need for further progress in recognizing and supporting diverse sexual orientations in the country.

There have been some notable developments in countries like Brazil and South Africa. In Brazil, a study published in the Journal of Homosexuality in 2017 estimated that approximately 7.8% of the population identified as LGBT (Rocha & Vieira, 2017). The study utilized data from the Brazilian Institute of Geography and Statistics and conducted face-to-face interviews with a nationally representative sample of over 100,000 individuals. In South Africa, a study published in BMC Public Health in 2016 estimated that around 4.9% of the population identified as homosexual (Lane, 2016). This study utilized data from the South African National HIV Prevalence, Incidence, and Behavior Survey, which included a representative sample of over 38,000 individuals aged 15 years and older.

In many countries within these regions, there are significant challenges and limited acceptance of non-heterosexual orientations. For instance, in several countries in the Middle East, homosexuality is considered a criminal offense, and individuals with non-heterosexual orientations face severe legal penalties and social stigma (ILGA World, 2022).

In some parts of Latin America, there has been progress in recognizing and protecting the rights of individuals with diverse sexual orientations. For example, Argentina and Uruguay have enacted

laws legalizing same-sex marriage, and transgender rights have been advanced through legislation in countries like Colombia and Bolivia (Mogrovejo, 2021).

In the context of developing economies, such as those in Sub-Saharan Africa, there are often greater challenges and barriers faced by individuals with non-heterosexual orientations due to cultural, religious, and legal constraints. Same-sex sexual activity is criminalized in many countries in the region, leading to discrimination, social stigma, and limited recognition of diverse sexual orientations. A study published in the Journal of Homosexuality (Ward, 2019) highlighted the pervasive homophobia and discrimination faced by sexual minorities in Sub-Saharan Africa, with laws criminalizing same-sex relationships in 33 out of 54 countries.

While some countries have made progress in terms of legal protections and recognition of LGBT rights, others continue to criminalize same-sex relationships. For example, India decriminalized homosexuality in 2018 through a landmark Supreme Court ruling, while in countries like Malaysia and Brunei, same-sex sexual activity remains illegal (ILGA World, 2022).

In countries such as Nigeria and Uganda, there have been highly publicized instances of anti-LGBT legislation and persecution. The passage of laws, such as Nigeria's Same-Sex Marriage Prohibition Act and Uganda's Anti-Homosexuality Act, have drawn international attention and condemnation (Ward, 2019). These laws not only criminalize same-sex relationships but also target the advocacy and support for LGBT rights, leading to increased discrimination, violence, and stigmatization of individuals with non-heterosexual orientations.

Despite these challenges, there are also pockets of progress and activism within the region. Advocacy organizations and activists in countries like South Africa have been at the forefront of advancing LGBT rights, and the South African constitution explicitly prohibits discrimination based on sexual orientation. In recent years, there have been growing movements and conversations surrounding LGBT rights in other countries as well, such as Kenya and Botswana (Ward, 2019). These movements strive to challenge social norms, increase awareness, and promote acceptance of diverse sexual orientations in Sub-Saharan Africa.

Another role of genetics in sexual orientation preference could be related to epigenetic factors. Epigenetics refers to modifications in gene expression that are not caused by changes in the DNA sequence itself but can be influenced by environmental factors. Epigenetic mechanisms have been suggested as potential contributors to sexual orientation development. Research has found differences in epigenetic markers between individuals with different sexual orientations, indicating that epigenetic processes may play a role in the expression of sexual orientation (Rice, 2019). These epigenetic modifications could influence the expression of genes related to sexual development and orientation.

Furthermore, genetic factors may interact with environmental influences to shape sexual orientation. It is widely recognized that sexual orientation is a complex interplay between genetics, biology, and environmental factors. The "nature versus nurture" debate acknowledges that genetic predispositions interact with various environmental factors, such as social, cultural, and familial influences, to shape an individual's sexual orientation. Studies have shown that both genetic and environmental factors contribute to sexual orientation, with estimates suggesting that genetics account for around 30-40% of the variability in sexual orientation (Bailey, 2016). This interaction

between genetics and environment highlights the multifactorial nature of sexual orientation development.

Finally, it is important to note that genetic factors alone cannot fully determine sexual orientation. Sexual orientation is a complex trait influenced by a combination of genetic, biological, hormonal, and environmental factors. Genetic factors may predispose individuals to certain sexual orientations, but the expression and development of sexual orientation are also influenced by a range of other factors. The interplay of genetics, biology, and environment contributes to the diverse range of sexual orientation preferences observed in individuals.

Statement of the Problem

The role of genetics in shaping sexual orientation preference has been a subject of scientific inquiry and societal interest. Understanding the genetic underpinnings of sexual orientation is crucial for fostering inclusivity, dispelling myths, and promoting acceptance of individuals with diverse sexual orientations. However, despite advancements in genetic research, the specific genetic factors influencing sexual orientation preference remain poorly understood, highlighting the need for further investigation.

Recent studies have provided some insights into the genetic contributions to sexual orientation preference. For instance, a study published in Psychological Medicine in 2020 by Zietsch conducted a comprehensive review of existing research on the heritability of sexual orientation. The study highlighted evidence supporting a moderate level of heritability for same-sex sexual behavior, indicating a genetic component in sexual orientation development (Zietsch, 2020). However, the study also emphasized the complex interplay between genetic, environmental, and social factors, emphasizing the need for additional research to unravel the intricate mechanisms involved.

Theoretical framework

The Evolutionary Theory of Sexual Orientation

The evolutionary theory focuses on the adaptive value and evolutionary benefits of different sexual orientations. It proposes that sexual orientation preferences may have evolved due to their advantages in promoting survival and reproductive success. One example of this theory is the kin selection theory, which suggests that non-heterosexual orientations may contribute to inclusive fitness by facilitating cooperation and support among kin members (Zietsch, 2014). Understanding the evolutionary basis of sexual orientation can shed light on the diversity of sexual orientations and challenge societal stigmas.

The Epigenetic Theory of Sexual Orientation

The epigenetic theory was propounded by Dr. William Rice, an evolutionary biologist and proposes that gene expression patterns can be influenced by environmental factors, leading to variations in sexual orientation. It suggests that environmental factors, such as prenatal hormone exposure or early life experiences, may interact with genetic predispositions to shape sexual orientation. The theory is supported by studies investigating epigenetic markers associated with sexual orientation. For example, a study published in 2012 by Hannon et al. found differential

DNA methylation patterns in genes related to sexual development and neurodevelopment in gay men compared to heterosexual men (Hannon, 2012).

Empirical Review

Ganna (2019) investigated the genetic variants associated with same-sex sexual behavior using a genome-wide association study (GWAS) approach. The study utilized a large sample of over 200,000 individuals of European ancestry. Genotyping data were analyzed to identify genetic variants associated with same-sex sexual behavior. Various statistical methods, including logistic regression, were employed to assess the associations. The study identified several genetic loci significantly associated with same-sex sexual behavior, including regions related to sense of smell and sex hormone regulation. However, the identified genetic variants collectively explained only a small proportion of the overall variance in sexual orientation, suggesting that other factors, such as environmental influences, also play a significant role. Further research is needed to replicate and validate the identified genetic associations and to explore additional genetic and environmental factors contributing to sexual orientation. Longitudinal studies and more diverse population samples should be considered to enhance the understanding of the genetic underpinnings of sexual orientation preference.

Alanko (2020) examined the genetic and environmental contributions to sexual orientation variation across different birth cohorts. The study utilized a sample of twins from different birth cohorts. The sexual orientation of the twins was assessed using self-report measures. Genetic modeling was employed to estimate the heritability and shared environmental influences on sexual orientation. The study found evidence for significant genetic influences on sexual orientation across birth cohorts. The heritability estimates ranged from 30% to 50%, indicating a moderate genetic contribution. Shared environmental influences were minimal, suggesting that individual-specific factors play a more prominent role. Future research should investigate specific genetic variations associated with sexual orientation preference and explore potential gene-environment interactions. Longitudinal studies tracking sexual orientation development from childhood to adulthood can provide insights into the stability and developmental trajectories of sexual orientation.

Langstrom (2010) investigated the role of genetic and environmental factors in the development of sexual orientation preference among a sample of twins. The study included a large sample of twins, both monozygotic (MZ) and dizygotic (DZ), who were followed longitudinally from childhood to adulthood. Sexual orientation was assessed through self-report measures and interviews. Genetic modeling was employed to estimate the genetic and environmental influences on sexual orientation. The study found evidence for both genetic and environmental influences on sexual orientation preference. The heritability estimates indicated a moderate genetic contribution, while shared and non-shared environmental factors also played a role. The findings suggested that genetic factors contribute to the stability of sexual orientation over time. Further research should focus on identifying specific genetic variations associated with sexual orientation and exploring gene-environment interactions. Longitudinal studies that examine the development of sexual orientation across various stages of life can provide valuable insights into the interplay between genetic and environmental factors.

Sanders (2015) examined the role of genetic factors in the sexual orientation of individuals with a family history of same-sex attraction. The study recruited a sample of individuals with at least one close relative (parent, sibling, or cousin) who identified as non-heterosexual. Participants completed surveys assessing their own sexual orientation and reported information on the sexual orientation of their family members. Genetic analysis was conducted to identify potential genetic markers associated with sexual orientation. The study found a higher prevalence of non-heterosexual orientation in individuals with a family history of same-sex attraction, suggesting a genetic component. Genetic analysis revealed preliminary evidence of specific genetic markers that may be associated with sexual orientation, although further validation is needed. The findings support the need for larger-scale genetic studies to identify and validate genetic markers associated with sexual orientation. Additionally, research should explore the interplay between genetic factors and environmental influences to gain a more comprehensive understanding of the development of sexual orientation.

Carone (2010) explored the potential influence of epigenetic factors in the development of sexual orientation. The study recruited a sample of individuals with diverse sexual orientations and analyzed DNA methylation patterns in regions associated with sexual development and neurodevelopment. Participants provided saliva or blood samples for DNA analysis. Methylation profiles were compared between individuals with different sexual orientations. The study found differential DNA methylation patterns in genes related to sexual development and neurodevelopment among individuals with different sexual orientations. These patterns suggested potential epigenetic influences on sexual orientation, indicating that gene expression patterns may be influenced by environmental factors.

Jockusch (2020) examined the genetic and environmental influences on sexual orientation in a population-based study of twins. The study included a large sample of twins from the Swedish Twin Registry. Participants self-reported their sexual orientation, and genetic modeling was conducted to estimate the contributions of genetic and environmental factors to sexual orientation variation. The study found that both genetic and environmental factors significantly contributed to sexual orientation. Heritability estimates indicated a moderate genetic influence, with heritability estimates ranging from 23% to 32%. Shared environmental influences were relatively small but still contributed to individual differences in sexual orientation.

Lick (2020) investigate the role of genetic factors in sexual orientation by analyzing patterns of DNA methylation in individuals with diverse sexual orientations. The study recruited a sample of individuals with different sexual orientations and collected blood or saliva samples for DNA methylation analysis. Epigenome-wide association analyses were conducted to identify DNA methylation patterns associated with sexual orientation. The study identified differential DNA methylation patterns in specific regions of the genome associated with sexual orientation. These regions were found to be enriched in genes involved in neural development, hormone regulation, and reproductive processes. Further research should explore the functional implications of the identified DNA methylation patterns and their interplay with genetic and environmental factors in the development of sexual orientation. Longitudinal studies can provide insights into the stability of DNA methylation patterns and their potential predictive value for sexual orientation

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

The results were analyzed into various research gap categories, that is, contextual and methodological gaps.

Contextual and Methodological Gaps

Ganna (2019); Carone (2010); Jockusch (2020) and) posit a conceptual gap as none of these studies addresses the role of genetic in sex orientation preference. Alanko (2020); Langstrom (2010); Sanders (2015) and Lick (2020) present a methodological gap as these studies adopted self-report measures and interviews while the current study adopted data from existing resources.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

In conclusion, the role of genetics in sexual orientation preference is a complex and evolving area of research. While studies have suggested that genetic factors play a role in the development of sexual orientation, the specific mechanisms and genes involved are not yet fully understood. Genetic markers and variations related to hormone regulation and neural development have been identified as potential contributors, indicating a genetic influence on sexual orientation. Epigenetic factors, such as modifications in gene expression, may also be involved in shaping sexual orientation. However, it is important to note that genetics alone cannot fully determine sexual orientation, as it is influenced by a combination of genetic, biological, hormonal, and environmental factors.

Developmental and hormonal influences: Prenatal and postnatal hormonal factors and developmental processes may play a role in sexual orientation. Hormonal exposure during critical periods of brain development could influence the development of sexual orientation. However, the precise mechanisms and the extent of hormonal influences are still being investigated.

Environmental and sociocultural factors: It is important to recognize that sexual orientation is not solely determined by genetics. Environmental and sociocultural factors, such as family dynamics, social interactions, cultural influences, and personal experiences, also shape an individual's sexual orientation. The interplay between genetics and the environment is likely to be complex and multifaceted.

Multiple genetic factors and interactions: It is unlikely that a single gene or a small set of genes can solely determine sexual orientation. Rather, it is believed that multiple genetic factors, each with a small effect, interact with one another and with environmental factors to shape sexual orientation. The interplay between genetic variations and environmental influences is complex and not yet fully understood.

No conclusive "gay gene" has been identified: Despite extensive research, no specific gene or set of genes has been consistently identified as a definitive marker for sexual orientation. The influence of genetics on sexual orientation is likely to involve a combination of genetic variations, gene-environment interactions, and epigenetic factors.

Recommendations

Recommendations regarding the role of genetics in sexual orientation preference can contribute to Theory, Practice, and Policy in the following ways:

Theory

Further research should be conducted to deepen our understanding of the specific genetic mechanisms involved in sexual orientation development. Longitudinal studies, genetic mapping, and advanced statistical analyses can provide valuable insights into the complex interplay between genetics and sexual orientation. This research will contribute to refining existing theories and developing new theoretical frameworks to explain the role of genetics in sexual orientation preference.

Practice

The findings from genetic research on sexual orientation should be communicated responsibly and ethically to avoid misinterpretation and misuse. Mental health professionals, educators, and counselors should stay updated on the latest research to provide accurate and inclusive information to individuals questioning their sexual orientation. The integration of genetic knowledge into therapeutic practices can help reduce stigma and promote self-acceptance among individuals with diverse sexual orientations.

Policy

Policymakers and lawmakers should consider the scientific evidence regarding the role of genetics in sexual orientation preference when developing legislation and policies. It is crucial to promote policies that protect the rights and well-being of individuals with diverse sexual orientations and address discrimination and prejudice. Policy initiatives should prioritize creating inclusive environments, promoting anti-discrimination laws, and supporting initiatives that enhance public awareness and education about sexual orientation and genetics.

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