

A Biological Study of Mental Health, Physical Health, And Psychological Wellbeing

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Abstract- *Mental health is intricately linked to physical health and psychological wellbeing, influenced by various biological factors. This study investigates the biological aspects of mental health, focusing on brain structure, neurochemical processes, and physiological functions that affect behavior and emotional stability. It assesses genetic predisposition's role in mental health issues, connecting inherited traits and family history with the risk of psychological disorders. With advancements in neuroscience and genetics, the research reveals mechanisms behind conditions like depression and anxiety. It advocates for evidence-based treatments that blend biological insights with clinical practice, emphasizing a holistic approach to enhance understanding and improve prevention and treatment strategies for mental health. By focusing on a biological perspective, this research aims to enhance the understanding of mental health and promote more effective and scientifically grounded methods for prevention and treatment. The findings underscore the necessity of a holistic approach that considers both biological and psychological dimensions to improve overall wellbeing and quality of life.*

Keywords: *Mental Health, Biological Factors, Genetic Predisposition, Psychological Wellbeing, Physical Health, Neuroscience, Evidence-Based Treatment*

I. INTRODUCTION

Mental health has emerged as a critical area of concern in contemporary society, influencing not only individual wellbeing but also social and economic productivity (Meghrajani et al. 2023). In recent decades, the understanding of mental health has shifted from a purely psychological or behavioral viewpoint to a more comprehensive and scientific framework that includes biological determinants. The biological perspective emphasizes that mental health is deeply rooted in the structure and functioning of the brain, as well as in genetic, neurochemical, and physiological processes (Cherry 2026). This approach challenges the traditional belief that mental disorders are merely the result of personal weakness,

lack of willpower, or emotional instability, and instead positions them as legitimate medical conditions requiring proper diagnosis and treatment. The human brain plays a central role in regulating emotions, cognition, and behavior. Any disruption in its normal functioning—whether due to neurotransmitter imbalances, hormonal changes, or genetic predisposition—can significantly affect an individual's mental state. Disorders such as depression and anxiety are increasingly being recognized as outcomes of such biological irregularities (Hole et al. 2025). For instance, imbalances in chemicals like serotonin, dopamine, and norepinephrine are often associated with mood disorders. Similarly, genetic factors may increase susceptibility to certain mental illnesses, indicating that mental health conditions can run in families. These biological insights have contributed to the development of more effective pharmacological treatments and therapeutic interventions. In addition to neurochemical factors, physical health conditions also play a vital role in shaping mental wellbeing. Chronic illnesses, nutritional deficiencies, and hormonal imbalances can influence brain functioning and contribute to psychological distress. This highlights the interconnected nature of physical and mental health, reinforcing the need for an integrated approach to healthcare. The biological perspective, therefore, not only aids in understanding the root causes of mental disorders but also underscores the importance of early detection and preventive strategies (Akram et al. 2025). By identifying individuals at higher biological risk, healthcare providers can implement timely interventions to mitigate the severity of mental health conditions. Despite significant scientific advancements, mental health continues to be surrounded by stigma and misconceptions, particularly in developing societies. Many individuals hesitate to seek medical help due to fear of social judgment or lack of awareness. Viewing mental illness through a biological lens can play a transformative

role in reducing such stigma (Baek et al. 2023). When mental disorders are understood as conditions similar to physical diseases like diabetes or cardiovascular disorders, it fosters empathy, acceptance, and a more supportive environment for affected individuals. This shift in perception is essential for encouraging treatment-seeking behavior and improving overall mental health outcomes. The present study aims to analyze mental health, physical health, and psychological wellbeing through the lens of the biological perspective. It seeks to bridge the gap between scientific understanding and societal attitudes by highlighting the physiological basis of mental disorders. By doing so, the study contributes to a more holistic understanding of health, where mental wellbeing is given equal importance as physical health. Ultimately, this research aspires to promote a more informed, compassionate, and evidence-based approach to mental healthcare.

II. REVIEW OF LITERATURE

Various studies have been conducted in this direction recently most notable among them are as follows: Krishnan and Nestler (2018) explored the molecular and cellular mechanisms underlying depression. Their findings indicated that stress-induced changes in brain structure and function, particularly in the hippocampus and prefrontal cortex, contribute significantly to depressive disorders. The study also highlighted how environmental stressors interact with biological systems, leading to long-term mental health issues. Insel and Wang (2019) focused on the genetic and biological foundations of mental illnesses. Their research demonstrated that genetic predisposition significantly contributes to disorders such as schizophrenia, depression, and bipolar disorder. They emphasized that early identification of genetic risks can improve preventive care and treatment outcomes. The study reinforced the importance of integrating biological science into mental healthcare systems. of reducing stigma and improving access to medical treatment worldwide. Kendler (2020) analyzed the complex interaction between genetic, biological, and environmental factors in mental illness. The study proposed that while biological mechanisms are central to mental disorders, they do not operate in isolation. Instead, mental health outcomes are the result of dynamic interactions between genes, brain function,

and life experiences. This integrative approach supports a more comprehensive understanding of mental health. Blase et al. (2021) examined the biological basis of mental health disorders, emphasizing the role of neurochemical imbalances in influencing human behavior and emotional responses. Their study highlighted that neurotransmitters such as serotonin and dopamine play a crucial role in regulating mood, and any imbalance can lead to conditions like depression and anxiety. The researchers concluded that mental disorders must be understood as medical conditions rooted in brain physiology rather than mere psychological disturbances. The World Health Organization (2022) provided a global perspective on mental health, emphasizing the biological and physical dimensions of mental disorders. The report highlighted that mental health conditions are influenced by a combination of biological, psychological, and social factors, with biological aspects playing a foundational role. It also stressed the importance. With the help of literature it has been found to understanding the biological basis of mental health, several gaps remain unaddressed. Most research has primarily focused on isolated aspects such as neurochemical imbalances, genetic predisposition, or brain structure, without integrating these factors with physical health and psychological wellbeing in a comprehensive framework. Furthermore, limited attention has been given to the interaction between biological mechanisms and socio-cultural influences, especially in the Indian context where stigma and lack of awareness still prevail. Many studies are also concentrated in developed countries, leaving a gap in region-specific empirical evidence from developing societies like India. Additionally, there is insufficient research examining preventive strategies based on early biological risk identification. Therefore, this study attempts to bridge these gaps by adopting a holistic biological perspective that connects mental, physical, and psychological dimensions of wellbeing, while also addressing societal attitudes and promoting a more integrated and context-specific understanding of mental health.

III. OBJECTIVE OF THE STUDY

Following objectives to investigate to understand the role of biology in physical and mental health

- 1) To examine the biological basis of mental health;
- 2) To assess the impact of genetic predisposition on mental health;
- 3) To suggest the need for evidence-based treatment approaches;

IV. IMPORTANCE OF THE STUDY

The present study holds significant importance as it provides a scientific understanding of mental health by emphasizing its biological foundations. In many societies, including India, mental health issues are often misunderstood and associated with stigma, superstition, or personal weakness. This study helps to challenge such misconceptions by explaining that mental disorders are linked to brain structure, genetic factors, and biochemical processes, just like other physical illnesses. By doing so, it promotes a more rational and evidence-based approach toward mental healthcare. Another important aspect of this study is that it highlights the strong connection between physical health and psychological wellbeing. It underlines how factors such as chronic diseases, nutritional deficiencies, and hormonal imbalances can directly affect mental health. This integrated perspective encourages healthcare professionals and policymakers to adopt a holistic approach while addressing health issues. Furthermore, the study is valuable for early identification and prevention of mental disorders. By understanding biological risk factors, timely interventions can be implemented, reducing the severity and long-term impact of mental illnesses. Lastly, the study contributes to spreading awareness and fostering empathy in society, encouraging individuals to seek proper medical treatment without fear or hesitation, thereby improving overall quality of life.

V. RESEARCH METHODOLOGY

The present study is based entirely on secondary data to examine the biological dimensions of mental health, physical health, and psychological wellbeing. Relevant information has been collected from credible and authoritative sources such as the National Mental Health Survey (NMHS), National Crime Records Bureau (NCRB), World Health Organization (WHO) reports, research journals, books, and government

publications. The study adopts a descriptive and analytical research design to interpret existing data related to the prevalence of mental disorders, genetic influences, and biological factors affecting mental health, particularly in the context of Uttar Pradesh and India. The collected data has been systematically organized into tables and analyzed using comparative and interpretative methods to identify patterns, relationships, and trends. Emphasis has been placed on understanding how biological determinants such as neurotransmitter imbalance, genetic predisposition, and physical health conditions influence mental wellbeing. The methodology ensures reliability and validity by using recognized data sources and scientific literature.

VI. DATA ANALYSIS AND INTERPRETATION

This section presents an analysis of mental health conditions in Uttar Pradesh based on secondary sources of data obtained from national reports, such as the National Mental Health Survey (NMHS), NCRB, and WHO. The data highlights the prevalence of mental disorders and their biological associations.

Treatment gap and Mental Disorder

The data indicates that a significant portion of the population in Uttar Pradesh is affected by mental health issues. Substance use disorders show the highest prevalence of almost 16.36%, followed by lifetime mental morbidity and current mental morbidity suggesting strong biological dependence mechanisms. The presence of both current and lifetime mental morbidity highlights the persistent nature of mental health conditions.

Table 1: Prevalence of Mental Disorders in Uttar Pradesh

Mental Health Indicator	Percentage (%)
Current Mental Morbidity	6.08%
Lifetime Mental Morbidity	7.97%
Severe Mental Disorders	0.09%
High Suicide Risk Population	0.93%

Substance Use Disorders	16.36%
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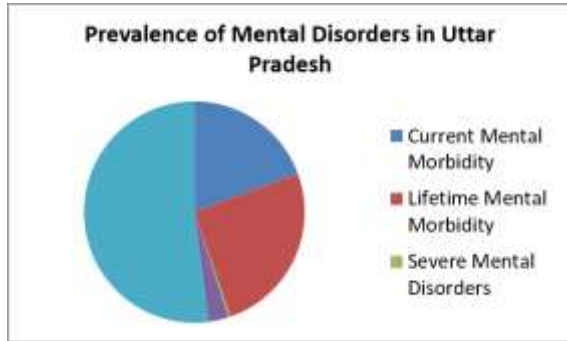


Fig-1

Table 2: Treatment Gap in Mental Healthcare

Category	Treatment Gap (%)
Common Mental Disorders	75% – 85%
Severe Mental Disorders	70% – 80%
Substance Use Disorders	85% – 100%

Treatment gap is the percentage of individuals who have the problems, however, do not receive the treatment on time is a serious global public health crisis. Such gap intensify various chronic illnesses, it is most severe in mental health and substance use disorders, where rates of untreated individuals consistently exceed 50% globally and frequently top 80% to 95% in low- and middle-income. In the study region treatment gap is extremely high across all categories. This suggests that despite biological causes, a large number of individuals do not receive medical intervention. Factors such as lack of awareness, stigma, and insufficient healthcare infrastructure contribute to this gap.

Biological determinants of mental health

Biological determinants of mental health refer to the physical, genetic, and physiological factors that influence a person's psychological well-being and vulnerability to psychiatric disorders. These factors originate within the body's biological systems and heavily shape brain function, emotional regulation, and behavior.

Table 3: Biological Factors Influencing Mental Health

Biological Factor	Impact on Mental Health
Neurotransmitter Imbalance	Leads to depression and anxiety
Genetic Predisposition	Increases vulnerability to mental disorders
Chronic Physical Illness	Causes psychological stress and depression
Hormonal Imbalance	Affects mood and emotional stability
Substance Dependence	Alters brain chemistry and behavior

The table shows that mental health is closely linked with biological mechanisms. Neurochemical changes and genetic factors play a major role in the onset of mental disorders. Physical health conditions further intensify psychological distress.

Table 4: Suicide Data (India Context – Relevant for U.P.)

Year	Total Suicide Cases	Rate per 1 Lakh Population
2020	1,53,052	11.3
2021	1,64,033	12.0
2022	1,64,033+	12.4

The increasing trend in suicide rates reflects the growing burden of mental health problems. Biological factors such as depression, stress disorders, and substance abuse are major contributors to suicidal behaviour in the study region.



Fig-2

Genetic Influence on Mental Health

Genetic predisposition plays a crucial role in the development of mental health disorders. Scientific studies across populations indicate that individuals with a family history of mental illness are at a significantly higher risk of developing similar conditions. This section presents a data-based interpretation of genetic influence using secondary research findings.

Table 5: Link Between Physical and Mental Health

Physical Condition	Associated Mental Health Issue
Diabetes	Depression
Cardiovascular Diseases	Anxiety and Stress
Malnutrition	Cognitive impairment
Thyroid Disorders	Mood disorders

This table clearly shows the interrelationship between physical and mental health. Biological illnesses directly influence brain functioning, leading to psychological disturbances.

Table 6 : Heritability Estimates of Major Mental Disorders

Mental Disorder	Estimated Heritability (%)	Interpretation
Schizophrenia	70% – 80%	Strong genetic influence; highly heritable disorder
Bipolar Disorder	60% – 70%	Significant role of inherited genetic factors
Major Depression	35% – 45%	Moderate genetic contribution
Anxiety Disorders	30% – 40%	Genetic factors combined with environmental triggers
Substance Use Disorder	40% – 60%	Genetic susceptibility with behavioral components

The data clearly indicates that disorders like schizophrenia and bipolar disorder have a strong genetic basis, while depression and anxiety show moderate heritability. This suggests that while genes play a vital role, environmental and social factors also contribute significantly.

The probability of developing mental illness increases substantially when close family members are affected. This pattern supports the concept of genetic transmission of mental disorders.

Table 7: Risk of Mental Illness Based on Family History

Family History Condition	Risk Level in Individual
No family history	Low (Baseline Risk)
One parent affected	2–3 times higher risk
Both parents affected	4–6 times higher risk
Sibling affected	2–4 times higher risk

Higher concordance rates in identical twins compared to fraternal twins confirm that genetic similarity strongly influences the likelihood of developing mental disorders.

Table 8 : Twin Study Evidence on Genetic Influence

Type of Twins	Concordance Rate (%)
Monozygotic (Identical) Twins	40% – 70%
Dizygotic (Fraternal) Twins	10% – 20%

Genetic predisposition often operates through biological pathways such as neurotransmitter activity and brain functioning, reinforcing the biological perspective of mental health.

Table 9: Biological Factors Linked with Genetic Risk

Biological Factor	Impact on Mental Health
Neurotransmitter Imbalance	Affects mood regulation and emotional stability
Brain Structure Variations	Alters cognitive and behavioral functions
Hormonal Dysregulation	Influences stress response and anxiety levels
Genetic Mutations	Increases vulnerability to psychiatric disorders

Suggestions: Need for Evidence-Based Treatment Approaches

1. Promote scientific awareness: Public awareness campaigns should be conducted to educate people that mental illnesses require scientifically validated treatments rather than myths, superstition, or unverified practices.

2. Strengthen access to professional care: Healthcare systems should ensure the availability of trained psychiatrists, psychologists, and counselors, especially in rural and semi-urban areas, to provide evidence-based diagnosis and treatment.
3. Encourage use of standardized treatments: Clinically approved methods such as pharmacotherapy (medication) and psychotherapy (e.g., cognitive behavioral therapy) should be widely adopted for effective management of mental disorders.
4. Early identification and intervention: Screening programs should be introduced at schools, colleges, and workplaces to detect mental health issues at an early stage and provide timely treatment.
5. Integrate mental and physical healthcare: Hospitals and healthcare providers should adopt a holistic approach where mental health is treated alongside physical health using coordinated and evidence-based practices.
6. Training and capacity building: Continuous training programs should be organized for healthcare professionals to update their knowledge about the latest research-based treatment methods.
7. Policy support and funding: Government policies should prioritize mental healthcare by allocating sufficient resources for research, infrastructure, and implementation of evidence-based treatment programs.
8. Reduce stigma and discrimination: Community-level interventions should be designed to reduce stigma, encouraging individuals to seek professional and evidence-based treatment without fear.
9. Use of data and research: Treatment approaches should be regularly evaluated and improved based on clinical data, research findings, and patient outcomes.
10. Encourage multidisciplinary approach: Collaboration among medical professionals, psychologists, social workers, and caregivers should be promoted to ensure comprehensive and evidence-based mental healthcare.

VII. POLICY RECOMMENDATIONS

1. **Strengthening Mental Healthcare Infrastructure:**
The government should expand mental health services at primary, secondary, and tertiary levels, especially in rural and underserved areas.
2. **Integration of Mental and Physical Health Services:**
Healthcare policies should promote a holistic approach by integrating mental health services with general healthcare systems.
3. **Awareness and Education Programs:**
Nationwide awareness campaigns should be conducted to educate people about the biological basis of mental health and to reduce stigma.
4. **Implementation of Evidence-Based Practices:**
Hospitals and healthcare institutions should strictly follow standardized and research-based treatment protocols for mental disorders.
5. **Capacity Building of Healthcare Professionals:**
Regular training and skill development programs should be organized for doctors, nurses, and counselors to ensure updated knowledge of mental health treatments.
6. **Early Screening and Preventive Programs:**
Schools, colleges, and workplaces should implement mental health screening programs to identify issues at an early stage.
7. **Increased Budget Allocation:**
The government should allocate more funds to mental health research, infrastructure, and treatment facilities.
8. **Promotion of Research and Data Collection:**
More region-specific studies should be encouraged to generate reliable data on mental health, particularly in states like Uttar Pradesh.
9. **Reducing Treatment Gap:**
Policies should focus on improving accessibility, affordability, and availability of mental healthcare services to minimize the treatment gap.
10. **Community-Based Mental Health Programs:**
Community participation should be encouraged to support individuals with mental health issues and promote inclusive and supportive environments.

VIII. LIMITATIONS OF THE STUDY

The present study is based on secondary data, which limits direct control over data accuracy and consistency. The findings rely on previously published reports, which may differ in methodology and time period, affecting comparability. The study primarily focuses on biological aspects of mental health and may not fully capture the influence of social, cultural, and environmental factors. In addition, region-specific primary data from Uttar Pradesh is limited, which restricts in-depth local analysis. The absence of field surveys and empirical testing further limits generalization. Despite these constraints, the study provides a useful scientific overview of mental health from a biological perspective.

IX. FUTURE SCOPE OF THE STUDY

Future research can expand this study by incorporating primary data through field surveys and clinical assessments to obtain more region-specific insights, particularly in Uttar Pradesh. Further studies may explore the interaction between biological, psychological, and socio-cultural factors in greater depth. Longitudinal research can be conducted to examine changes in mental health over time and the effectiveness of early interventions. There is also scope to analyze the role of emerging technologies such as artificial intelligence in diagnosis and treatment. Additionally, future studies can focus on developing culturally appropriate, evidence-based mental healthcare models to reduce stigma and improve accessibility and treatment outcomes.

X. CONCLUSION

The present study provides a comprehensive understanding of mental health by examining it through a biological perspective. The findings clearly establish that mental health is not merely a psychological or emotional condition but is deeply influenced by biological factors such as brain structure, neurotransmitter activity, genetic predisposition, and overall physical health. The analysis of secondary data highlights that a considerable proportion of the population, particularly in Uttar Pradesh, is affected by mental health

disorders, while a significant treatment gap continues to exist. The study further reveals that genetic factors play a vital role in increasing vulnerability to mental illnesses, and their interaction with environmental and physical health conditions intensifies the complexity of mental health issues. It also emphasizes that disorders such as depression, anxiety, and substance dependence are closely linked with biological processes and require proper medical attention. Moreover, the research underscores the importance of adopting evidence-based treatment approaches and reducing societal stigma associated with mental illness. A shift toward scientific understanding can improve early diagnosis, effective treatment, and preventive strategies. Overall, the study concludes that integrating biological, physical, and psychological dimensions is essential for achieving holistic mental wellbeing and strengthening the mental healthcare system.

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