

Mental Health and Neuroscience: A Call for Integrated Care in Pakistan

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Research in neuroscience and pharmacology has shown that mental health is not an isolated subdomain of medicine but an integral part of brain science. Conditions such as depression, anxiety, post-traumatic stress disorder (PTSD), and other psychiatric illnesses are no longer considered distant, vague, and nonbiological issues of mind; they actually stand as disorders of brain circuits, neurotransmitters, neuroinflammation, and plasticity^{1,2}. Yet, in Pakistan, mental health is treated separately: less scientific, not so urgent, and definitely not deserving the same rigorous neuroscience-based approach we employ with stroke, epilepsy, or Parkinson's disease.

Modern neuroscience shows the brain is not a "computer" but a dynamic organ shaped by genes, environment, trauma, nutrition, and social context². In Pakistan, however, psychiatry and neurology in medical colleges and hospitals often operate in separate silos, with separate buildings and cultures. The burden is considerable: globally, about one in seven people live with a mental disorder, yet only a small proportion of those affected receive proper treatment³. This treatment gap is especially wide in low- and middle-income countries such as ours.

Today, neuroscience gives us opportunities to understand various biological pathways such as how inflammation contributes to depression in a subset of patients, how the gut-brain axis influences mood, and how neuroplasticity is enhanced through therapy, exercise, and medications⁴. Functional imaging and electroencephalography (EEG) track the disruption of these pathways due to trauma, as well as the effect of mindfulness and cognitive therapies in relieving that damage. However, most of these advances are utilized in high-income countries. At the same time, high-income nations rely on specialized personnel and diagnostic machinery; adapting these neurological insights for Pakistan demands low-resource, highly scalable models that build on local community networks and family-based support systems.

Therefore, an integrated model of care is needed in which:

- Every patient receiving neurological care should be screened for depression, anxiety, and cognitive changes, while patients receiving psychiatric care

should be assessed for potential underlying neurological conditions when clinically indicated.

- Medical curricula should integrate neuroscience and psychiatry to promote a comprehensive understanding of mental and neurological health.
- Community health workers should be trained to recognize early signs of mental distress and facilitate timely referrals using simple, validated screening tools.

The solution is to establish "neuro-psychiatric" clinics in major teaching institutions, where neurologists, psychiatrists, psychologists, and social workers can work together. Incorporating basic neuroscience in the MBBS curriculum may train doctors in managing psychosocial conditions in patients presenting with chronic pain, insomnia or psychological distress, as these symptoms may reflect underlying neurological or mental health conditions.

In Pakistan, we need more research to explore various factors that influence brain development and mental health in our population. Highly prevalent parental consanguinity (first- and second-cousin marriages), malnutrition, dietary patterns, and lower socioeconomic conditions, together with biological, environmental, and cultural factors, may influence brain development and mental health. Investigating these factors can guide evidence-based public health policies and improve early detection, support timely intervention, and promote prevention.

REFERENCES

1. Gordon JA, Dzirasa K, Petzschn FH. The neuroscience of mental illness: Building toward the future. *Cell*. 2024 Oct 17; 187(21): 5858-5870. doi: 10.1016/j.cell.2024.09.028.
2. Hyde LW, Bezek JL, Michael C. The future of neuroscience in developmental psychopathology. *Dev Psychopathology*. 2024 Dec; 36(5): 2149-2164. doi: 10.1017/S09545 79424000233. Epub 2024 Mar 6.
3. Organization WH. Mental disorders. 2025. WHO. Available from: <https://www.who.int/news-room/fact-sheets/detail/mental-disorders>.
4. Altimus CM, Marlin BJ, Charalambakis NE, Colón-Rodriguez A, Glover EJ, Izbicki P et al. For Training Advisory Committee. The Next 50 Years of Neuroscience. *J Neurosci*. 2020 Jan 2; 40(1): 101-106. doi: 10.1523/JNEUROSCI.0744-19.2019. Erratum In: *J Neurosci*. 2020 May 20; 40(21): 4264. doi: 10.1523/JNEUROSCI.0103-20.2020.



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