

Project SWADESH

Why in News

Recently, the **Department of Biotechnology (DBT)-National Brain Research Centre (DBT-NBRC)** has developed **Project SWADESH**, for managing Neurological disorders.

• NBRC is the only institute in India dedicated to Neuroscience Research and Education.

Key Points

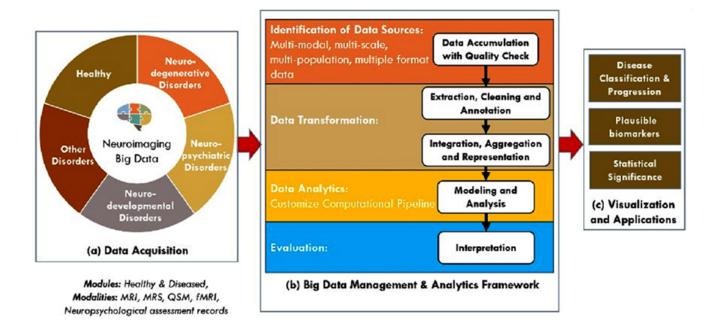
About:

- It is the first large-scale multimodal neuroimaging database designed specifically for the Indian population with <u>big-data</u> architecture and analytics for various disease categories under one platform.
- It proposes a big-data architecture that manages and analyzes six modules, namely <u>neurodegenerative</u> [AD, Mild Cognitive Impairment (MCI), and <u>Parkinson's</u> <u>disease</u> (PD)], neuropsychiatric (schizophrenia and bipolar disorder), neurodevelopmental (autism and <u>epilepsy</u>), <u>Covid-19</u>-related disorders, other disorders, and healthy subjects.
- It is supported by JAVA-based workflow environments and Python. Backed by a dedicated storage system, it provides quality control, data analysis reports, and data backups.
 - Python and Java are both computer programming languages.

Significance:

- It will be useful in conducting multimodal brain studies to understand <u>Alzheimer's</u> <u>disease</u> and several neurological disorders.
- Its development will facilitate the integration of multi-site data and collaborative research worldwide.

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Framework for SWADESH: a comprehensive platform for multimodal neuroimaging data, quality control, and data analytics. The major components are: (a) data acquisition, (b) big data management and analytics framework, and (c) visualization and applications

Neurological Disorders

- Meaning:
 - Neurological disorders are diseases of the central and peripheral nervous system.
 - In other words, the brain, spinal cord, cranial nerves, peripheral nerves, nerve roots, autonomic nervous system, neuromuscular junction, and muscles.
- Types:
 - Non-Communicable Neurological Disorders: Stroke, Headache disorders, <u>Epilepsy</u>, Cerebral palsy, <u>Alzheimer's disease and other dementias</u>, Brain and central nervous system cancer, <u>Parkinson's disease</u>, <u>Multiple sclerosis</u>, Motor neuron diseases, and other neurological disorders.
 - Communicable Neurological Disorders: <u>Encephalitis</u>, <u>Meningitis</u>, Tetanus.
- Injury-related Neurological Disorders:
 - Traumatic brain injuries, Spinal cord injuries.
- Indian Scenario
 - Neurological disorders contribute 10% of the total disease burden in India.
 - There is a growing burden of **non-communicable neurological disorders** in the country, which is mainly attributable to the ageing of the population.
 - The contribution of non-communicable neurological disorders to total DALYs (disability adjusted life-years) in India doubled from 4% in 1990 to 8.2% in 2019, and the contribution of injury-related neurological disorders increased from 0.2% to 0.6%.
 - Burden, high blood pressure, <u>air pollution</u>, dietary risks, high fasting plasma glucose, and high body-mass index are the leading contributors for Neurological Disorders in India.

Source: PIB

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