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## Indian Brain Templates: NIMHANS

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### Why in News

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A team of neuroscientists from the **National Institute of Mental Health and Neuro Sciences (NIMHANS)** has developed **Indian Brain Templates (IBT)** and a **brain atlas**.

NIMHANS is a medical institution located in **Bangalore**, Karnataka. It is the **apex centre** for mental health and neuroscience education in the country and **operates autonomously**.

### Key Points

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- **Brain Template:** It is a gross representation from various brain images to understand brain functionality in diseased conditions.
- **Background:**
  - The **Montreal Neurological Index (MNI)** template that India currently uses is **based on Caucasian brains**, which are **different from Asian brains**.

The MNI template was made by **averaging 152 healthy brain scans** from just a small slice of the city's population in North America.
  - **Some countries have their own scale to measure the brain**, whereas India is still dependent on the Caucasian brain template.

- **NIMHANS Indian Brain Templates and Brain Atlas:**
  - Neuroscientists **studied over 500 brain scans of Indian patients** to develop five sets of Indian Brain Templates (IBT) and a brain atlas.
  - **IBT provides a scale that will measure an Indian brain.** When most brain scans are taken, they need to be compared to a standard brain template — a model or standard for making comparisons from a group of individual brain scans.
    - Validation experiments and comparisons with existing international templates found that using the **NIMHANS IBTs for Indian brains significantly improved the accuracy of alignment** and thereby noticeably **reducing distortions, errors or biases** in final reports of brain structure and function.
  - **Brain Atlas** has been **developed for five age groups** covering late childhood to **late adulthood (six to 60 years)**.
- **Expected Benefits from IBT and Brain Atlas:**
  - These new population and age-specific Indian brain templates will allow **more reliable tracking of brain development and ageing**.
  - The templates and atlas will provide **more precise reference maps for areas of interest in individual patients** with neurological disorders like strokes, brain tumours, and dementia.
  - These will also help **pool information more usefully in group studies of the human brain and psychological functions**, aiding in understanding of psychiatric illnesses like Attention Deficit Hyperactivity Disorder (ADHD), autism, substance dependence, schizophrenia, and mood disorders.

## Way Forward

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- There have been similar attempts to develop brain templates previously in India, however they were typically focused on young adults and had a significantly smaller number of subjects. NIMHANS IBTs are based on a comprehensive scan.
- NIMHANS IBTs can be incorporated in normal protocols of brain imaging in India.

**Source: TH**