BioSpectrum
the business of Bio & Health Sciences
ASIA EDITION

“To diagnose and treat early dementia, digital screening tools and interventions have become a rising trend"

01 September 2023 | Opinion | By Ayesha Siddiqui

To better understand how dementia develops in Asians and to advance new strategies that will one day help to predict and delay the progression of the disease, Nanyang Technological University, Singapore (NTU Singapore) launched the Dementia Research Centre Singapore (DRCS) in April 2022. Nagaendran Kandiah, Associate Professor and Director, DRCS, discusses its mission, recent achievements, and emerging trends in the field.

Could you provide an overview of DRCS?

Dementia Research Centre Singapore (DRCS), is a research centre focusing on the early detection of dementia using neurocognitive, neuroimaging and blood-based biomarkers situated at Lee Kong Chian School of Medicine housed under Nanyang Technological University Singapore. The importance of focusing on the early detection of such biomarkers will pave the way for the development of digital screening tools and interventions for early dementia.

The Biomarkers and Cognition Study, Singapore (BIOCIS) is our visionary prospective cohort study at DRCS looking into these novel biomarkers to detect diseases that cause dementia at the earliest possible stage. The BIOCIS study will analyse 1500 community participants in Singapore from all ethnicities. At the baseline visit, we will collect comprehensive information from each participant, comprising cognitive, health and lifestyle questionnaires, physical measurements, and extensive physiological and imaging data. In addition, blood samples will be collected to measure markers associated with cognition in the blood. Participants will then be followed up over a period of 5 years to identify changes in cognition and health status.

Could you provide insights into any recent promising advancements in this area for detection of dementia in its earliest stages?

Preliminary analysis of our BIOCIS cohort has shown that about half of our community participants meet criteria for mild cognitive impairment (MCI). MCI is a prodromal stage of dementia whereby an individual has objective changes in their cognitive scores. 37-65 per cent of our cohort have abnormal white matter disease in their brain, which is a significantly high number compared to western cohorts. White matter disease is caused by reduced blood flow to the brain caused by cardiovascular diseases such as hypertension, high cholesterol and diabetes mellitus. 9-15 per cent of our cohort have the presence of elevated beta-amyloid in their blood which is much lower compared to western cohorts. Elevated beta-amyloid in the blood is a sign of neurotoxicity where the proteins clump together to form plaques between neurons that causes disruption to cell function. Our results show that Asian biological profiles of neurodegeneration are different from western profiles, thus the importance of studying the contributing factors towards Asian dementia.

What are the latest trends and challenges in Alzheimer's research?

The FDA had just granted approval for Leqembi (Lecanemab) which is an anti-amyloid monoclonal antibody pharmacological treatment for MCI and Alzheimer's disease made by Eisai and Biogen. Multimodal intervention is a non-pharmacological intervention such as the FINGER trial is a Finnish two year intervention involving diet, exercise, cognitive training and vascular risk monitoring to prevent cognitive decline. It is currently being adapted internationally and tweaked accordingly to be culturally sensitive to the respective population. Challenges in dementia research include the need for lengthy assessments and invasive tests which we are hoping to overcome using digital based evaluations and precision biomarkers. Digital screening tools and interventions are a rising trend to aid clinicians in diagnosing and treating early dementia. DRCS plans to launch their digital screening and interventions by early 2024.

Ayesha Siddiqui