

Use of CognICA in community settings to support healthy ageing within a senior population: Cognetivity's collaboration with Lions Befrienders

Introduction

As the elderly population grows, routine cognitive assessment for seniors is becoming increasingly important. Cognitive assessment can help identify seniors who may be at risk for cognitive decline, which, if unchecked, can have serious consequences on their well-being. By assessing and monitoring the cognitive health of seniors, it is possible to provide them with better healthcare, measure the impact of treatments, and improve their quality of life. These programs can also help prevent or delay the onset of irreversible brain deterioration, including dementia.

Lions Befrienders (LB) has been established for more than 26 years and offers a wide range of services and programs to cater to the needs of their seniors in Singapore. In an effort to identify those who may be cognitively impaired and take the necessary interventions to try to improve their cognitive status, LB used Cognetivity's AI-powered cognitive assessment platform, CognICA. CognICA is a 5-minute computerised cognitive test that can be used as an inexpensive cognitive screening and monitoring tool.

In 2020, close to 900,000 citizens aged 60 years and above - that is about 22.2% of the population - lived in Singapore. Although dementia is not a normal part of ageing, it tends to affect those above the age of 60. For most Singapore neighbourhoods, seniors make up 15% - 30% of the population. With more people projected to be living with dementia in the years ahead, Singapore as a nation has identified the need to prepare for the future. The preparation starts by having a wide range of services and programmes to cater to different requirements for its ageing population.

In line with this, LB partnered with Cognetivity Neurosciences on a project in which LB used CognICA to detect seniors at risk of developing dementia, deliver an active ageing program and interventions that help seniors to mentally and socially improve their lifestyle; and finally monitor the impact of such interventions and programs on cognitive health of the community.

Methods

272 participants were sampled across 10 active ageing centres in LB. Participants consisted of 204 females and 68 males. All participants were senior citizens aged 52 - 90 years (M = 72.5, SD = 6.68). Most participants had healthy, clear vision. However, those that were long-sighted or had blurry vision were instructed to bring along their viewing aids. All participants had no history of epilepsy and suffered from no psychomotor disabilities.

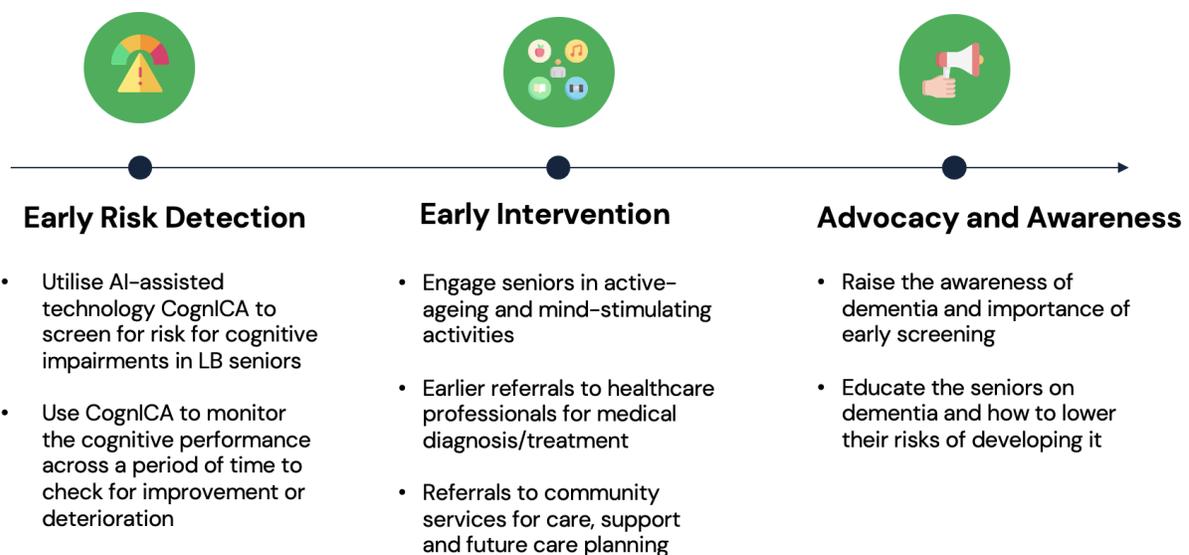


Figure 1. Purposes of the project. Using the AI-assisted CognICA to screen for cognitive impairments in seniors at risk of developing dementia. The seniors participated in LB's active ageing program, which involved activities around community awareness as well as educating seniors on dementia and the importance of modifiable lifestyle changes that can reduce the risk of dementia.

LB's AAP (Active ageing Programs): encourage seniors to stay active, healthy and socially engaged. LB offered 3 types of programs to their seniors as part of the AAP.

1. **Health and fitness** that consists of health talks, health coaching, and various exercise programmes - such as aerobics.
2. **Social and recreational** - outings, festive celebrations, event
3. **Learning** - picking up new skills/hobbies e.g. horticulture/gardening, sewing, musical instruments, singing

Cognetivity's ICA test (CognICA) is a rapid visual categorisation task with backward masking, and has been described in detail in previous publications [1-4]. The test takes advantage of the human brain's strong reaction to animal stimuli [5-7]. One hundred natural images (50 of animals and 50 of not containing an animal) of various levels of difficulty are selected and are presented to the participant in rapid succession as shown in Figure 2.

How CognICA™ works

Fast

Sensitive and accurate

A rapid visual categorization task using natural images of animals

Images are displayed for a fraction of a second.
Users tap to classify each in turn as **animal** or **non-animal**.



Cognetivity's Integrated Cognitive Assessment (CognICA) is shown to be independent of language and culture, and the AI outcome has demonstrated to generalise well across diverse populations.



The test is based on humans' strong reaction to animal stimuli, and the ability of a healthy brain to process images of animals in less than 200 ms.

Figure 2. Description of Cognetivity's Integrated Cognitive Assessment (CognICA).

Results

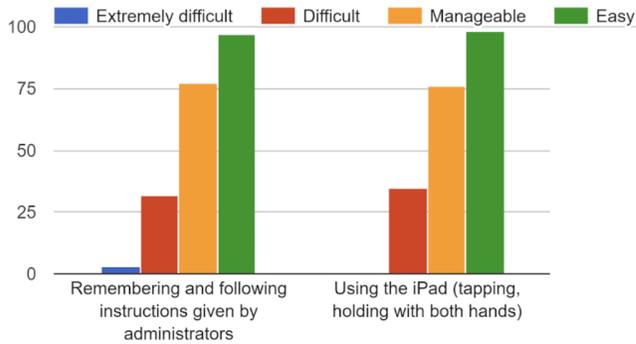
The results of the study demonstrated effectiveness and usability of CognICA in screening and monitoring senior participants in community settings in Singapore. The tool was capable of highlighting seniors at risk of cognitive decline, who were then followed up by LB's active ageing program, providing early intervention before the decline becomes severe. LB's active ageing programs showed a positive impact on the cognitive health of the seniors. The number of individuals highlighted as at-risk or impaired by CognICA were reduced by more than 10%, when re-assessed after LB's one-month intervention program (Table 1).

<i>N</i> = 272	Pre-test	Post-test
Healthy	104 (38.2%)	131 (48.2%)
At risk	11 (4.04%)	6 (2.21%)
Impaired	157 (57.7%)	135 (49.6%)

Table 1. Percentage of participants with improved cognitive status (%). Within the senior population, there was an increase in the percentage of participants who fell into the category of cognitively healthy in CognICA, after LB's intervention (= decrease in the number of cognitively at-risk and impaired individual)

Feedback from seniors: LB administered a survey to participants of the study. The purpose of the survey was to determine what participants value and deem important when it comes to doing dementia screening. It also aimed at understanding their experience of using CognICA and their attitudes towards adopting such technology.

How easy/difficult did you find these components



Would you be willing to learn and adopt the use of CognICA assessment, if it is able to help with early detection of cognitive issues?

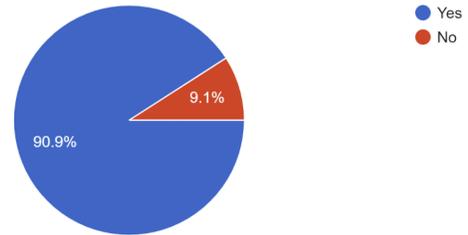


Figure 3. Survey from seniors who participated in the study.

Majority of seniors (74%) preferred to be screened in community settings, rather than clinics.

83% of seniors found it easy to follow instructions and complete the test. In addition, the majority found it easy or manageable to use iPads.

Conclusions

LB's active ageing programs (AAPs) have a beneficial impact on improving the cognitive health of the communities. This emphasises the importance of LB's services in providing seniors with the best possible healthcare and quality of life.

CognICA was identified as a highly sensitive tool that can pick up the risk of cognitive problems in seniors at an earlier stage before overt onset of severe symptoms and dementia. This gave LB a head start in introducing interventions to seniors at an earlier stage, enabling participation in AAPs, timely referral to community partners, and caregiver support, as well as timely referral to secondary care/hospital for formal diagnosis and treatment. Additionally, CognICA helped LB to measure the impact of the AAPs in the community.

As part of their social responsibility, pharmaceutical companies have an opportunity to contribute to the promotion of public awareness and improved outcomes in the health and wellbeing of the seniors in Singapore. Additionally, they can engage with key stakeholders in the community to ensure that the solutions they offer are well-equipped to meet the needs of the population.

References

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