CLINICAL NOTE

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Detection of Suspected Dementia and Risk Factors Among Older Adults in Maldives

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Dementia is a neurodegenerative condition affecting the brain, resulting in symptoms such as memory loss and difficulty with thinking, problem-solving, and language, to the extent that it interferes with daily life. Dementia is associated with earlier mortality and is the seventh leading cause of death globally and the main cause of dependence and disability among older people.[1]

Maldives is a South Asian island country located in the Indian Ocean, where dementia is a national concern due to a high prevalence of risk factors, as well as a projected increase in older people and people with dementia. The 2022 census counted a population of 515 132 people, with 20 850 (4.0%) people aged ≥ 65 years. However, the proportion of older people is rapidly increasing and projected to exceed 7% by 2030 and 14% by 2054.[2] The first STEPwise approach to non-communicable disease risk factor surveillance survey in 2010 reported a high prevalence of non-communicable diseases and risk factors for dementia, including hypertension (32.9%), hypercholesterolemia (54.9%), overweight (65.5%), central obesity (54.1%), and smoking (9.9%).[3] The Global Burden of Disease study estimated that the number of people with dementia in the Maldives will increase by 554%, from 1703 in 2019 to 11 135 in 2050.[4] Proactive measures are needed to raise awareness of dementia to enable early diagnosis, promote risk reduction measures, and establish comprehensive health and social systems for diagnosis, management, and ongoing care.

Dementia prevention operates at three levels: primary prevention, aimed at reducing the risk of dementia in individuals with normal cognitive function; secondary prevention, which focuses on early detection and intervention; and tertiary prevention, which targets the management of symptoms and the slowing of disease progression.[5] A study on brain health conducted in Belgium found that among adults aged 40–75 years, 65% were unaware of dementia risk reduction measures, 54% felt they did not have the necessary knowledge to make brain behavioral changes, and 89% indicated they want more information on improving brain health.[6] While there is no data available regarding public knowledge on dementia for the Maldives, a public awareness campaign on brain health to improve awareness of risk factors and practices to reduce dementia risk, with opportunistic case-finding to allow early diagnosis, was required.

In Kenya, a community-based approach involved utilizing community health workers to ask basic questions on risk factors and administer basic cognitive testing to screen older adults for dementia.[7] In Brunei, a dementia awareness program conducted in 2023 involved administering a survey of dementia risk factors, possible symptoms of dementia, and the Mini-Cog as a screening tool. This was followed by providing information on early warning signs of dementia and risk reduction measures for people aged ≥ 50 years. Participants with identified risk factors, symptoms, or issues identified from the Mini-Cog were advised to see their primary care physician regarding these concerns.[8] A similar community screening and awareness program is proposed for the detection of suspected dementia and risk factors among older adults in the Maldives. The Mini-Cog has been shown to have a high sensitivity for detecting mild cognitive impairment compared to dementia screening tools and has been used for dementia screening in non-English settings.[9]

The main challenge is that the Maldives has a very geographically dispersed population. Its small

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land area of 298 km^2 is scattered across 90 000 km^2 and 1190 islands, of which 198 are inhabited. The islands are grouped into atolls, where reefs of several islands enclose a ring-like lagoon; the 26 natural atolls are divided into 20 administrative atolls. Dementia screening is planned for four cities of the Maldives: Male, Addu, Fuvahmulah, and Kulhudhuffushi. City councils and regional hospitals were invited as partners for the awareness program, and information regarding planned screening times will be shared a month prior. The screening tool and Mini-Cog will be administered in-person by trained volunteers, who will be able to explain the relevance of the participant responses, advise on whether the responses requiring seeking medical attention, provide dementia prevention measures, and answer frequently asked questions regarding dementia.[10] Volunteers will be selected based on their experience in community health or services, elderly care or social work, as well as recommendations from engaged partners and stakeholders. The volunteer training is planned as a Train-the-Trainers workshop, after which they are expected to screen at least 15 participants to demonstrate their capabilities. Given the geographical challenges, contact persons from the council or hospital in each city will keep a record of certified screeners to ensure the sustainability of future interval screening.

Participants are residents of the cities, targeting older people aged ≥ 60 years, or aged ≥ 50 years with non-communicable diseases or risk factors for developing dementia (including, but not limited to, cardiac disease, diabetes mellitus, renal impairment, and previous stroke). Individuals outside the target demographics will still be allowed to complete the screening tool, receive information pamphlets, and attend awareness talks, but they will be excluded from analysis. The questionnaires will be administered in English or Dhivehi by the volunteers. A copy of the questionnaire is available as an Appendix.

There are several unique considerations for implementing this dementia screening approach in the Maldives. These include the country's distinctive linguistic profile and its archipelagic geography. To ensure cultural and linguistic relevance, the screening tool and instructions were provided in both the local language (Dhivehi) and English. Local volunteers familiar with Maldivian older adults were trained to conduct screening, while city councils and hospitals were engaged to support participant recruitment and implementation. The initial phase focuses on four urban centers due to feasibility, existing infrastructure, and stakeholder readiness. However, a phased plan has been developed to expand screening to remote islands via atoll-level health facilities. While the Mini-Cog has not been formally validated in the Maldives, forward and back translation by bilingual experts, along with piloting for comprehension and cultural appropriateness, was done to ensure conceptual accuracy. Outcome metrics include the number of individuals screened and the proportion referred for further assessment. Program evaluation will consider process indicators such as volunteer training completion and screening uptake, short-term outcomes such as improvement in dementia knowledge scores, and medium-term outcomes including referral completion and follow-up. To support sustainability, records of certified volunteers are maintained by local councils or hospitals. These volunteers may be mobilized for future dementia awareness and screening events. It is anticipated that this initiative will be repeated at regular intervals as part of broader health promotion and public education efforts in the Maldives.

This community-based program aims to screen older people and individuals with dementia risk factors to identify the prevalence of self-reported risk factors and potential symptoms of dementia, as well as provide information to raise awareness about dementia symptoms, risk factors, and risk reduction approaches in the Maldives. It is expected that this approach can be adapted to other localities, given the expected increase in dementia prevalence and a need to prepare for this public health challenge globally.

Disclosure
The authors declare no conflicts of interest.

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APPENDIX

Questionnaire

Please answer the following questions

Age:

Gender:

Education: Primary School/Secondary School/Tertiary Education/Other

State the level/grade:

Occupation:

Do you have any of the following medical conditions? (circle your answer)

High blood pressure:	Yes/No/Do not know
High cholesterol:	Yes/No/Do not know
Diabetes:	Yes/No/Do not know
Heart disease:	Yes/No/Do not know
Lung disease:	Yes/No/Do not know
Liver disease:	Yes/No/Do not know
Kidney disease:	Yes/No/Do not know
Previous head injuries:	Yes/No/Do not know
Previous strokes:	Yes/No/Do not know
Overweight:	Yes/No/Do not know
Other (please specify):	Yes/No/Do not know
Smoking:	Yes/No/Do not know

Do you have (or has someone mentioned that you have) any of the following issues?

Memory loss or forgetfulness	Yes/No
Difficulty performing familiar tasks	Yes/No
Problems with language / word finding difficulty	Yes/No
Easily disoriented to time and place	Yes/No
Difficulty making judgements	Yes/No
Problems keeping track of things	Yes/No
Misplacing things	Yes/No
Experience changes in mood and behaviour	Yes/No
Have difficulties with images and spatial relationships	Yes/No
Withdrawing from work or social activities	Yes/No
If yes to any of the above, do you think these issues are getting worse?	Yes/No/No Issues
If yes to any of the above, is it affecting your daily activities?	Yes/No/No Issues
Do you think you should get your memory checked?	Yes/No/I don't know

Any other comments / concerns?

3-item recall score: