



**HOPE FOR
DEMENTIA**

**Dementia Prevention:
A New, Proactive Approach
to Protect Brain Health
via Digitization.**



INTRODUCTION

What is Dementia?

Dementia refers to a set of symptoms and signs associated with a progressive deterioration of cognitive functions that affects daily activities. It is caused by various brain diseases and injuries. Alzheimer's disease is the most common cause of dementia. Vascular dementia, frontotemporal dementia, and Lewy body dementia constitute other common types. Symptoms of dementia can include memory loss, judgement and reasoning problems, and changes in behaviour, mood and communication abilities.ⁱ

Key statistics

The progression in the number of persons living with dementia presents a formidable challenge to health systems, communities, and families worldwide.

- About 1 in 4 seniors age 85+ have been diagnosed with dementia. The population of Canadians age 65 and older is increasing; as a result, so is the number of people living with dementia.
- The prevalence of dementia more than doubles every 5 years for Canadians age 65 and older, from less than 1% for those age 65 to 69 to about 25% for those 85 and older. Dementia is more prevalent among women than men, and the gap increases with age.ⁱⁱ

Managing modifiable risks

A growing body of research evidence exists that identifies 14 potentially modifiable risk factors that can provide a good quality of life for individuals with mild cognitive impairment or early in their retirement age.

The 14 modifiable risk factors are:

- Physical inactivity, smoking, excessive alcohol consumption, air pollution, head injury, infrequent social contact, less education, obesity, hypertension, diabetes, depression, hearing impairment, vision loss and high cholesterol.

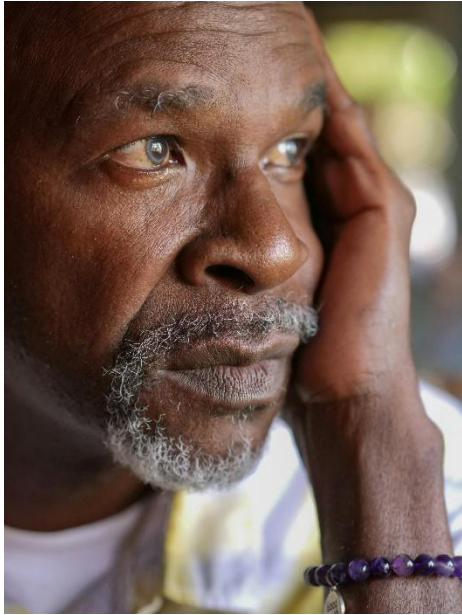
If all these risk factors could be modified, up to 45% of cases of dementia could be delayed or prevented.ⁱⁱⁱ

A new approach to promote dementia awareness and prevention is needed to reduce the number of preventable diagnoses.

This white paper presents an innovative solution that aims to create engagement through gamification and education to incite people to take measurable actions to mitigate the modifiable risks of dementia. During the 12-month pilot phase of implementation, research will be done to assess the effectiveness and validate the impact of the proposed solution.



THE PARADOX: AWARENESS AND INACTION



Dementia care and prevention face a paradox: widespread awareness but insufficient action toward prevention and early intervention and care.

Lack of knowledge about the severity of dementia and the stigma associated with mental health prevents those affected from seeking help for dementia symptoms. This reluctance delays timely support, leaving many without needed resources to manage their condition.

Underdiagnosis remains a challenge, with many cases unrecognized in primary settings, hindering access to treatment and support. This means that the majority of persons in the early stages of dementia do not have access to treatment.

Research from Alzheimer's Disease International shows that most people currently living with dementia have not received a formal diagnosis. In high income countries, such as Canada only 20-50% of dementia cases are recognized and documented in primary care.^{iv}

Additionally, there is a **significant treatment gap in post-diagnosis support**, with many individuals unable to access necessary care.

Despite significant efforts to promote dementia awareness and prevention, not enough action is being taken to mitigate the modifiable risk factors, because of the stigma associated with dementia and limited access to screening, early intervention, and care.

For persons who seek help, whether through consulting their physician or taking a diagnostic screening test, 56% are unable to get the **post diagnosis support** they need. This is not a surprising result, which is corroborated by the findings of the Commonwealth Fund Survey of Family Physicians which found that only 41% of all surveyed doctors in Canada felt they were well-prepared to manage dementia care.^v



PROPOSED SOLUTION: A NEW APPROACH TO PROTECT BRAIN HEALTH VIA DIGITIZATION

Hope for Dementia takes the position that the research findings point to the dire need for public awareness about dementia prevention to integrate information dissemination with strategies to incite people to take concrete actions that mitigate the modifiable risks of dementia. The lack of action calls for the implementation of new methods of educating people about dementia, inciting and empowering them to mitigate the risks of dementia and to manage the symptoms of Mild Cognitive Impairment (MCI).



Hope for Dementia proposes an innovative approach to dementia prevention, that empowers individuals to manage their brain health: ***Dementia Prevention: A new, proactive approach to protect brain health via Digitization.***

Complemented by a robust array of resources to enhance understanding, reduce stigma, and encourage community support, our solution aims to:

- Promote a proactive stance towards dementia prevention and early intervention;
- Decelerate the path to a diagnosis of mild cognitive impairment (MCI);
- Decelerate the progression of symptoms of MCI; and
- Bridge the treatment gap for persons diagnosed with MCI.



The proposed solution integrates 3 elements:

1. **Gamification-Technology Platform**

A growing number of seniors are using digital platforms. A gamification-technology platform is likely to engage them in learning and taking action to preserve their brain health.

- *82.6% of seniors over the age of 65 used the Internet in 2022, a 6.3 percentage point increase vs 2020.*
- *15.4% of seniors have used gamification-technology platforms.*

Furthermore, the ease of using the gamification-technology platform was demonstrated in a recent pilot project entitled “The development and usability of a video game to attenuate pandemic-related stress using an equity lens.”^{vi vii}

2. **Education and Awareness Program**

A suite of educational and information material for dissemination will be developed by Hope for Dementia.

These knowledge products will target project participants, their caregivers, community groups, and the public. The content of the material will address the misunderstandings about dementia and include topics such as the use of non-stigmatizing language, how to interact with a person with dementia, how to seek help for persons with the early signs of dementia.



3. **Research and Effectiveness of the Program**

Recent research indicates that sustained engagement in cognitively demanding, novel activities where new skills are being acquired enhances memory function in older adulthood.^{viii}

The solution aims to provide additional proof of the impact of sustained engagement in new and cognitively demanding activities could have on cognition and on the brain health of seniors.

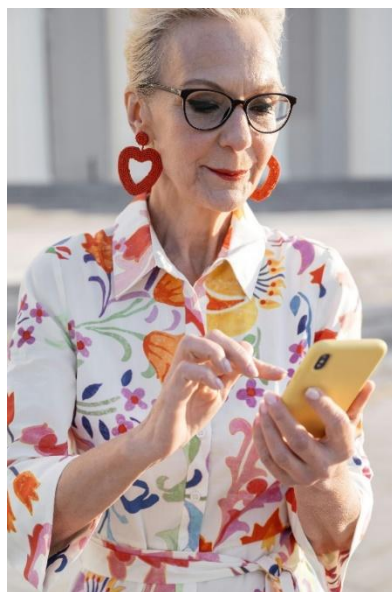


INNOVATING FOR THE FUTURE: THE STRATEGIC ROLE OF DIGITAL SOLUTIONS IN DEMENTIA CARE

As the population ages, the prevalence of dementia and related cognitive impairments presents an escalating challenge to public health systems, families, and individuals worldwide.

Traditional approaches to dementia prevention and care, heavily reliant on in-person assessments and interventions, have been stretched to their limits. In-person therapy and rehabilitation after screening, testing and diagnosis for dementia have been limited and further exacerbated by the strain on the healthcare system particularly during the Covid-19 pandemic and in its aftermath. This underscores the urgent need for innovative solutions that can scale to meet growing demand while offering effective, personalized prevention support and care.

The treatment gap reflects a disconnect between awareness efforts and practical support available, compounded by a lack of preparedness among family physicians for dementia care.



The proposed solution represents a forward-thinking response to this challenge, harnessing the power of technology to transform the landscape of dementia prevention, diagnosis, and care. With a growing number of seniors using easy to use interactive technologies to remain socially connected and cognitively sharp, the gamification-technology platform provides an attractive, effective option for project participants.

The gamification-technology platform will be available 24/7 so that users will be empowered to manage their cognitive health, knowing that they are getting credible, relevant information in a novel, fun and interesting way.



A NEW PARADIGM IN DEMENTIA PREVENTION

Prevention is the first line of defense against dementia. The gamification technology platform's approach to prevention is rooted in education and early detection.

By engaging users with interactive content and cognitive exercises, the gamification-technology platform not only raises awareness but also promotes brain health. This proactive engagement helps demystify dementia and encourages a culture of preventive health, where individuals are empowered to take charge of their cognitive well-being long before symptoms might arise.

Intelligent digital characters on the platform interact with patients, educating them on the warning signs and risks of dementia, while providing fun exercises to support the conservation of brain health and to break social isolation.

To foster inclusivity and to normalize diversity, the software allows the user to fully customize their self-avatar, including skin colour, cultural symbols, pronoun choice and representation of ability aids such as wheelchairs or glasses. A representative cast of characters is also present in the game.

To guarantee accessibility by users with varied abilities, the game includes features such as screen-reading capacity, customizable font sizes and zoom view, large buttons, and multiple navigation modes. The gamification-technology platform also supports users with limited technological proficiency, including support for older devices and limited internet connection.

ENHANCING EARLY DETECTION AND DIAGNOSIS

Early detection and diagnosis of dementia can significantly impact the course of the disease, offering opportunities for intervention that can slow progression and improve the quality of life.

The gamification-technology platform leverages advanced algorithms and data analytics to provide users with personalized feedback on their cognitive health, identifying potential concerns that warrant further evaluation. This functionality can bridge the gap between noticing symptoms and seeking professional help, a critical period where delays can have profound consequences. Questionnaires and an assessment test will be deployed to participants to gather feedback on the following:

- Changes perceived in participants' level of anxiety in regard to dementia;
- Their motivation to modify their behavior to reduce the risks of dementia;
- Their appreciation of the platform; and
- The effectiveness of the gamification-technology platform.



REVOLUTIONIZING POST-DIAGNOSIS SUPPORT AND CARE

For individuals diagnosed with dementia, the journey post-diagnosis can be fraught with uncertainty and challenges. The gamification-technology platform addresses this by offering a comprehensive suite of support tools tailored to the needs of persons with mild cognitive impairment (MCI) or early-stage dementia. From memory aids and daily living assistance to communication tools for caregivers, the solution enhances the support network available to individuals, facilitating a higher quality of life and greater independence.



A COLLABORATIVE ECOSYSTEM FOR COMPREHENSIVE CARE

Recognizing that effective dementia care involves a network of support, the gamification-technology platform functions as a hub for collaboration among healthcare professionals, caregivers, and the wider community. It enables the sharing of information and resources, streamlining the care process and ensuring that individuals receive the comprehensive support they need. This collaborative ecosystem not only improves outcomes for those directly affected by dementia but also contributes to a more informed and compassionate society.

To complement the gamification technology platform, Hope for Dementia will develop resource and presentation material to promote dementia prevention and risk mitigation and the reduction of dementia-related stigma. The material will be widely promoted in community spaces and in long-term residences for seniors. In addition, the material will be available on Hope for Dementia's social media and direct communication channels. The dual aim of the distribution of the resource material is to initiate discussions and to create grassroots engagement on dementia prevention while encouraging seniors' residences and supporting communities to be more dementia inclusive in their activities.



LEADING-EDGE RESEARCH TO SUPPORT DEMENTIA PREVENTION

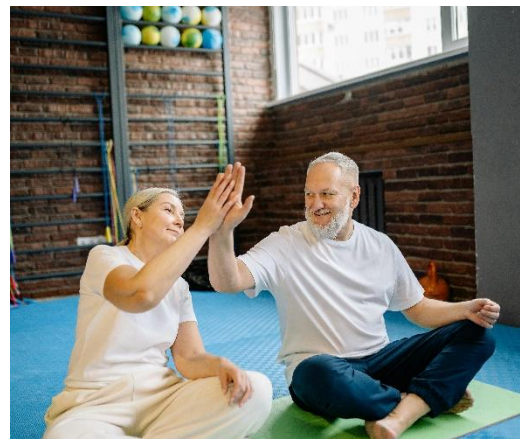
Various communities can learn from the results of this program and adapt the process within their own communities.



The solution aims to provide evidence to support a growing body of research on the impact of sustained engagement in cognitively demanding, novel activities on brain health in aging adults.

Deployed initially as a twelve-month pilot project, three questionnaires will be distributed to participants to provide feedback on perceived changes in their level of anxiety about dementia, their motivation to make behavioral changes to reduce the risks of dementia and their appreciation of the gamification-technology platform.

At the beginning of the pilot project deployment, a cognitive screening test will be used to identify the cognitive capability of the aging adult participants and monitor them two additional times – at the mid-point of the project and again at the end of the project – and compare the findings with a group that did not go through this process and compare the effectiveness of the program on cognitive health. We will collaborate with renowned researchers to test the participants throughout the program.



Hope for Dementia aims to have a high satisfaction rate of 90% of participants with the ease of use of the platform, 80% of participants should be able to identify at least two strategies for stress mitigation and mental health self-care, and 80% of participants should indicate that they have initiated and sustained dementia risk reduction and mitigation actions (e.g., physical exercise, socializing with others, etc.) within a twelve-month timeframe.



CONCLUSION: A VISION OF THE FUTURE

The digital platform embodies a vision of the future where technology plays a central role in addressing the challenges of dementia care.

By offering innovative solutions for prevention, early detection, and post-diagnosis support, the solution *Dementia Prevention: A New, Proactive Approach to Protect Brain Health via Digitalization* paves the way for a new era of personalized, accessible, and effective dementia risk mitigation, prevention, and care.

The continued evolution of this solution will be crucial in meeting the needs of an aging population, transforming the experience of those living with dementia and offering hope and support to millions in Canada and worldwide.



REFERENCES

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- ⁱ Dementia in Canada, including Alzheimer’s Disease <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/dementia-highlights-canadian-chronic-disease-surveillance.html#fn4> Accessed on 25 March 2024
- ⁱⁱ The Canadian Institute for Health Information (CIHI) <https://www.cihi.ca/en/dementia-in-canada/dementia-in-canada-summary> Accessed on 25 March 2024
- ⁱⁱⁱ Alzheimer’s Disease International <https://www.alzint.org/about/risk-factors-risk-reduction/> Accessed 2 March 2026
- ^{iv} Alzheimer’s Disease International <https://www.alzint.org/about/dementia-facts-figures/dementia-statistics/> Accessed 5 March 2024
- ^v Canadian Institute for Health Information <https://www.cihi.ca/en/dementia-in-canada/spotlight-on-dementia-issues/family-doctor-preparedness> Accessed on 5 March 2024
- ^{vi} Statistics Canada <https://www.statcan.gc.ca/o1/en/plus/4288-canadian-seniors-more-connected-ever> Accessed on 6 March 2024
- ^{vii} Minian N, Saiva A, Gayapersad A, Dragonetti R, Proulx C, Debergue P, Lecce J, Hussain S, Desjardins E, Selby P The development and usability of a video game to attenuate pandemic-related stress using an equity lens JMIR Formative Research. 30/03/2022:36820).
- ^{viii} Denise C. Park, Jennifer Lodi-Smith, Linda Drew, Sara Haber, Andrew Hebrank, Gérard N. Bischof, and Whitley Aamodt The Impact of Sustained Engagement on Cognitive Function in Older Adults: The Synapse Project. National Library of Medicine <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4154531/> Accessed on 6 March 2024

