

## PERSPECTIVE

# Building digital solutions to support brain health prescribing in primary care: Where to begin?

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**Abstract**

National and international policy goals on healthy ageing and dementia risk reduction are yet to be fully realised in community healthcare settings. Disease modification strategies through lifestyle and social interventions are viable, evidence-based solutions to reduce age-related disease burden. However, prescribing lifestyle interventions targeting dementia risk in primary care remains deficient. Using digital technologies to support older individuals and healthcare professionals through formal health checks and lifestyle management is likely to enable shared understanding and consequences of personalized care and treatment options. These tailored solutions may bridge the translation gap and support healthy ageing.

## 1 | INTRODUCTION

Although international work is underway to authenticate the World Health Organization's Dementia Global Action Plan<sup>1</sup> with an equitable focus on dementia prevention through lifestyle management, most countries have yet to finalize and release their national plans. As a result, investments to date have been restricted, reactive, and disjointed. Technologies that focus on the monitoring and management of dementia may help overcome equity and current practice-based concerns in primary care centers globally. When implemented properly with the consultation of primary healthcare professionals, digital solutions may enable older Australians to live more physically, socially, and cognitively active lives.

The World Health Organisation's<sup>2</sup> *Decade of Healthy Ageing* report focuses on changing perceptions and fostering communal care strategies for older people to live longer, better, and higher quality lives. Research into targeted lifestyle modification programs (LMPs) for dementia prevention has grown exponentially over the last few years.<sup>3</sup> This is largely due to the growing evidence base on the modifiable risks of dementia, which includes factors such as hearing loss, hypertension, obesity, alcohol consumption, and smoking.<sup>4</sup> Lifestyle modification programs target decreasing dementia risk factors and promoting

protective factors by altering behaviors associated with risk, such as dietary changes,<sup>5</sup> physical exercise,<sup>6</sup> and social connectedness.<sup>7</sup> However, community-based preventative strategies are often under-recognized in reducing the personal and societal burden of dementia on the whole.<sup>8,9</sup>

Research surrounding multi-domain LMP interventions is still evolving, but in general has demonstrated small, but significant, effect sizes in cognitive outcomes.<sup>3,10</sup> It is thus timely to consider how we can best integrate dementia prevention initiatives and programs, such as multi-domain LMPs, into existing healthcare systems, as a way of transforming existing community-based strategies into more comprehensive population-wide efforts to reduce the burden of dementia on individuals and society.

Many countries have, or are currently formulating, comprehensive guidelines and policies to address the increasing disease burden associated with ageing, with a strong focus on early detection, holistic care, and prevention. Examples include the United Kingdom<sup>9</sup> and Australia<sup>11,12</sup> both of which have dedicated national efforts. Additionally, international organizations,<sup>1,2</sup> professional bodies (e.g., Royal Australian College of General Practitioners<sup>13</sup>), and initiatives such as UK's 'All Our Health'<sup>14</sup> have prompted guidelines on dementia prevention. Despite the availability of such guidelines and policies across

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various government levels, there is a noticeable gap in their practical implementation at the clinical level.

Effective public health policy and preventative initiatives necessitate a holistic understanding of community needs, the integration of existing healthcare systems, and the active management of dementia risk factors, particularly within primary care settings.<sup>8</sup> Yet dedicated discussions on healthy brain ageing are infrequent in clinical settings,<sup>15</sup> and deliberate efforts to modify lifestyle factors linked to dementia risk are limited. Concerns also persist regarding the inadequate translation of policy into clinical practice, resulting in suboptimal uptake of preventative measures.<sup>15-17</sup>

Primary care services are a cost-effective and readily accessible component within most global healthcare systems, making it advantageously positioned to support LMPs and contribute to dementia management within the community. Primary care teams include general practitioners (GPs), nurses, and allied health workers,<sup>18</sup> with GPs holding the position of the most frequently consulted health professionals in Australia,<sup>19</sup> where the average individual consults their GP approximately six times annually.<sup>20</sup> Despite this frequency, dementia topics often receive inadequate attention within primary care settings, leading to underdiagnosis. This oversight may be attributed, in part, to the limited patient consultation times, underuse of diagnostic assessments, and GPs' perceived lack of knowledge or confidence in dementia-related matters,<sup>21</sup> familiarity with diagnostic tools, and awareness of available resources and treatment pathways.<sup>16</sup> To effectively address the evolving needs of the ageing community, it is imperative to offer appropriate support to healthcare professionals, not only at the policy level, but also within clinical practice.

Advancements in health information technologies offer promising opportunities to support healthcare professionals in promoting healthy ageing practice.<sup>22,23</sup> Recently, the ever-increasing sophistication and utility of these technologies, driven by ongoing research and development, have enabled more precise preventative medicine across multiple domains (e.g., managing obesity,<sup>24</sup> cardiovascular disease,<sup>25</sup> and diabetes).<sup>26</sup> Technological applications for dementia also exist and hold potential benefits for both healthcare professionals and older adults alike. Innovations in Internet of Things (IoT) technologies allow continuous monitoring of vital health indicators, including heart rate, respiratory rate, physical activity, and mood, with the ability to relay these data to multidisciplinary healthcare teams.<sup>27</sup> Wearable technologies, integrated into IoT systems, can further enable ageing at pace by providing valuable health data.<sup>28</sup>

Coupled with advances in machine learning and data analytics, IoT technologies may enable early detection of disease, progression monitoring, and advanced care planning.<sup>29</sup> Furthermore, leveraging existing healthcare records in primary care to create and monitor dementia risk scores is becoming increasingly feasible.<sup>30</sup> Advances in data and text mining systems also hold promise for predicting dementia risk by analyzing medical texts, assisting HCPs in identifying individuals vulnerable to dementia and aiding decision making.<sup>31</sup> Dashboard technology is also emerging as a valuable tool for the care of older adults and people with dementia,<sup>32,33</sup> offering solutions for productivity management in hospitals, improving the quality of care for dementia patients, and visualizing disease progression in older populations.<sup>33</sup>

However, while leveraging novel technologies and data insights to prevent and detect dementia risks offers numerous benefits, the implementation of these technologies must remain flexible and tailored to the needs of healthcare professionals and their patients.

Conferring with the various stakeholders involved in supporting healthy ageing, including HCPs, patients, and other healthcare technology consumers is essential for creating useful and meaningful healthcare technologies. Participatory design methods enable stakeholders to have a sense of ownership and control over the creation and implementation of healthcare technologies.<sup>33</sup> Additionally, involving stakeholders early in the technology design process can address adoption barriers, such as low acceptance, costs, ethics, and usability complexities, and enable appropriate educational practices,<sup>34</sup> which can support future integration of these solutions in primary care.

## 2 | CONCLUSION

The global healthcare goals set by the WHO and governments are yet to be fully actioned in community settings. Disease modification strategies through lifestyle and social interventions are viable solutions to reduce age-related disease burden. However, healthy ageing is not being promoted to its fullest potential in primary care settings. Primary care is advantageously positioned to respond to the needs of the ageing community but requires further support. It is essential that HCPs across global healthcare systems receive adequate support to enable their patients to age well, and co-designed technology may provide the means to track disease progression, actively respond to dementia disease risks and be truly adaptive to the changing needs of the community in a constantly evolving technological space.

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## CONFLICT OF INTEREST STATEMENT

All authors have nothing to disclose. Author disclosures are available in the [supporting information](#).

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