

New Trends in Cognitive Aging and Mild Cognitive Impairment: Policy and Practice Insights

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The edited volume *New Trends in Cognitive Ageing and Mild Cognitive Impairment*, curated by Facal et al,¹ is a comprehensive compilation of diverse studies addressing cognitive aging and mild cognitive impairment (MCI). The book is organized into nine chapters, which explore the mental health implications for older individuals and clinical strategies for treating cognitive deficits, focusing on MCI. It takes an interdisciplinary approach, encompassing results from geriatric assessments conducted across countries in North America and Western Europe.

Cognitive aging is the natural changes in cognitive functions that occur over time as part of the normal aging process. These changes do not necessarily interfere significantly with an individual's ability to perform daily activities.² Notable features of cognitive aging include a decline in processing speed, mild impairments in working memory and episodic memory, alterations in attention, and difficulties in executing complex tasks. However, skills such as semantic memory, vocabulary, and general knowledge tend to remain relatively preserved. In contrast, MCI is a clinical condition characterized by a more significant decline in one or more cognitive domains such as memory, attention, or language, without significantly affecting daily functioning. MCI is considered an intermediate state between normal cognitive aging and neurodegenerative disorders such as dementia.^{3,4} Although MCI is an early indicator of the risk for developing dementia, not all individuals diagnosed with MCI will progress to more severe disorders, as this condition presents a valuable window of opportunity for preventive or therapeutic interventions.^{5,6}

Research in this field is of fundamental importance to address one of the most significant challenges of the 21st century: caring for a rapidly aging global population.⁷

Along with the accelerated aging of populations worldwide, there is an anticipated substantial increase in the incidence and prevalence of diseases associated with gradual cognitive decline in the forthcoming decades.⁸ From a clinical perspective, the focus is on improving diagnosis, treatment, and quality of life. From a public health perspective, the priorities are prevention, equitable access to care, and the sustainability of health systems. In this brief book review, I aim to highlight key findings while addressing critical gaps and proposing strategies to enhance the book's contributions to practice and policy.

It is important to first address the regional variations, given the nature of the volume as a thematically based edited collection that does not fully explore the social, geographical, cultural, and economic factors in sufficient depth. These factors elucidate the structural constraints many older individuals face in accessing and receiving geriatric care.⁹ Therefore, overlooking such factors may engender gaps in the clinical approach presented. One major theme is the influence of demographic and health factors on cognitive aging, exemplified by an analysis of Mexican older adults using data from the Mexican Health and Aging Study. In this chapter, the authors underscore the interplay between education, rural residence, chronic diseases, and gender-specific cognitive health outcomes. Nonetheless, there is room to explore the socio-cultural implications of these findings such as how cultural norms and attitudes influence the success of interventions. For example, cultural stigmas around aging can hinder early cognitive screenings or participation in prevention programs.

The book further underscores the importance of subjective cognitive decline (SCD) as a predictor for MCI and dementia, a clinical outcome corroborated by systematic reviews by Rostamzadeh et al¹⁰ and Parfenov et



al.¹¹ These latter authors further note that approximately 2.75% of healthy individuals without SCD convert to MCI annually. Although technological innovations, including virtual reality (VR) and tools like Sustained Attention to Response Tasks, show promise in enhancing cognitive assessments,¹² the practical challenges of scaling these technologies in low-resource settings require further consideration. Issues such as cost, accessibility, and user familiarity with advanced tools often hinder adoption, particularly in under-resourced areas.

In their systematic review, McHenry et al¹³ explored the potential of portable electronic devices as a cost-effective and impactful tool for health assessments. Their findings highlighted several advantages, including enhanced knowledge for both healthcare providers and patients, improved patient care and management outcomes, increased confidence among providers in using technology and creating environments conducive to informal technology-driven learning. However, their review also identified notable challenges such as significant initial investment costs, limited access to technical support, and concerns about device theft. Open-source platforms and low-cost applications tailored for smartphones could serve as practical, cost-effective alternatives, enhancing accessibility.

While the relationship between mobility issues and cognitive decline is well-established,¹⁴ the broader role of community-based support systems warrants further exploration. Successful models such as age-friendly city initiatives or culturally tailored community interventions, could inform scalable solutions. For instance, Moradi and colleagues¹⁵ evaluations of “age-friendly city” indicators in Golestan province, Iran, provide valuable insights into creating supportive environments for cognitive health. Additionally, the book’s discussion on polypharmacy (the use of multiple medications simultaneously) and its impacts could benefit from clearer explanations and integration of preventative strategies. Despite the recognized adverse effects of polypharmacy, often leading to questions about its efficacy for specific conditions, the benefit-risk ratio for MCI remains inadequately documented in the scientific literature.

Research by Trevisan et al¹⁶ indicates that even mild polypharmacy may elevate the risk of MCI progression to dementia, likely due to drug-drug interactions that frequently emerge in multidrug regimens. Perdixi et al¹⁷ posit that potential drug-drug interactions and the use of anticholinergics are prevalent among community-dwelling older adults. Exposure to anticholinergics has been associated with MCI, particularly regarding impaired executive function. Consequently, clinicians are advised to exercise caution when prescribing anticholinergics.

From the points above, a multifaceted approach to prevention strategies involves the regular evaluation of medication regimens by healthcare providers to assess the necessity and appropriateness of each pharmaceutical agent. A key focus of this process is discontinuing

medications that are non-essential or potentially harmful. As clinicians, we are encouraged to adopt a patient-centered approach, considering the individual’s health goals and cognitive capacity when prescribing or deprescribing medications. Hence, educating patients and caregivers about the potential risks associated with polypharmacy is crucial, thereby empowering them to engage in informed discussions. By reducing the use of unnecessary medications, we can help prevent polypharmacy, which in turn can support better cognitive outcomes and enhance the quality of life for individuals with MCI.

Overall, to address gaps identified in the book, this review recommends a deeper exploration of how socio-cultural norms shape intervention outcomes. For instance, cultural attitudes toward aging often influence cognitive health behaviors, as highlighted in Rabiey Faradonbeh and colleagues¹⁸ qualitative analysis of elder neglect. Mixed-method studies could further illuminate these dynamics, revealing how interventions might be adapted for different cultural contexts. While VR and telemedicine show promise, barriers such as costs and infrastructure in low-resource settings cannot be overlooked. Specifically, what are the challenges of implementing VR for cognitive interventions in rural clinics with limited internet access? Solutions such as open-source alternatives or using smartphones for telemedicine, as suggested by Maheshwari and Maheshwari’s⁷ research on Vietnam’s aging population, could help bridge these gaps.

As pointed out by Holthe et al,¹⁹ systematic technology approaches are not part of routine community health care, which may contribute to inequities in the provision of technologies that enhance occupational possibilities and meaningful activities for individuals with MCI. Therefore, the role of community-based systems in promoting cognitive health deserves greater emphasis. Successful examples from both low- and high-resource settings could be explored to offer insights into replicable frameworks. Localized support networks that combine cultural traditions with modern interventions may increase engagement and improve efficacy.²⁰ European countries with innovative policies in this area seem to be significantly ahead of the rest of the world.^{21,22} This suggests that less-developed countries could potentially replicate these models, given their available capacities and resources, with the potential for positive outcomes.

The book makes a significant contribution to understanding cognitive aging, particularly through its focus on technological innovations and demographic factors. However, addressing the socio-cultural dimensions, accessibility challenges, and cost-effective tools would further enhance its relevance for diverse populations. Given the multifaceted nature of cognitive aging, strategies that combine physical exercise, cognitive stimulation, and pharmacological treatment (when applicable) are important allies in recent literature. Hence, future research could explore the synergistic effects of

these approaches.

On the other hand, policy-level changes are crucial for addressing gaps in healthcare access and resource distribution. Advocating for universal health coverage, age-friendly policies, and community-based support systems can help mitigate disparities in cognitive healthcare.

As discussed, cognitive aging and MCI have significant implications for health systems and policy development, particularly with the growing aging population worldwide. These conditions increase the demand for health services, including diagnostic tools, long-term care facilities, and training programs for healthcare professionals. Policies should focus on early detection and intervention, emphasizing preventive strategies such as promoting physical activity, cognitive stimulation, and the management of chronic conditions (e.g., hypertension and diabetes) that contribute to cognitive decline. The challenge goes beyond facilitating access to quality and responsive services. It involves rethinking the organization of health networks, particularly for underserved populations, who are most affected by the multidimensional consequences of these conditions. Therefore, strengthening the right to health for older adults and those approaching old age must also be part of the broader discussion.

It is important to note that the financial burden associated with cognitive aging and MCI extends beyond healthcare costs, encompassing indirect costs such as lost productivity,²³ caregiving expenses,²⁴ and the emotional toll on families.²⁵ Public health systems face increasing pressure to allocate resources for supportive services, including memory clinics, respite care, and caregiver training. This is a pressing concern requiring immediate attention. Policymakers must balance these demands with rising economic strain, exploring funding models like public-private partnerships or insurance reforms to help offset costs. Moreover, strategies to support informal caregivers such as tax incentives or paid family leave can alleviate economic pressures while ensuring quality care for affected individuals.

In conclusion, addressing the challenges raised in this book, along with the complementary points highlighted for reflection, is crucial in minimizing the long-term socioeconomic impact of cognitive aging and MCI on both individuals and society.

Ethical approval

Not applicable.

Conflict of interests

None declared.

References

- Facal D, Spuch C, Valladares-Rodriguez S. *New Trends in Cognitive Aging and Mild Cognitive Impairment*. 1st ed. Multidisciplinary Digital Publishing Institute (MDPI); 2022. p. 130. doi: [10.3390/books978-3-0365-5538-6](https://doi.org/10.3390/books978-3-0365-5538-6).
- Moon W, Han JW, Bae JB, Suh SW, Kim TH, Kwak KP, et al. Disease burdens of Alzheimer's disease, vascular dementia, and mild cognitive impairment. *J Am Med Dir Assoc*. 2021;22(10):2093-9.e3. doi: [10.1016/j.jamda.2021.05.040](https://doi.org/10.1016/j.jamda.2021.05.040).
- Montine TJ, Bukhari SA, White LR. Cognitive impairment in older adults and therapeutic strategies. *Pharmacol Rev*. 2021;73(1):152-62. doi: [10.1124/pharmrev.120.000031](https://doi.org/10.1124/pharmrev.120.000031).
- GBD 2019 Ageing Collaborators. Global, regional, and national burden of diseases and injuries for adults 70 years and older: systematic analysis for the Global Burden of Disease 2019 Study. *BMJ*. 2022;376:e068208. doi: [10.1136/bmj-2021-068208](https://doi.org/10.1136/bmj-2021-068208).
- Rosenberg A, Solomon A, Jelic V, Hagman G, Bogdanovic N, Kivipelto M. Progression to dementia in memory clinic patients with mild cognitive impairment and normal β -amyloid. *Alzheimers Res Ther*. 2019;11(1):99. doi: [10.1186/s13195-019-0557-1](https://doi.org/10.1186/s13195-019-0557-1).
- Jones A, Ali MU, Kenny M, Mayhew A, Mokashi V, He H, et al. Potentially modifiable risk factors for dementia and mild cognitive impairment: an umbrella review and meta-analysis. *Dement Geriatr Cogn Disord*. 2024;53(2):91-106. doi: [10.1159/000536643](https://doi.org/10.1159/000536643).
- Maheshwari A, Maheshwari G. Aging population in Vietnam: challenges, implications, and policy recommendations. *Int J Aging*. 2024;2(1):e1. doi: [10.34172/ija.2024.e1](https://doi.org/10.34172/ija.2024.e1).
- GBD 2019 Collaborators. Global mortality from dementia: application of a new method and results from the Global Burden of Disease Study 2019. *Alzheimers Dement (N Y)*. 2021;7(1):e12200. doi: [10.1002/trc2.12200](https://doi.org/10.1002/trc2.12200).
- Haakenstad A, Yearwood JA, Fullman N, Bintz C, Bienhoff K, Weaver MR, et al. Assessing performance of the Healthcare Access and Quality Index, overall and by select age groups, for 204 countries and territories, 1990-2019: a systematic analysis from the Global Burden of Disease Study 2019. *Lancet Glob Health*. 2022;10(12):e1715-43. doi: [10.1016/s2214-109x\(22\)00429-6](https://doi.org/10.1016/s2214-109x(22)00429-6).
- Rostamzadeh A, Bohr L, Wagner M, Baethge C, Jessen F. Progression of subjective cognitive decline to MCI or dementia in relation to biomarkers for Alzheimer disease: a meta-analysis. *Neurology*. 2022;99(17):e1866-e74. doi: [10.1212/wnl.0000000000201072](https://doi.org/10.1212/wnl.0000000000201072).
- Parfenov VA, Zakharov VV, Kabaeva AR, Vakhnina NV. Subjective cognitive decline as a predictor of future cognitive decline: a systematic review. *Dement Neuropsychol*. 2020;14(3):248-57. doi: [10.1590/1980-57642020dn14-030007](https://doi.org/10.1590/1980-57642020dn14-030007).
- Mallo SC, Valladares-Rodriguez S, Facal D, Lojo-Seoane C, Fernández-Iglesias MJ, Pereiro AX. Neuropsychiatric symptoms as predictors of conversion from MCI to dementia: a machine learning approach. *Int Psychogeriatr*. 2020;32(3):381-92. doi: [10.1017/s1041610219001030](https://doi.org/10.1017/s1041610219001030).
- McHenry MS, Fischer LJ, Chun Y, Vreeman RC. A systematic review of portable electronic technology for health education in resource-limited settings. *Glob Health Promot*. 2019;26(2):70-81. doi: [10.1177/1757975917715035](https://doi.org/10.1177/1757975917715035).
- Cao BF, Zhou R, Chen HW, Liang YQ, Liu K, Fan WD, et al. Association between mobility limitations and cognitive decline in community-dwelling older adults: the English Longitudinal Study of Ageing. *Gerontologist*. 2024;64(12):139. doi: [10.1093/geront/gnae139](https://doi.org/10.1093/geront/gnae139).
- Moradi A, Akbari A, Sanagoo A, Abolghazi M, Vodjani H, Gharajeh A, et al. Evaluation of "age-friendly city" indicators in Golestan province from the perspective of the older adult population. *Int J Aging*. 2024;2(1):e9. doi: [10.34172/ija.2024.e9](https://doi.org/10.34172/ija.2024.e9).
- Trevisan C, Limongi F, Siviero P, Noale M, Cignarella A, Manzato E, et al. Mild polypharmacy and MCI progression in older adults: the mediation effect of drug-drug interactions. *Aging Clin Exp Res*. 2021;33(1):49-56. doi: [10.1007/s40520-021-00682-0](https://doi.org/10.1007/s40520-021-00682-0).

- 019-01420-2.
17. Perdixi E, Cotta Ramusino M, Costa A, Bernini S, Conti S, Jesuthasan N, et al. Polypharmacy, drug-drug interactions, anticholinergic burden and cognitive outcomes: a snapshot from a community-dwelling sample of older men and women in northern Italy. *Eur J Ageing*. 2024;21(1):11. doi: [10.1007/s10433-024-00806-0](https://doi.org/10.1007/s10433-024-00806-0).
 18. Rabiey Faradonbeh M, Mohammadi S, Roshanzadeh M, Shirvani M, Khalilzadeh Naghneh MH. Analysis of underlying factors in financial neglect and abuse in older adults: a qualitative content analysis. *Int J Aging*. 2024;2:e17. doi: [10.34172/ija.2024.e17](https://doi.org/10.34172/ija.2024.e17).
 19. Holthe T, Halvorsrud L, Thorstensen E, Karterud D, Laliberte Rudman D, Lund A. Community health care workers' experiences on enacting policy on technology with citizens with mild cognitive impairment and dementia. *J Multidiscip Healthc*. 2020;13:447-58. doi: [10.2147/jmdh.S246180](https://doi.org/10.2147/jmdh.S246180).
 20. Nie Y, Richards M, Kubinova R, Titarenko A, Malyutina S, Kozela M, et al. Social networks and cognitive function in older adults: findings from the HAPIEE study. *BMC Geriatr*. 2021;21(1):570. doi: [10.1186/s12877-021-02531-0](https://doi.org/10.1186/s12877-021-02531-0).
 21. Kasper S, Bancher C, Eckert A, Förstl H, Frölich L, Hort J, et al. Management of mild cognitive impairment (MCI): the need for national and international guidelines. *World J Biol Psychiatry*. 2020;21(8):579-94. doi: [10.1080/15622975.2019.1696473](https://doi.org/10.1080/15622975.2019.1696473).
 22. Vita A, Gaebel W, Mucci A, Sachs G, Erfurth A, Barlati S, et al. European Psychiatric Association guidance on assessment of cognitive impairment in schizophrenia. *Eur Psychiatry*. 2022;65(1):e58. doi: [10.1192/j.eurpsy.2022.2316](https://doi.org/10.1192/j.eurpsy.2022.2316).
 23. Abarca-Fernandez D, Vidal-Espinoza R, Aguilar-Portugal TR, Gonzalo Gomez H, Cossio-Bolaños M, Gomez-Campos R. Bibliometric study of scientific productivity in intervention programs that improve cognitive impairment in older adults. *Eur J Transl Myol*. 2024;34(4):12876. doi: [10.4081/ejtm.2024.12876](https://doi.org/10.4081/ejtm.2024.12876).
 24. Zhang J, Wang J, Liu H, Wu C. Association of dementia comorbidities with caregivers' physical, psychological, social, and financial burden. *BMC Geriatr*. 2023;23(1):60. doi: [10.1186/s12877-023-03774-9](https://doi.org/10.1186/s12877-023-03774-9).
 25. Yahirun JJ, Vasireddy S, Hayward MD. The education of multiple family members and the life-course pathways to cognitive impairment. *J Gerontol B Psychol Sci Soc Sci*. 2020;75(7):e113-28. doi: [10.1093/geronb/gbaa039](https://doi.org/10.1093/geronb/gbaa039).