

MINI-REVIEW

Lifestyle determinants of health and well-being
in middle-aged and older adults: A narrative
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Abstract

The global epidemiological transition from communicable to non-communicable diseases presents an unprecedented challenge to modern healthcare systems, particularly as populations age rapidly. This narrative review synthesizes evidence on the multifaceted lifestyle determinants of health and well-being among middle-aged and older adults. While previous reviews have examined individual risk factors or delivery models in isolation, this review uniquely synthesizes individual lifestyle behaviors with structural care systems under the unifying lens of socioeconomic health poverty. Primary lifestyle factors, including diet and regular physical activity, are essential for maintaining “health stock,” yet their persistence is heavily influenced by socioeconomic status and “time poverty.” Health information signals, such as diagnoses of chronic conditions, can serve as critical “wake-up calls” that prompt healthier behaviors, though their effectiveness varies across income and education levels. This review also focuses on the social and structural dimensions of health, specifically informal caregiving burdens and social isolation. Informal care often leads to health deterioration for caregivers, while living alone is linked to increased long-term care needs. Continuity of care is a vital longitudinal framework for managing chronic diseases like hypertension and diabetes, reinforcing medication adherence and reducing mortality. However, the COVID-19 pandemic introduced substantial disruptions to these healthcare pathways, revealing deep-seated socioeconomic disparities in health outcomes and well-being. By integrating longitudinal survey data and systematic reviews, this review underscores the necessity of integrated, person-centered care models. Effective policy design must prioritize mitigating socioeconomic barriers and addressing “health poverty” to support healthy aging and ensure the sustainability of healthcare systems.

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1. Introduction

The global burden of disease has shifted dramatically over the past few decades, moving from a predominance of communicable diseases to non-communicable diseases (Jakovljevic *et al.*, 2021). This transition, driven by unprecedented global population aging and changing lifestyles, makes cardiovascular diseases, cancers, and mental health conditions the leading causes of mortality worldwide (Jakovljevic *et al.*, 2021; Jakovljevic,

Kumagai & Ogura, 2023). In high-income countries, the prevalence of people aged 65 and over is increasing rapidly, while middle-income countries are experiencing an even faster demographic shift, bringing “double burdens” to their national health systems (Jakovljevic, Chang & Kumagai, 2023; Jakovljevic, Kumagai & Ogura, 2023). Globally, non-communicable diseases account for over 70% of all premature deaths, placing disproportionate strain on primary healthcare infrastructure in aging societies (GBD 2019 Diseases and Injuries Collaborators, 2020). Non-communicable diseases are long-term conditions that require ongoing management models rather than acute care (Chan *et al.*, 2021; Zhao *et al.*, 2013). Achieving universal health coverage (UHC) is complex, as older adults often present with multiple chronic conditions requiring integrated long-term care (LTC) (Okamoto & Komamura, 2022). This growing prevalence of multimorbidity severely complicates care delivery and elevates healthcare expenditures (Barnett *et al.*, 2012). Furthermore, non-communicable diseases place a severe, long-term economic and human capital strain on developing economies, undermining health equity across diverse populations (Bloom *et al.*, 2011). Understanding lifestyle determinants—from dietary choices to social participation—is critical for designing sustainable healthcare policies that improve life satisfaction in aging populations (Jakovljevic, Kumagai & Ogura, 2023).

To contextualize lifestyle determinants within global policy frameworks, extensive literature has examined healthy aging through major international initiatives, such as the World Health Organization’s Healthy Ageing and Integrated Care for Older People (ICOPE) frameworks (World Health Organization, 2015, 2017), as well as the Lancet Commission’s landmark work on modifiable risk factors for dementia prevention (Livingston *et al.*, 2020). While previous reviews have extensively examined individual risk factors or specific healthcare delivery models in isolation (*e.g.*, WHO Healthy Ageing frameworks), this review uniquely synthesizes individual lifestyle behaviors with structural care systems under the unifying lens of socioeconomic health poverty.

To prevent this review from acting as a descriptive list of isolated factors, we propose a unifying conceptual framework (Figure 1). This framework posits that underlying socioeconomic disadvantages (*e.g.*, time poverty, low health literacy) simultaneously impair individual capacity for health behavior change (Diet, Physical Activity, Information Processing) and intensify vulnerabilities within social and medical support systems (Informal Caregiver Stress, Social Isolation, Disrupted Continuity of Care). The COVID-19 pandemic acted as an external shock that exacerbated these latent vulnerabilities.

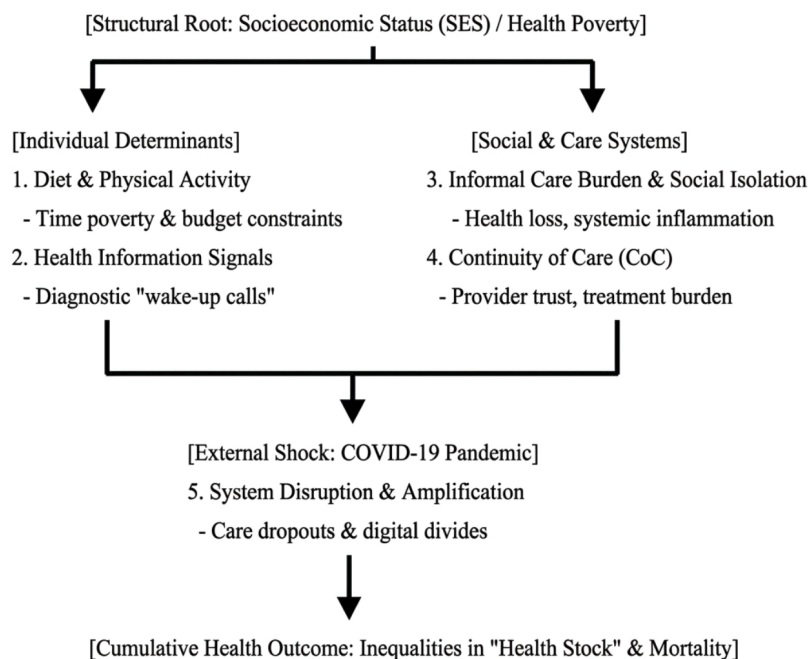


Figure 1. Conceptual framework

2. Methods

To construct this narrative review, a targeted literature search was conducted across Medline (via PubMed), ScienceDirect, and Google Scholar up to 2025. Search terms included combinations of “lifestyle determinants,” “middle-aged and older adults,” “continuity of care,” “informal caregiving,” “social isolation,” “socioeconomic disparities,” and “COVID-19 disruption.” Studies were included if they investigated quantitative health outcomes, mortality, or functional decline in middle-aged and older populations. Priority was given to meta-analyses, longitudinal cohort studies, and high-quality policy evaluations published in peer-reviewed journals. Non-English publications and studies focusing exclusively on pediatric or young adult populations were excluded.

3. Dietary habits, physical activity, and the role of health information

Lifestyle-related chronic conditions, such as hypertension and diabetes, are often categorized as “diseases of affluence” in developing nations (Brindley *et al.*, 2025; Zhao *et al.*, 2013). Evidence from China suggests that while higher income generally increases the demand for health, it also facilitates unhealthy lifestyles, leading to a positive income-hypertension gradient in rapidly developing economies (Zhao *et al.*, 2013). However, as low- and middle-income countries undergo further economic development, this burden often shifts toward lower socioeconomic groups, mirroring patterns observed in high-income nations (Brindley *et al.*, 2025). Providing accurate health information can serve as a critical “wake-up call,” prompting broader lifestyle modifications, such as dietary adjustments and reductions in alcohol consumption (Hu *et al.*, 2022; Zhao *et al.*, 2013). For example, diagnoses of chronic conditions like hypertension often motivate individuals to decrease fat intake or curb unhealthy habits (Hu *et al.*, 2022; Zhao *et al.*, 2013). However, these positive behavioral responses are less pronounced among lower-income and less-educated groups, highlighting a critical socioeconomic disparity in health behavior modification (Hu *et al.*, 2022; Zhao *et al.*, 2013). In addition, adherence to high-quality dietary patterns, such as the Mediterranean diet, significantly reduces cardiovascular morbidity and overall mortality across diverse socioeconomic strata (Estruch *et al.*, 2018).

Regular physical activity in middle age is associated with greater persistence of latent health stock (Kumagai & Ogura, 2014). Comprehensive systematic evidence indicates that higher levels of leisure-time physical activity in midlife substantially reduce the long-term risk of developing cognitive decline, major depressive disorders,

and cardiovascular mortality in late life (Cunningham *et al.*, 2020). Targeted physical activity interventions have consistently demonstrated efficacy in preserving neuromuscular function and preventing frailty in older populations (Izquierdo *et al.*, 2021). However, state dependence and socioeconomic status (SES) are powerful predictors; lower education and income act as barriers to regular physical activity due to time poverty and hazardous work conditions (Kumagai & Ogura, 2014; Pedron *et al.*, 2022). The underlying built environment and neighborhood walkability also exert a profound influence on daily physical activity levels and cardiovascular health outcomes among older residents (Sallis *et al.*, 2016). While health screenings can increase healthcare utilization, their impact on long-term behavioral changes depends on effective framing and integration into personalized care plans (Iizuka *et al.*, 2021; Kwak *et al.*, 2022; Pedron *et al.*, 2022).

4. The multi-faceted burden of informal care and social isolation

The provision of informal care remains a double-edged sword for the well-being of older adults and their families. High-intensity informal caregiving has been shown to lead to significant mental health deterioration, particularly among female caregivers who balance multiple societal roles (Kumagai, 2017). Specifically, high-intensity family caregivers providing 20 or more hours of care per week, compared to non-caregivers, face approximately twice the risk of developing depressive symptoms (OR 1.8–2.1), alongside a marked decline in physical health and elevated levels of inflammatory biomarkers such as interleukin-6 (IL-6) (Pinquart & Sörensen, 2003; Vitaliano *et al.*, 2003).

Furthermore, policy changes that reduce formal long-term care benefits can exacerbate these health losses by increasing the strain on household resources (Fu *et al.*, 2025). Targeted psychological interventions and structured respite care programs have proven effective in mitigating caregiver burden and preserving physical health (Sörensen *et al.*, 2002).

Beyond caregiving, social isolation itself is a major risk factor. Older adults living alone exhibit specific care preferences rooted in a fear of social exclusion (Kumagai, 2018). Meta-analytic evidence indicates that loneliness and social isolation carry severe mortality consequences; rather than merely posing a theoretical risk, social isolation increases the risk of death by 1.26 to 1.32 times (HR/OR), resulting in a mortality risk equivalent to that of severe obesity or smoking 15 cigarettes per day (Holt-Lunstad *et al.*, 2015). Social disconnection triggers chronic stress responses, exacerbating cognitive decline and elevated

cardiovascular risk in older adults (Courtin & Knapp, 2017; Leigh-Hunt *et al.*, 2017). Community-based activities and care prevention programs are essential interventions, as they have been shown to reduce institutional long-term care needs (Kumagai & Fukuda, 2023). Participating in volunteer work and structured social groups reinforces self-efficacy and psychological well-being in late life (Choi & Kim, 2011; Jenkinson *et al.*, 2013). Decomposition analyses of health inequalities between urban and rural populations further suggest that disparities in social participation and physical activity are primary drivers of health status differences among the oldest-old (Yuan *et al.*, 2023). Ultimately, targeted interventions to reduce loneliness and foster social connectivity are not only vital for individual well-being but are also highly cost-effective strategies for sustainable healthcare systems (McDaid & Park, 2022).

5. The critical role of continuity of care and challenges in chronic disease management

Continuity of care (CoC) functions as a crucial “system-level enabler” designed to sustain and support long-term individual lifestyle changes, such as dietary modifications and physical activity (**Figure 1**). By providing structured clinical oversight and fostering enduring relational trust, CoC bridges individual behavioral efforts with long-term medical management.

5.1. Lifestyle improvements and clinical benefits of CoC

A strong continuous relationship with healthcare providers serves as a fundamental mediator that translates initial lifestyle adjustments into sustained health gains. High CoC enables primary care physicians to reinforce personalized lifestyle guidance, optimize therapeutic adherence, and detect early clinical complications (Chen & Cheng, 2011; Delgado *et al.*, 2022; Nicolet *et al.*, 2022). Quantitative evidence highlights substantial survival and clinical advantages associated with high relational continuity: meta-analytic findings establish that patients with high CoC experience an approximate 15%–25% reduction in all-cause mortality (Pereira Gray *et al.*, 2018), alongside a 12%–30% reduction in hospitalization rates among patients with chronic conditions such as diabetes and hypertension (Chan *et al.*, 2021; Pereira Gray *et al.*, 2018). Furthermore, high CoC is significantly associated with improved blood pressure control, demonstrating how stable provider relationships facilitate better clinical management of cardiovascular risk factors (Khanam *et al.*, 2019). Effective disease management programs and maintaining high levels of CoC have been shown to improve subjective health perceptions and reduce long-term medical expenditures (Kim *et al.*, 2021; Kumagai

et al., 2023). Continuity of care with a family doctor fosters trust and comprehensive understanding, which are essential for navigating complex clinical guidelines (Nowak *et al.*, 2021). Intensive blood-pressure control and individualized glycemic targets yield maximum clinical benefits when supervised by consistent medical personnel (Bress *et al.*, 2017; Inzucchi *et al.*, 2015). Integrating standardized self-monitoring tools and digital health interventions into routine primary care further empowers patients to maintain optimal clinical targets between consultations (Noah *et al.*, 2018; Tucker *et al.*, 2017).

5.2. Barriers to CoC benefits: Treatment burden and multimorbidity in low-SES populations

Despite the substantial systemic advantages of CoC, several structural factors can hinder or undermine these clinical benefits, particularly among low-socioeconomic status (SES) populations. Treatment burden—defined as the daily workload of self-management, complex drug regimens, and healthcare navigation—frequently leads to fatigue and non-adherence, especially when patients face low health literacy or severe financial constraints (Eton *et al.*, 2012; Rogers *et al.*, 2021). In aging populations, the high prevalence of multimorbidity severely complicates chronic disease management, often leading to polypharmacy and inappropriate prescribing patterns that result in preventable adverse drug events and emergency admissions (Barnett *et al.*, 2012; Chen & Cheng, 2016; Maher *et al.*, 2014). For socioeconomically disadvantaged individuals, competing demands such as time poverty and financial stress interact with high treatment burdens, effectively neutralizing the supportive capacity of CoC. Therefore, while CoC provides a critical framework for health maintenance, its effectiveness hinges on reducing treatment complexity and addressing underlying structural health poverty.

6. COVID-19 pandemic: Disruptions and socioeconomic disparities

The COVID-19 pandemic significantly disrupted chronic condition management, leading to an abrupt decline in physician visits in Japan (Kumagai, 2021; Osawa *et al.*, 2021). During the early stages of the pandemic, the rate of regular medical checkups among middle-aged and older adults in Japan decreased by 10%–15%, while the rate of delayed medical visits and worsening hypertension management among low-income groups was 1.5 times higher than that of high-income groups (Osawa *et al.*, 2021; Yoshikawa & Kawachi, 2021).

Systemic healthcare disruptions during emergency periods disproportionately affected chronic disease self-management and routine preventive services globally (Moynihan *et al.*, 2021). In the United States, the shift

to telehealth made documenting blood pressure control difficult, potentially setting back progress in cardiovascular risk management (Meador *et al.*, 2022). Despite rapidly filling care gaps, telehealth adaptation presented persistent digital literacy barriers among low-income older populations (Eberly *et al.*, 2020).

Socioeconomic circumstances were a fundamental factor in vulnerability, with lower income and higher smoking rates correlating with higher COVID-19 mortality (Bratsberg *et al.*, 2023; Yoshikawa & Kawachi, 2021). Systematic international reviews confirmed that low socioeconomic status was consistently associated with a heightened risk of severe disease outcomes and mortality throughout the various phases of the pandemic (Marmot & Allen, 2020). Structural economic disadvantages and overcrowding aggravated virus exposure risks and clinical vulnerability in underprivileged communities (Bambra *et al.*, 2020). The pandemic further highlighted the loss of well-being among parents with childcare responsibilities and the informal care needs of those infected (Kumagai *et al.*, 2025; Ramezani-Doroh *et al.*, 2023). Recent assessments using subjective well-being valuation approaches indicate that working parents faced substantial mental and physical health declines due to dual caregiving and occupational burdens during the pandemic crisis (Kumagai *et al.*, 2025). Women bore a disproportionate amount of domestic burden and unpaid care work, causing systemic psychological distress during pandemic lockdowns (Power, 2020). To address these inequalities, the concept of “health poverty” provides a vital instrument for identifying individuals with the worst health risks and focusing public health attention on those most deprived in society (Clarke & Erreygers, 2020). Proactive social safety nets and target-oriented healthcare subsidies are mandatory to protect socioeconomically vulnerable populations during public health crises (Patel *et al.*, 2020).

7. Limitations and future directions

Several limitations of this review warrant consideration. First, as a narrative review, selection bias cannot be fully eliminated compared to a systematic protocol. Second, a significant portion of the evidence relies on high-income or specific developing contexts (*e.g.*, Japan, U.S., China), which may limit the direct generalizability of findings to countries with fundamentally different healthcare financing structures. Third, causal inference in longitudinal observation studies cited remains subject to unobserved confounding variable risks.

8. Conclusion

The health and well-being of middle-aged and older adults are determined by a complex interplay of lifestyle factors,

social support, and healthcare delivery. Continuity of care remains the longitudinal framework necessary for effective chronic disease management, yet its success is inextricably linked to social policy and the mitigation of socioeconomic barriers. Addressing these multifaceted determinants requires a multi-sectoral approach to foster healthy aging in a complex global health landscape.

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Conflict of interest

Narimasa Kumagai is an Editorial Board Member of this journal, but was not in any way involved in the editorial and peer-review process conducted for this paper, directly or indirectly. The author declares he has no competing interests.

Author contributions

This is a single-authored article.

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data

Not applicable.

Further disclosure

In the preparation of this manuscript, AI (Gemini 3.5) was used to refine the expressions and partially assist with the translation. However, the author is responsible for verifying the accuracy of the content, determining the final structure, and assuming full responsibility for the text.

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