

COGNITIVE HEALTH IN GEROTOURISM: A REVIEW OF ALZHEIMER/DEMENTIA PREVENTION AND GERIATRIC CHECK-UP TOURISM

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Abstract

The rapid global increase in the 65+ population has positioned gerotourism as a strategically important field at the intersection of health and tourism. Within this context, cognitive health has emerged as a critical component shaping the travel motivations, risk perceptions, and service expectations of older adults. This review synthesizes current evidence on Alzheimer's and dementia risk-reduction practices and examines how these scientifically grounded interventions are being incorporated into geriatric check-up tourism. Findings indicate that multidimensional lifestyle interventions—including Mediterranean diet adherence, physical activity, cognitive rehabilitation, social engagement, stress management, and mindfulness—provide measurable benefits in delaying cognitive decline and reducing modifiable dementia risk factors. Simultaneously, advancements in diagnostic technologies such as PET/MR imaging, liquid biopsy, and AI-driven cognitive assessment tools have expanded the scope and attractiveness of geriatric check-up packages offered by tourism destinations.

The analysis highlights that cognitive health programs enhance tourist satisfaction, perceived health benefits, and destination trust, thereby strengthening loyalty among senior travelers. Furthermore, geriatric check-up tourism offers destinations significant economic advantages while encouraging preventive health behaviors among older adults.

Overall, the review underscores the rising significance of cognitive health in gerotourism and argues that destinations should prioritize brain-health-oriented service models, enhance age-friendly infrastructure, and promote integrated neurological screening and wellness programs. Future research should further explore cross-national comparisons, technological innovations, and qualitative insights into senior tourist behavior to advance both theoretical and practical knowledge in this emerging field.

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1. Introduction

Global population growth is changing the demand for healthcare services and the travel habits of older people. According to the World Population Prospects Report, the population aged 65 and over will rise from 727 million in 2020 to over 1.5 billion by 2050 (Desa, 2022). The rapid change in the elderly population has increased interest in services focused on health, well-being, and quality of life. Therefore, senior tourism has gained importance as a sub-area of health tourism.

Gerotourism is not just a tourist activity, but also a holistic environment that includes health, care, well-being, and social participation. The spread of Alzheimer's and other types of dementia is one of the most significant effects of the global aging trend. Approximately 55 million people worldwide live with dementia. This number is projected to rise to 78 million by 2030 and 139 million by 2050 (World Health Organization, 2021). Alzheimer's disease accounts for 60 to 70 percent of dementia cases, and the risk increases with age (Lane et al., 2018).

By 2030, the financial burden of dementia on healthcare systems is projected to reach \$2.8 trillion (Wimo et al., 2017: 5). These data indicate that cognitive health has become an important issue in medical tourism and healthcare policies. The motivations of elderly tourists for health-related travel, prevention, and treatment are increasingly important. The motivations for health-related travel among older tourists include factors such as access to preventive healthcare services, improving quality of life, accessing specialized healthcare personnel, managing chronic diseases, rehabilitation, and participating in programs that support cognitive health (Fleischer and Pizam, 2015; Chen, 2017).

The travel choices of older individuals depend on lifestyle interventions, including lifestyle changes to reduce the risk of Alzheimer's and dementia, cognitive exercises, nutrition programs, and comprehensive geriatric screenings. Current literature shows that older tourists are drawn to both therapeutic and “health enhancement” and “health preservation” experiences (Gupta et al., 2020).

Gerotourism is emerging as an important field in response to the health needs of the world's rapidly aging population. The importance of gerotourism is increasing due to older visitors turning to preventive health programs, the rising number of Alzheimer's and dementia patients, and the inclusion of comprehensive geriatric services in the tourism industry. This review comprehensively examines these trends to assess the role of cognitive health programs in the field of gerotourism.

This review is expected to generate a clearer conceptual and analytical foundation for the emerging intersection of gerotourism, cognitive health, and preventive medical travel. Although gerotourism and health tourism have been widely discussed, the literature remains fragmented regarding how Alzheimer's/dementia risk-reduction science is translated into tourism-based service models. By synthesizing evidence across lifestyle interventions (diet, exercise, cognitive training, social engagement, stress management/mindfulness) and advanced screening technologies (PET/MR, biomarkers/liquid biopsy, digital and AI-supported cognitive assessment), the study is expected to:

1. Introduce an integrated framework that positions cognitive health as both a clinical and experiential determinant of gerotourism demand (i.e., shaping travel motivation, perceived risk, trust, and loyalty).
2. Clarify mechanism-based linkages between modifiable dementia risk factors and tourism-delivered interventions, supporting a more structured understanding of “brain-health-oriented tourism” beyond general wellness claims.
3. Map research gaps systematically, particularly in three underdeveloped areas:
 - The real-world effectiveness and sustainability of digital cognitive therapies (apps, VR/AR, tablet-based training) in tourism settings,
 - Cross-cultural variability in cognitive health tourism demand, risk perception, and service expectations,
 - The validity, acceptability, and ethical governance of AI-based cognitive assessment systems used outside traditional clinical environments.
4. Propose a research agenda for future empirical studies (comparative, longitudinal, and mixed-method designs) to test outcomes such as cognitive benefit, behavior change persistence, patient-tourist satisfaction, and destination competitiveness.

Overall, the review is expected to reduce conceptual ambiguity in the field by specifying what cognitive health tourism is, which interventions are evidence-aligned, and how these can be operationalized in geriatric check-up tourism models—thereby addressing the literature gap between neuroscience/preventive medicine evidence and tourism product development.

From a practical standpoint, the study is expected to provide actionable insights for destinations, healthcare providers, tourism operators, and policymakers seeking to develop credible and age-friendly cognitive health services. Specifically, the findings are expected to:

1. Support evidence-informed package design for geriatric check-up tourism by identifying

which program components are most aligned with dementia risk-reduction science (e.g., Mediterranean-style nutrition counseling, structured physical activity plans, cognitive training, supervised mindfulness/stress programs, and social engagement modules).

2. Guide service integration models that combine clinical screening (neurological tests and advanced diagnostics) with wellness delivery in a way that increases perceived benefit and reduces risk perceptions among older travelers.

3. Strengthen destination trust and loyalty by highlighting how transparency, accreditation, ethical safeguards, and post-check-up follow-up pathways can improve senior travelers' confidence—an issue under-addressed in current tourism practice.

4. Provide recommendations for age-friendly infrastructure and staffing, including accessibility standards, dementia-sensitive communication, emergency readiness, and multidisciplinary teams (geriatrics–neurology–nutrition–physiotherapy–psychology).

5. Address ethical and governance needs by outlining practical safeguards for informed consent, privacy, data security, and the responsible use of AI-based screening tools—responding to the gap in applied guidance for cognitive health data use in tourism contexts.

6. Contribute to economic and policy planning by framing cognitive-health-oriented gerotourism as a year-round, high-value segment that may reduce seasonality and expand the preventive health economy, while encouraging health-protective behaviors among older adults.

In sum, the study is expected to deliver both (i) a theoretical consolidation of a fragmented literature and (ii) a practice-oriented roadmap for designing, marketing, and governing cognitive-health-driven gerotourism offerings. By directly linking current scientific evidence to tourism service models, it aims to fill a critical gap: the lack of integrated, interdisciplinary guidance on how dementia risk reduction and geriatric screening innovations can be credibly embedded into tourism destinations and products.

2. Literature Review

2.1. The Concept of Gerotourism (Senior Tourism)

In the literature, a tourism segment referred to as “gerotourism” emerged from the convergence of the rapidly growing fields of tourism and demography, particularly in the second half of the 20th century. This idea developed in tourism literature due to the increasing population's demands for health, well-being, and care. Gerotourism encompasses the

experience of traveling for the purposes of health, relaxation, rehabilitation, and improving quality of life. Thermal tourism, wellness programs, rehabilitation centers, and geriatric-focused health services have become an important part of travel motivations for older adults (Fleischer and Pizam, 2015). The literature indicates that older tourists shape their travel based on motivations such as “enhancing functional capacity” and “health preservation” (Gupta, Dash and Mishra, 2020). Older people show greater interest in medical and wellness-focused travel, particularly due to age-related health issues such as chronic diseases, mobility problems, and cognitive decline. In a study examining the travel motivations of older visitors, Chen (2017) found that healthy activities were prioritized over traditional tourist activities. These results show that gerotourism is not just a type of vacation, but also a tourism model that promotes the overall well-being of older adults.

Demographic change plays an important role in gerotourism becoming a growing market worldwide. According to the United Nations' 2022 World Population Prospects report, by 2050, approximately 16% of the world's population will be aged 65 and over, reaching 1.5 billion people aged 65 and over (UN, 2022). This demographic growth encourages the diversification and professionalization of services for older customers in tourism.

The World Tourism Organization (UNWTO, 2020) reports that older tourists travel more frequently, stay longer, and spend more per person. Older visitors also spend more on health services (Eurostat, 2021). For this reason, both developed and developing countries view gerotourism as a strategic economic opportunity.

The growth of gerotourism in the literature is seen not only as an economic phenomenon, but also as linked to issues such as social policy, elderly health, and quality of life. Nordin and Svensson (2021) found that destinations for older tourists enhance older people's ability to travel through accessibility, safety, medical support, and opportunities for social participation. The tourism sector has begun to establish new standards due to older tourists' mobility limitations, health issues, dietary, and care needs.

Consequently, the literature shows that gerotourism is becoming an increasingly important issue for both tourism and the healthcare system. Improving the quality of life and economic value of older individuals is consistent with the focus of travel on health and well-being. Therefore, gerotourism is widely recognized in the literature not only as the travel habits of older people but also as a tourism model emerging as a result of global aging.

2.2. Profile of Elderly Tourists and Travel Motivations

One of the main focuses of gerotourism literature is the demographics and travel motivations

of elderly visitors. Compared to younger and middle-aged groups, elderly tourists travel with a greater focus on health and risk awareness. Factors such as health screenings, chronic disease management, physical and cognitive well-being, and a preference for destinations offering safe and high-quality care shape their travel motivations (Chen, 2017; Fleischer and Pizam, 2015). In this case, the motivations of older tourists are not limited to “vacation” and ‘recreation’; they also focus on goals such as “health protection,” “health promotion,” and “maintaining functional capacity” (Gupta, Dash and Mishra, 2020).

The literature indicates that older tourists prefer to undergo health screenings during their travels. Screening for heart disease, cancer, metabolic syndrome, and neurological diseases is particularly in demand (Connell, 2013; Heung, Kucukusta and Song, 2011). Some destinations offer packaged “geriatric check-up tourism” for older visitors. They provide services such as imaging, laboratory tests, functional assessment, and counseling (Lunt, Horsfall and Hanefeld, 2016).

Older visitors, especially those from countries with long waiting times or limited access to advanced diagnostic technologies, are more motivated to travel for health screenings. This increases the appeal of destinations for senior tourism that combine technological infrastructure, affordable prices, and a variety of geriatric services (Johnston et al., 2010). However, another key motivation for elderly tourists traveling for health purposes is chronic disease management. The health behaviors of elderly tourists are affected by chronic diseases such as hypertension, diabetes, chronic obstructive pulmonary disease, osteoarthritis, and cardiac diseases (WHO, 2015). Tourism literature emphasizes that older people with chronic diseases show greater interest in destinations offering rehabilitation, thermal treatments, physiotherapy, diet, and exercise packages (Hall, 2011; Smith and hall, 2014).

Older visitors may find attractive options, particularly in thermal regions, due to the combination of rheumatological and musculoskeletal treatments offered with spa and wellness centers. Gupta et al. (2020) found a correlation between older tourists' desire to control the course of chronic diseases and their interest in lifestyle interventions (such as nutrition, physical activity, and stress management). Therefore, older customers are increasingly demanding tourism packages that include programs such as memory enhancement, group activities, nature walks, light sports, yoga, and cognitive exercises (Patterson and Balderas, 2018). Fleischer and Pizam (2015) note that older tourists are more knowledgeable about health risks, safety, hygiene, medical infrastructure, and emergency response capabilities.

Nordin and Svensson (2021), when defining an “age-friendly destination,” found that factors

such as accessibility, infrastructure, proximity to healthcare facilities, professional care services, and staff quality have a significant impact on the quality of service perceived by elderly visitors. Furthermore, certification, accreditation, and international quality standards in health tourism enhance the perception of reliability, particularly for elderly visitors (Heung et al., 2011; Lunt et al., 2016). In this case, elderly visitors consider not only price or attractiveness when choosing a destination, but also factors related to safety, such as legal transparency, post-service follow-up opportunities, insurance coverage, and protection against medical errors (Connell, 2013).

In general, the profiles of elderly tourists focus on health, risk, and quality of life. Programs aimed at improving cognitive and physical well-being are combined with medical motivations such as health screening and chronic disease management. A safe environment, high-quality care, and a reliable destination image are key factors that reinforce these motivations. In this context, gerotourism provides an important analytical framework for understanding the various aspects of older tourists' motivations and offers important insights into how health tourism policies should be designed for the older population.

3. Alzheimer's/Dementia Risk Reduction Programs

3.1 Scientific Interventions to Reduce Dementia Risk

Dementia, and Alzheimer's disease in particular, is one of the most common public health problems among the aging population worldwide. The World Health Organization (WHO, 2021) estimates that dementia affects more than 55 million people worldwide and that this number will reach 139 million by 2050. Numerous clinical and epidemiological studies have shown that lifestyle interventions to reduce risks are beneficial, even though there is no definitive cure for dementia (Livingston et al., 2020). The literature emphasizes that interventions such as the Mediterranean diet, aerobic exercise, cognitive rehabilitation, social interaction, and stress management both reduce the risk of dementia and slow cognitive decline.

3.1.1. Mediterranean-Style Nutrition

The Mediterranean diet is one of the best lifestyle changes for reducing dementia risk. Adherence to the Mediterranean diet reduces the risk of Alzheimer's disease by 30 to 40 percent (Lourida et al., 2013; Singh et al., 2014). The literature also contains neuroimaging findings showing that this diet preserves hippocampal volume, supports synaptic plasticity, and slows brain aging (Gu et al., 2015).

Additionally, multi-component intervention studies such as the FINGER study have shown that the Mediterranean diet has a positive effect on cognitive capacity (Ngandu et al., 2015).

3.1.2. Aerobic Exercise and Physical Activity

Meta-analyses show that regular exercise reduces the risk of Alzheimer's disease by 30% (Blondell et al., 2014). Moderate aerobic exercise (such as walking, swimming, and light jogging) is known to improve cognitive function and provide significant benefits, particularly in the areas of executive function and memory (Smith et al., 2010). According to randomized controlled trials, 150 minutes of aerobic exercise per week significantly reduces cognitive decline (Kramer and Erickson, 2013). Consequently, dementia prevention guidelines worldwide recommend physical activity as a fundamental lifestyle change.

3.1.3. Cognitive Rehabilitation and Brain Training

Cognitive rehabilitation involves structured interventions to improve cognitive domains such as attention, executive functions, memory, and problem solving. Methods such as memory techniques, problem-solving activities, and computer-based brain training strengthen neural connections and increase cognitive reserve (Sitzer, Twamley and Jeste, 2006). Additionally, ten-year follow-up studies found that regular mental activity reduced the risk of Alzheimer's disease by 40% (Valenzuela and Sachdev, 2009). Social tourism programs make cognitive training more effective and provide long-term benefits.

3.1.4. Social Interaction and Social Tourism

Social interaction is crucial in reducing the risk of dementia. Various studies have shown that social isolation accelerates cognitive decline, while regular social participation protects mental health and neurological functions (Fratiglioni et al., 2000). It is noted that social stimulation increases cognitive reserve, reduces the risk of depression, and has positive effects on the prefrontal cortex and limbic system (Kuiper et al., 2015).

In tourism, programs that increase social interaction, such as group tours, senior-friendly activities, and cultural events, are important tools that support cognitive health. Social tourism's ability to increase psychosocial well-being and reduce loneliness contributes positively to cognitive performance (Smith and Diekmann, 2017). Consequently, social interaction is crucial in dementia-fighting interventions.

3.1.5. Stress Management and Mindfulness Practices

Mindfulness is a holistic approach comprising awareness, attention focusing, breathing exercises, meditation, and other holistic practices. Mindfulness can positively influence both mental health and neurobiological processes. There are randomized controlled studies showing that mindfulness practices reduce stress hormones (cortisol), improve emotional

regulation, and promote structural improvement in the prefrontal regions of the brain (Hölzel et al., 2011). Additionally, meditation regulates default mode network (DMN) functions and improves cognitive. Additionally, it was discovered that meditation regulates default mode network (DMN) functions and reduces neural fluctuations associated with early signs of cognitive aging (Goyal et al., 2014). Older visitors prefer nature-based stress-reducing activities, spa services, yoga retreat camps, and mindfulness-based wellness programs (Smith and Diekmann, 2017). These practices positively affect the dementia risk profile by increasing both physical stress levels and mental health.

3.2. Cognitive Health Programs Offered at Tourism Destinations

Lifestyle interventions aimed at reducing dementia risk in tourism destinations represent a new service area known as cognitive health programs. Neuroscience applications, digital cognitive assessment tools, lifestyle clinics, “brain health accommodation” packages focused on brain health, and holistic wellness activities such as spa or nature therapy are the main components of these programs. The literature shows that such applications reduce stress levels, lower the risk of dementia, and support cognitive functions (Livingston et al., 2020; Bherer et al., 2013). The proliferation of these interventions among tourists demonstrates that cognitive health is not limited to clinical conditions. Instead, it shows that behavioral and psychosocial factors make cognitive health a life experience.

3.2.1. Neuroscience-Based Vacation Programs

Recently, some tourism destinations have been incorporating the results of neuroscience research into vacation programs to produce specialized content that supports cognitive health. These programs are based on scientific data related to cognitive reserve, the neurobiology of stress, healthy aging, and brain plasticity. Neuroscience-based vacation programs typically include exercises aimed at improving memory, activities aimed at developing executive functions, emotional regulation exercises, and meditation-based practices (Hölzel et al., 2011). Vacation packages provide greater health benefits when they include activities that support areas of the brain important for cognitive aging, such as the prefrontal cortex, hippocampus, and posterior cingulate cortex.

Some programs enhance brain plasticity by combining mind-body exercises, attention training, and physical exercise. There is evidence that such packages reduce stress hormones, increase cognitive flexibility, and enhance subjective well-being in older visitors (Goyal et

al., 2014). Neuroscience-based vacation practices have rapidly gained popularity, especially among visitors aged 55 and older, and have become a sub-specialty within the field of gerotourism.

3.2.2. Digital Cognitive Tests

Digital cognitive tests and early diagnosis screenings are also becoming increasingly common in tourism destinations. In many health tourism centers, technological applications such as memory tests, tablet-based cognitive assessment tools, reaction time measurements, and portable EEG devices are now standard (Zygouris and Tsolaki, 2015). These tests enable individuals to quickly and reliably assess their basic cognitive areas such as executive function, processing speed, attention, memory, and attention.

Digital tests can be administered in less time than classic neuropsychological tests and can be easily adapted to non-clinical settings. This is an important reason for their proliferation in the tourism sector. Some resorts and wellness centers offer their visitors “brain age screening” or “cognitive baseline check-ups.” EEG-based stress measurements and neurofeedback applications have become particularly popular among older visitors at some wellness centers in California (Gruzelier, 2014).

3.2.3. Integration of Lifestyle Clinics with Tourism

Lifestyle clinics provide personalized assistance in various areas such as nutrition, physical activity, stress management, and sleep patterns. The integration of these clinics into the tourism sector has developed a new approach to reducing risks associated with cognitive aging, obesity, metabolic syndrome, and chronic disease management. It has been reported that lifestyle change interventions in these hospitals are effective in reducing the risk of various chronic diseases, including dementia (Barnes and Yaffe, 2011).

A team consisting of geriatric specialists, neurologists, dietitians, physical therapists, psychologists, and many other disciplines manages lifestyle clinics in tourist destinations. Programs may include cognitive training, social activities, anti-inflammatory diet programs, aerobic activity prescriptions, and meditation sessions (Smith and Puczkó, 2014). “Health improvement-focused long-stay tourism” by elderly visitors has increased due to these clinics. In some European countries, “lifestyle medicine retreat” programs lasting two to six weeks have been shown to improve the cognitive capacity of elderly visitors and reduce their risk of

depression (Franco et al., 2014).

3.2.4. Examples of “Brain Health Retreats”

The term “brain health retreat” refers to comprehensive health tourism packages designed to support brain health. These retreats offer various vacation programs such as cognitive training, yoga, meditation, sleep regulation programs, dietary counseling, memory enhancement, and neurofitness. Popular in the United States, Japan, Spain, and Canada, these packages specifically target visitors over the age of 60.

Cognitive protective lifestyle protocols offered by Alzheimer's Prevention International and other organizations form the basis of most of these retreat programs (Isaacson et al., 2018). Furthermore, “retreat tourism” is an important mechanism for supporting the cognitive health of older individuals because it not only provides a vacation but also reduces stress levels, enhances cognitive capacity, and fosters social connections.

3.2.5. Spa, Nature Therapy, and Memory-Boosting Activities

Spa and wellness practices include interventions such as massage therapy, aromatherapy, hydrotherapy, sauna, and steam baths. These practices have been reported to reduce stress and emotions, lower cortisol levels, and balance the autonomic nervous system in older adults (Moyer et al., 2004). Nature therapy, such as nature bathing, ecotherapy, and nature walks, is also an important tourism practice that improves cognitive health.

However, puzzle solving, artistic activities, music therapy, storytelling, and cultural activities are known as memory-enhancing activities. Music therapy has been shown to specifically strengthen memory and reduce the risk of dementia (Särkämö et al., 2014). Complementary practices that increase cognitive reserve include art therapy and creativity-based tourism activities.

3.3. Attractiveness Factors of Cognitive Health Tourism

In health tourism literature, cognitive health tourism is gaining importance as a new subcategory, particularly with the aging population. Customized programs, the integration of medical and wellness services, health tourism models focused on long stays, and the safety and infrastructure quality of the destination are the key attractive aspects of this segment. The literature shows that the tendency of elderly visitors to opt for package programs aimed at

improving cognitive health is largely influenced by these reasons (Connell, 2013; Smith and Puczkó, 2014).

3.3.1. Personalized Programs

One of the most important factors increasing the appeal of cognitive health tourism is personalized health programs. Programs are designed using personalized cognitive interventions, including genetic profile, lifestyle, health history, and risk factors. A study by Isaacson et al. (2018) based on structured Alzheimer's prevention protocols and a structured personal risk profile showed that individualized interventions provide significant improvements in cognitive functions. Places offering personalized diet plans, cognitive exercise programs, physical activity prescriptions, and stress management strategies are more popular in tourism (Franco et al., 2014).

Today, many wellness and health tourism facilities create vacation plans to determine individuals' cognitive profiles through neuropsychological assessments and digital cognitive tests. Zygoris and Tsolaki (2015) state that personalized cognitive screenings at tourism destinations are very beneficial and encourage protective health behaviors by increasing awareness among older visitors.

3.3.2. Specialist Physician Support + Wellness Combination

An attractive feature of cognitive health tourism is the combination of medical interventions and wellness services. The literature on health tourism shows that elderly visitors in particular are turning to programs that support holistic well-being, not just treatment (Smith and Puczkó, 2014).

A multidisciplinary team provides expert physician support consisting of neurologists, geriatricians, psychiatrists, physical therapists, and dietitians. The individual's cognitive status, risk factors, and medically safe program are evaluated by these teams. Healthy living elements include mental health-related activities such as spa treatments, yoga, meditation, aromatherapy, nature therapy, breathing exercises, and low-intensity physical activities.

Hölzel and colleagues (2011) discovered that meditation-based activities have a positive effect on brain structure and attention processes; Moyer et al. (2004) found that wellness programs significantly reduce stress hormones. These results demonstrate that medical follow-up and wellness activities work together effectively in cognitive tourism packages.

Johnston et al. (2010) also noted that specialist physician support plays an important role in selecting tourist destinations by increasing the sense of security for elderly visitors. Consequently, a key attraction for cognitive health tourism is the combination of health and medical supervision.

3.3.3. Long-Stay Packages

Interest in programs involving long-term stays in health tourism has increased worldwide. Cognitive health tourism typically involves programs lasting 2 to 6 weeks. Long-term stays help behavioral changes become permanent and facilitate the adoption of a healthy lifestyle (Michie et al., 2011).

There are several reasons why elderly visitors prefer long-term stays:

- Neuroplasticity and cognitive rehabilitation processes require time
- Ability to focus on healthier lifestyle habits by giving up daily routines
- Group activities and social interaction become more effective
- Development of clinical follow-up practices

Franco et al. (2014) found that long-term lifestyle interventions yield better results in cognitive function and psychological well-being in older adults compared to short-term programs.

Older visitors in countries such as Japan, Spain, and New Zealand particularly prefer “destination-based long-stay health programs” (Nield, 2008). Long-term stays are an economically attractive model for tourism businesses and contribute to the sustainability of the programs.

3.3.4. Safety, Infrastructure, and Destination Image

The success of cognitive health tourism depends not only on the quality of the programs but also on the safety, infrastructure, and overall image of the destination. Due to the high risk perception of elderly tourists, the safety of the destination is very important for this demographic group (Fleischer and Pizam, 2015).

Security components:

- Low crime rate

- Health-safe environment
- Proximity to emergency medical services
- High hygiene standards

Infrastructure components include:

- Accessibility (environmental arrangements suitable for disabled and elderly people)
- Technological equipment for healthcare facilities
- Appropriate arrangements in accommodation facilities for the elderly
- Ease of transportation and medical transfer

These elements directly affect the satisfaction of elderly visitors and the overall perception of the destination. Nordin and Svensson (2021) state that elderly-friendly infrastructure provides a competitive advantage to tourism centers.

However, in cognitive health tourism, the factors that shape a destination's image are particularly related to the following (Chen, 2017):

- Recognition of medical expertise
- Prevalence of a health culture
- Positive international image
- Having reliable companies

UNWTO (2020) states that the perception of reliability and professionalism has a greater impact than other factors on the destination selection of elderly tourists.

4. GERIATRIC CHECK-UP TOURISM

4.1. Definition and Content of Geriatric Check-Up

Geriatric check-ups are a comprehensive screening process consisting of medical, functional, and psychosocial factors, aiming to systematically and comprehensively assess the multidimensional health status of older individuals. The World Health Organization (WHO, 2015) emphasizes that the health of older people is not limited to the diagnosis of diseases, but also includes maintaining quality of life, managing long-term illnesses, and promoting healthy aging. Geriatric-focused check-ups differ significantly from classic adult check-ups. Cardiovascular status, endocrine function, musculoskeletal system, neurological performance,

nutritional status, and cancer screening are addressed in geriatric assessments using a multidimensional approach (Cesari et al., 2016; Akishita and Ouchi, 2017).

As a result, many health tourism destinations have created comprehensive check-up packages, especially for elderly visitors; these packages combine medical evaluations with tourist activities, making them an important service area of gerotourism (Connell, 2013).

4.1.1. Cardiological Assessment

In individuals over the age of 65, morbidity and mortality are caused by cardiovascular diseases. Consequently, cardiac screening is an important part of geriatric check-up programs. Arterial stiffness measurements, echocardiography, exercise testing, rhythm monitoring, and electrocardiography (ECG) are frequently used for early detection of cardiac risk (Benjamin et al., 2017).

4.1.2. Endocrinological Tests

The endocrine system changes with age, and many chronic diseases stem from hormonal imbalances. Insulin resistance assessment (HOMA-IR), hemoglobin A1c (HbA1c), vitamin D level, cortisol, adrenal function measurements, and thyroid function tests (TSH, T3, T4) are among the basic endocrinological examinations (Kategaya et al., 2020).

Diabetes and metabolic syndrome in older adults are closely associated with cognitive impairment and the risk of Alzheimer's disease (Biessels et al., 2014). Consequently, metabolic and hormonal assessments are vital for cognitive and overall health. Offering endocrinological tests as a package in tourist centers helps elderly visitors choose reliable places in terms of health.

4.1.3. Musculoskeletal Function Tests

Sarcopenia, osteoporosis, loss of balance, and limited mobility are problems that affect the musculoskeletal system with aging. Sarcopenia is seen in 30% of people over the age of 70 (Cruz-Jentoft et al., 2019). Therefore, musculoskeletal system assessments are very important in geriatric care.

Commonly used tools for assessment include:

- Determining bone mineral density using DEXA
- Measuring walking speed
- Measuring grip strength
- A seated test
- Balance assessment standards

These tests can be used in tourist centers to determine people's muscle health and risk of falling. Research shows that interventions that reduce the risk of falling lower healthcare costs

and preserve independent living in older adults (Sherrington et al., 2017).

Neurological Screenings

Neurological assessments are crucial for the early diagnosis of age-related problems such as cognitive impairment, depression, sensory loss, and movement disorders. The basic neurological assessments included in the literature on geriatric screening programs are as follows:

- MMSE (Mini Mental State Examination)
- Montreal Cognitive Assessment (MoCA)
- Sensory tests (vision and hearing functions)
- Motor coordination assessments
- EEG and brain imaging when necessary

Disease prognosis and quality of life are directly affected by early diagnosis. For this reason, neurological screenings have become a feature of check-up packages at health tourism destinations.

4.1.4. Nutritional Status Assessment

Older adults may be at risk for dangerous consequences such as cognitive impairment, muscle loss, and increased risk of infection (Visvanathan et al., 2015). Therefore, assessing nutritional status in geriatric screening programs is very important. Commonly used tools for assessment include:

- Mini Nutritional Assessment (MNA)
- Serum albumin and prealbumin
- Electrolyte levels
- Body composition measurement
- Micronutrient analysis

Assessing the nutritional status of elderly visitors enables the planning of interventions that improve quality of life. Cognitive health is supported by personalized diet programs, metabolic profile analyses, and Mediterranean-based diet counseling offered by health tourism centers (Valls-Pedret et al., 2015).

4.1.5. Cancer Screening in Old Age

Cancer incidence increases in the older age group, making cancer screenings an important part of geriatric check-up packages. The World Health Organization and the American Cancer Society list certain screenings that older adults should undergo at specific intervals:

- Colonoscopy for colorectal cancer
- Mammography for breast cancer

- PSA for prostate cancer
- Low-dose computed tomography (for individuals at risk of lung cancer)
- Skin cancer screenings

Early diagnosis significantly increases survival even in old age (Siegel et al., 2020). As a result, many health tourism destinations that offer comprehensive cancer screening packages for older adults positively influence the safety perceptions and destination preferences of elderly visitors (Connell, 2013).

4.2. Why Geriatric Check-Up Tourism is on the Rise

In recent years, geriatric check-up tourism has increased significantly due to both the global aging trend and changes in healthcare services. The literature indicates that this development is primarily linked to three main reasons. These are: faster and cheaper diagnostic options; the proliferation of advanced diagnostic technologies (such as PET/MR hybrid systems and liquid biopsy); and the incorporation of personalized medicine practices in geriatric services. Health tourism has become an experience for older people that involves not only treatment but also preventive healthcare and early diagnosis (Connell, 2013; Lunt et al., 2016).

4.2.1. Faster and More Affordable Diagnostic Options

Long waiting times and high costs are among the biggest problems encountered in accessing healthcare services for older people in many countries. In developed countries such as the UK, Canada, and Australia, there are months-long waiting lists for advanced imaging, specialist doctor appointments, and comprehensive check-ups (Johnston et al., 2010). As a result, the cheap and fast diagnostic services offered by health tourism destinations have significantly increased the desire of elderly visitors to travel. Hanefeld et al. (2015) found that “access to fast service” is one of the main motivations for participating in medical tourism, and that this is much more pronounced among older adults. For example, the cost of a comprehensive check-up program in the United States ranges from \$2,500 to \$5,000. However, the same service can be offered much more cheaply in countries such as Thailand, India, and Turkey (Lunt et al., 2016).

The costs of advanced examinations and check-up packages demonstrate the price advantage. Global comparisons have shown that geriatric screenings offered at private health tourism centers are inexpensive, especially for older people (Connell, 2013). This is an important factor supporting the global growth of geriatric check-up tourism.

Technological Advancements (PET/MR, Liquid Biopsy, etc.)

Recent developments in diagnostic technology have expanded the scope of check-up services,

making advanced diagnostic methods an important attraction for tourist destinations. Non-invasive diagnostic technologies, such as PET/MR hybrid imaging, PET/CT systems, and liquid biopsy, enable the early detection of Alzheimer's, cancer, and cardiovascular diseases (Hegde et al., 2018).

4.2.2. The Impact of PET/MR and PET/CT Hybrid Systems

PET/MR technology provides high sensitivity in the early diagnosis of neurodegenerative diseases by offering both metabolic and anatomical imaging. Imaging beta-amyloid and tau pathology is crucial for the early detection of cognitive decline in Alzheimer's disease (Villemagne et al., 2015). The use of these technologies at many tourist destinations has significantly improved the quality of check-up packages.

4.2.3. Liquid Biopsy

The detection of tumor DNA (ctDNA) from a blood sample is a new diagnostic method known as liquid biopsy. Liquid biopsy offers a major advantage, especially for older people, in situations where traditional biopsies are risky (Wan et al., 2017). Medical tourism centers attract older visitors by offering this technology as “early diagnosis packages.”

4.2.4. Other Scientific Developments

- High-resolution MR imaging systems
- Low-dose CT scans
- Image analysis with artificial intelligence
- Digital cardiology (such as mobile electrocardiogram and telecardiology)

Thanks to these technological developments, destinations have made advanced diagnostics more accessible for elderly visitors.

4.2.5. Personalized Medicine Applications and Geriatric Check-Ups

Personalized medicine, also known as personalized healthcare, refers to health services tailored to an individual's genetic, biological, and lifestyle characteristics. This approach is becoming increasingly common in geriatrics and has a significant impact on early diagnosis, disease risk assessment, and personalized treatment recommendations (Ashley, 2016).

The impact of personalized medicine applications on the increase in geriatric check-up visits can be evaluated at three levels:

1. Genetic and Biomarker-Based Risk Analyses

Genetic tests are used to assess risk indicators such as BRCA mutations and APOE-ε4 genotype to determine the risk levels of diseases such as cancer and Alzheimer's (Corder et al., 1993). Adding these programs to check-up packages helps elderly tourists become more aware of their health.

2. Personalized Nutrition and Lifestyle Programs

Diet and exercise programs that take into account personal metabolic profiles are based on literature showing that they improve the quality of life and cognitive functions of elderly individuals (Franco et al., 2014).

3. Artificial Intelligence and Database-Based Health Management

Some health tourism centers use AI-supported systems to analyze all clinical data of elderly visitors and create risk prediction models (Topol, 2019). This increases the reliability and accuracy of check-up services, thereby enhancing the destination's appeal.

The literature indicates that the rise of geriatric check-up tourism stems from various factors. Older tourists are turning to this sector through faster and cheaper diagnosis, advanced diagnostic technologies, and the inclusion of personalized medicine practices in the tourism industry. The medical nature of gerotourism has been strengthened by offering a comprehensive health experience that provides older visitors with a high level of satisfaction and safety as a result of these factors.

5. The Role Of Cognitive Health Programs And Geriatric Check-Ups In Gerotourism

Cognitive health programs and geriatric check-up services, which play an important role in the development of gerotourism, significantly influence the health-related travel behavior of elderly tourists. The literature shows that elderly tourists' demand for these services stems not only from medical needs but also from service quality, perceived health benefits, risk reduction behaviors, and economic-social factors (Connell, 2013; Smith and Puczkó, 2014). As a result, cognitive health and check-up tourism is one of the fastest growing sectors of contemporary gerotourism.

5.1. Elderly Tourist Satisfaction and Cognitive Health Services

5.1.1. Service Quality

The satisfaction of elderly visitors is influenced by service quality. The health tourism literature shows that older adults have higher expectations of service quality compared to younger tourists (Fleischer and Pizam, 2015). Senior visitors evaluated service quality based on the following factors:

- the level of expertise of healthcare providers,
- the clarity of diagnosis and treatment procedures,
- the accessibility of facilities,
- personalized care and attention,

- the use of a multidisciplinary approach,
- the use of advanced technologies (PET/MR, digital tests, etc.)

Johnston et al. (2010) found that the quality of medical tourism services, the satisfaction of elderly visitors, and their desire to return are largely dependent on the quality of medical tourism services. In reliable locations, especially those with high medical standards, older people are more inclined to choose mental and physical health service packages.

5.1.2. Perceived Health Benefits

The participation of elderly visitors in cognitive health programs and geriatric check-up packages is largely influenced by the health benefits they receive. Howard (2019) noted that individuals' "valuation of health tourism services" is largely linked to the health benefits they perceive. Elderly tourists have a better perception of quality of life with interventions such as cognitive training, lifestyle change programs, neurological scans, and anti-inflammatory nutrition programs.

Franco et al. (2014) demonstrated that long-term stays and cognitive intervention programs led to significant improvements in both the physical and cognitive health of elderly visitors. One of the key components that increases the appeal of cognitive tourism packages is "perceived benefit."

5.1.3. Trust and Destination Loyalty

Tourism literature reveals that trust is one of the most powerful determinants in the destination and institution selection of older tourists (Nordin and Svensson, 2021). Older individuals tend to avoid risk when receiving healthcare services; therefore, the destination's safety profile, medical accreditations, and the reputation of healthcare professionals are extremely important.

Trust elements include:

- hospital/facility accreditation (JCI, etc.),
- international recognition, transparent pricing,
- medical complication rates,
- emergency response capacity.

Smith and Puczkó (2014) note that in high-trust health destinations, older tourists' intention to revisit increases and destination loyalty strengthens. Countries such as Turkey, South Korea, Singapore, and Thailand, in particular, receive high satisfaction from older tourists thanks to their strong healthcare infrastructure.

5.2. Risk-Reduction Behavior and Quality of Life

5.2.1. Information-Seeking Behaviors of Older Tourists

The gerotourism literature indicates that older tourists tend to search for more information regarding health-related issues (Chen, 2017). Digital platforms, physician review websites, social media groups, and e-health applications play an important role in the decision-making processes of older adults. Heung et al. (2011) state that information seeking in the context of health tourism enhances the sense of trust among older tourists and reduces the risk of making incorrect choices. Data-driven information provision in complex services—such as cognitive health programs and check-up packages—positively influences the decision-making processes of older tourists.

5.2.3. Reducing Health Risks and the Preventive Medicine Approach

The growing adoption of preventive medicine in the tourism sector is directly linked to the rise of geriatric control tourism. Livingston et al. (2020) found that modifiable risk factors such as hypertension, obesity, diabetes, physical inactivity, depression, hearing loss, and social isolation account for forty percent of Alzheimer’s disease risk. Consequently, there is substantial demand for risk-reduction package programs.

The key components of risk-reduction strategies include:

- cognitive tests for early diagnosis (PET/MR and cancer screenings),
- lifestyle modification activities,
- stress management and mindfulness,
- physical exercise and nutritional regulation.

Tourism centers offer integrated “check-up + wellness + lifestyle therapy” packages, providing older visitors with a holistic experience that helps minimize health risks.

5.2.3.1. The Rise of the “Preventive Tourism” Concept

In the health tourism literature, “preventive tourism” has emerged as a rapidly growing concept in recent years. This approach includes programs aimed at achieving health benefits before the onset of illness (Hall, 2011). Older tourists, in particular, tend to choose travel options focused on risk reduction and healthy ageing rather than medical treatment.

The UNWTO (2020) highlights the increasing importance of preventive health services in the context of senior health travel. This trend strengthens the position of cognitive health programs within gerotourism.

5.3. Economic, Social, and Ethical Dimensions

5.3.1. Cost Advantage

One of the main drivers behind the growth of geriatric check-up tourism is its cost advantage.

Lunt et al. (2016) note that early diagnosis and check-up services are offered at significantly lower prices compared to many national healthcare systems, which boosts tourism demand. Older adults—especially those from high-cost countries—prefer destinations that offer economic benefits. In addition to medical diagnostic services, long-term stays, rehabilitation programs, and bundled interventions provide further economic advantages.

5.3.2. Economic Contribution to Destinations

Gerotourism, particularly through cognitive health tourism and check-up packages, generates substantial added value for destinations. Older visitors tend to spend more and stay longer than younger tourists, increasing destination revenues (Patterson and Balderas, 2018). Moreover, the following sectors constitute major components of this tourism segment (Connell, 2013):

- transportation,
- accommodation,
- gastronomic and nutritional care,
- healthcare facilities.

Ethical and Privacy Issues Concerning Older Adults

Cognitive health programs and check-up services present ethical and privacy concerns due to the processing of sensitive personal health data. Decision-making difficulties stemming from cognitive capacity limitations among older adults are a significant ethical issue (Georges et al., 2019).

Major ethical concerns include:

- high-cost and unnecessary screenings,
- use of health data for commercial purposes,
- older adults' capacity to provide informed consent,
- the risk of perceiving tourists as “customers” rather than “patients,”
- elder exploitation and excessive medical intervention.

For these reasons, Smith and Puczkó (2014) emphasize that the implementation of ethical standards is crucial in health tourism services targeted at older individuals.

6. Discussion

The growing medical, social, and economic shifts associated with global ageing have made cognitive health services increasingly popular within tourism. The literature demonstrates that cognitive health significantly affects the quality of life of older adults (Livingston et al., 2020).

The expansion of cognitive health programs and geriatric check-up services within tourism destinations has produced various strategic implications at both individual and destination levels. This section examines why cognitive health is important for gerotourism, the strategic opportunities it provides for destinations, future trends, and existing research gaps.

6.1. The Importance of Cognitive Health in Gerotourism

Gerotourism is highly significant because cognitive health directly influences older individuals' independent living capacity, social participation, safety levels, and overall quality of life. Alzheimer's and dementia, affecting over 55 million people worldwide, are among the most significant health issues driving older tourists to seek preventive healthcare and reduce risk (WHO, 2021). Livingston et al. (2020) emphasize that modifiable lifestyle factors account for nearly 40% of dementia cases, highlighting the essential role of cognitive health in preventive medicine.

In tourism, practices that support cognitive health—such as cognitive rehabilitation programs, lifestyle interventions, stress management, physical activities, social engagement activities, and digital cognitive assessments—may emerge as a response to older visitors' desires for both improved health and meaningful holiday experiences. Thus, the medical and experiential value of gerotourism can be enhanced through cognitive health.

Furthermore, tourism services supporting cognitive well-being reduce risk perceptions among older adults and strengthen their sense of trust during travel decision-making (Nordin and Svensson, 2021). Consequently, cognitive health constitutes not only a clinical dimension of gerotourism but also a fundamental element of the overall tourism experience.

6.2. Destination Strategies

The integration of cognitive health and geriatric check-up services into the tourism sector has created extensive strategic opportunities for destinations. First, older visitors tend to spend more money and stay longer, providing destinations with a long-term and stable revenue source (Patterson and Balderas, 2018).

Key tactical opportunities for destinations include:

1. High-Value Service Provision

Advanced diagnostic technologies (PET/MR, liquid biopsy, etc.), digital cognitive analytics, and lifestyle clinics represent high-tech services that enhance destinations' international competitiveness (Connell, 2013).

2. Integration of Tourism and Healthcare

The combination of medical support and wellness programs attracts visitors from diverse demographic groups (Smith and Puczkó, 2014).

3. Developing an Age-Friendly Destination Image

Nordin and Svensson (2021) state that age-friendly infrastructure and cognitive health programs strengthen destination perception and increase visitor engagement.

4. Year-Round Demand Growth

Gerotourism reduces seasonality by attracting visitors throughout the year.

5. Contribution to the Health Economy

By investing in health infrastructure and medical technologies, destinations become active participants in the global health economy, offering both strategic and financial opportunities. Thus, cognitive health programs are not only recreational but also strategically valuable elements for tourism development.

6.3. Research Gaps

Although the literature on cognitive health tourism and geriatric check-up services is expanding, several areas require further research.

(a) Digital Cognitive Programs

The long-term cognitive effects of digital cognitive interventions—such as app-based memory training, tablet-based tests, and VR/AR cognitive exercises—remain unclear. Although Zygouris and Tsolaki (2015) demonstrate that digital tests can be helpful, their sustainability and effectiveness require further research. Additionally, how these programs are perceived within tourism settings and their impact on visitor satisfaction remain insufficiently examined.

(b) AI-Based Cognitive Analysis Systems

Artificial intelligence holds substantial potential for cognitive test analysis and early Alzheimer's diagnosis (Topol, 2019). However, research on how these technologies will be integrated into tourism and how older visitors perceive and trust these systems is limited. Further studies should investigate which AI systems provide genuine clinical benefits, under what conditions they may produce misleading results, and how they may raise ethical concerns within tourism contexts.

(c) Importance of Cultural Differences

Cultural factors significantly influence older visitors' demand for cognitive health services; however, the literature remains limited in this area. Patterson and Balderas (2018) note that cross-cultural cognitive health tourism research is scarce, despite cultural factors playing a major role in older visitors' behaviors.

Future research should examine:

- differences between Western and Asian cognitive health practices,
- the influence of family structures on older adults' tourism preferences,
- how cultural perceptions of cognitive decline affect screening demand,
- development of culturally adapted cognitive programs,

- the need for destination marketing and service design strategies to consider cultural diversity

7. Conclusion

Gerotourism has become a strategically important field in both tourism and healthcare as a result of global ageing. As estimated by the United Nations (2022), the population aged 65 and over is expected to reach 1.5 billion by 2050, accelerating the global mobility of older adults seeking healthcare services. Consequently, cognitive health programs have emerged as essential components of gerotourism, particularly due to the increasing prevalence of neurodegenerative disorders such as dementia and Alzheimer's disease. The literature confirms that cognitive health plays a vital role in preventive medicine and that lifestyle interventions can reduce Alzheimer's risk by approximately 40% (Livingston et al., 2020).

Integrating cognitive health applications into tourism—such as neuroscience-based vacation programs, cognitive rehabilitation, digital cognitive tests, and social engagement-based activities—provides significant benefits for improving the health and quality of life of older visitors.

Similarly, geriatric check-up tourism is expected to grow rapidly due to the early diagnostic potential of advanced technologies such as PET/MR hybrid imaging, liquid biopsy, and AI-supported analytical systems (Topol, 2019; Villemagne et al., 2015). This study contributes an interdisciplinary perspective to the gerotourism literature by examining cognitive health and geriatric check-up tourism within a comprehensive framework while also offering strategic recommendations for practitioners, policymakers, and destinations.

Implications for Destinations

- Developing tourism packages that prioritize cognitive health,
- Promoting hybrid models that combine neurological screening with wellness programs,
- Strengthening elderly-friendly, accessible, and safe infrastructure (Nordin and Svensson, 2021).

Implications for Researchers

- Conducting comparative analyses of gerotourism models across countries,
- Scientifically testing VR/AR cognitive exercises, AI-based screening tools, and digital therapies,
- Increasing qualitative research to thoroughly examine older tourists' risk perceptions, motivations, and behaviors.

In conclusion, geriatric check-up and cognitive health programs will continue to shape the future of gerotourism, as they align with global preventive health trends and meet the evolving expectations of older tourists.

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Declaration of Research and Publication Ethics

This study which does not require ethics committee approval and/or legal/specific permission complies with the research and publication ethics.

Researcher’s Contribution Rate Statement

The authors declare that they have contributed equally to the article.

Declaration of Researcher’s Conflict of Interest

There is no potential conflicts of interest in this study.