



**ENHANCING THE BUILT ENVIRONMENT  
FOR PROMOTING HEALTH AND SOCIAL EQUITY  
OF AGING POPULATION IN THAILAND: LEARNING  
FROM EXPERIENCES OF JAPAN AND SINGAPORE**

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## ABSTRACT

**Background:** The global population is going through a significant demographic shift, with a notable increase in older individuals, particularly in Asia and Thailand. Urbanization is also rising, affecting the health and well-being of older adults. Age-friendly environments are essential for better health and social equity. Thailand, especially in rapidly urbanizing areas like Bangkok, faces challenges in promoting healthy aging through the built environment. Addressing health disparities and socioeconomic inequality is crucial. This paper underscores the critical importance of enhancing the built environment to support Thailand's aging population, drawing insights from Japan and Singapore. Creating age-friendly environments while addressing urbanization challenges can promote healthy aging and improve the quality of life for older adults both in Thailand and elsewhere.

**Objective:** This paper analyzes Japan and Singapore's implementation of the built environment to promote health and social equity among their aging populations. It describes their strategies, policy approaches, and challenges, and evaluates their applicability to Thailand's context while identifying potential implementation barriers. The aim is to offer recommendations for a successful age-friendly built environment in Thailand, drawing insights from Japan and Singapore's experiences.

**Methodology:** The search for relevant documents that addressed the research questions. EndNote was used to organize the collected data and information. All articles included in the review were selected from 2015 onwards, in line with the data collection and analysis plan. A total of 42 articles were included in the review, and the relevant findings are presented.

**Conclusion:** The study emphasizes the significance of enhancing the built environment to promote the health and social equity of Thailand's aging population. Drawing insights from Japan's '*Age in Place*' policy and Singapore's focus on creating a livable and sustainable urban environment, Thailand can develop age-friendly policies that prioritize adaptable housing and a well-connected public transportation system. By incorporating elements of Singapore's approach, such as extensive green spaces and integrated land use planning, Thailand can foster physical activity and social interaction among older adults. Collaboration among various stakeholders is essential for successful implementation, ensuring that the interventions address the unique challenges faced in urban settings. However, Thailand needs to address potential barriers, including walkability challenges and socioeconomic disparities, to effectively implement age-friendly initiatives and promote the well-being of its aging population.

**Keywords:** Built Environment, Aging Population, Physical Activity, Social Participation, Functional Decline, Age-Friendly Environment, Health Social Equity, Japan, Thailand, Singapore

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# CHAPTER 1

## INTRODUCTION

### 1.1 Demographic Transition: Aging Population

The phenomenon of aging populations and urbanization is rapidly changing the global built environment, significantly impacting older adults' health and well-being. Research has shown that factors such as walkability, access to transportation, availability of green spaces, and neighborhood safety are really important in promoting physical activity and social interaction among older adults (Bonaccorsi et al., 2020).

The number of elderly individuals worldwide is increasing rapidly as people are living for a longer time. In the year 2020, there were 727 million individuals aged 65 or above. Women generally have longer lifespans than men, it is predicted that within the next three decades, the number of older people globally will more than double and exceed 1.5 billion by 2050. Every part of the world will have more older people between 2020 and 2050. While Europe has historically been the oldest region, Asia and Latin America are undergoing rapid demographic transitions and aging. It is noteworthy that the population aged 65 and over by region from 2015 to 2050 reveals that by 2050, most of the older population will live in Asia (United Nations, 2015). As reported by the United Nations (United Nations, 2020), in 2020, 8.7% of Asia's population was aged 65 or over, and this is projected to increase to 14.6% in 2030 and 24.9% in 2050. Aging populations present various difficulties for individuals and societies across all aspects of life (Enrico D'Ambrogio, 2020).

Singapore, with a life expectancy of approximately 83 years, is recognized as one of the most rapidly aging societies in the world. As such, the Singaporean government has made significant investments in life-long learning initiatives, which aim to enhance the nation's human capital, support personal growth, and foster social integration.

Japan is also a rapidly aging country, with approximately 25 percent of its population aged 65 and over, and this number is projected to reach 40 percent by 2060. But the reason why the population is getting older is because there have been big

improvements in healthcare and the economy in different countries and regions. This same trend is happening all around the world, especially in Asia. Thus, Singapore and Japan are pioneers of an aging world, taking proactive measures early to prepare for future demographic changes. They have implemented innovative policies and solutions to benefit from the longevity dividend (WEF, 2020). Their experiences can serve as valuable examples for other countries facing similar challenges.

According to data, Thailand is seeing a rapid rise in its older population. In 2021, there were 12.5 million individuals aged 60 or older, accounting for 19 percent of the total population of 66.7 million. Older people faced several challenges in their daily activities, with 11.4 percent dealing with chronic health issues, 12.5 percent experiencing mental and emotional difficulties, and 32.9 percent facing problems accessing medical services when sick. Additionally, the COVID-19 pandemic and containment measures had negative effects, such as 90 percent experiencing stress and anxiety, 59.3 percent experiencing a decrease in income and increased financial burden, and 47.9 percent participating in fewer gatherings or activities outside their homes. (Somsak Chunharas & et al., 2021).

The need for long-term care among the elderly increased to over 700,000 by 2020, and it is expected to reach 2.78 million by 2024. Looking ahead to 2040, the number of people aged 60 or older in Thailand is projected to surpass 20 million, accounting for 33 percent of the overall population. Additionally, 16 provinces in Thailand would have over 20 percent of their population aged 60 or older (Duangjai, 2021). As more working-age individuals move from rural to urban areas, the aging population presents a significant challenge for Thailand's healthcare and welfare systems (Duangjai Lorthanavanich, 2021; World Health Organization, 2023).

This shift has important implications for the healthcare system, social services, and economic planning in Thailand. Thailand's aging population faces several health-related challenges. Chronic diseases such as hypertension, diabetes mellitus, cardiovascular diseases, stroke, hypercholesterolemia, and cancer are more prevalent among older adults, with incidence rates four times higher than in other age groups. Moreover, as older adults become increasingly dependent on others for daily activities, they require assistance or caregivers, highlighting the need for accessible healthcare services that can cater to their unique needs. In response to these demographic changes

and the associated challenges, Thailand has developed a series of national policies aimed at improving the well-being of older adults. These policies are derived from various national development plans, including the 20-Year National Strategy (2018-2037), the 12th National Economic and Social Development Plan (2017-2036), and the National Health Development Plan (2017-2036). One notable policy framework is the 2nd National Plan on the Elderly (2002-2021), which emphasizes enhancing the well-being of older adults by promoting their dignity, autonomy, and security. Key strategies include preparedness for quality aging, support for health, financial security, social inclusion, and age-friendly environments.

**The Act on the Elderly**, enacted in 2003, further establishes the rights of Thai elderly citizens in various aspects, including social support, health, economic protection, and access to public services. The goal is to enable Thai elderly individuals to actively age and lead fulfilling lives. Thailand has also implemented various healthcare initiatives to support older adults' health and well-being. These initiatives encompass universal health care, healthy aging, and strong social support systems. Key components include comprehensive health care programs, geriatric clinics, mental health support, and age-friendly communities. Additionally, the country has developed a long-term care model, including training for care managers, caregivers, and community volunteers. This model classifies elderly individuals into three groups based on activities of daily living (ADL) assessments, ensuring that the appropriate level of care and support is provided. A robust data system is essential for monitoring and evaluating the effectiveness of policies and healthcare programs for older adults. Thailand has established data systems such as the Health Data Center, Ageing Health Data, Long-Term Care 3C Program, and the Long-Term Care Fund. These systems help track older adults' health status and needs and ensure efficient delivery of services.

In November 2019, Thailand established the ASEAN Centre for Active Ageing and Innovation (ACAI) as a knowledge hub dedicated to active aging and innovation. ACAI supports evidence-informed policies, research, capacity development, and monitoring of active aging across ASEAN countries. Thailand's aging population presents both challenges and opportunities for the country. The government has taken proactive steps to address the unique needs of older adults through policies, healthcare initiatives, and data systems. These efforts aim to promote active and healthy aging,

ensuring that older Thai citizens can lead fulfilling lives and contribute to society. However, ongoing monitoring and evaluation of these policies and programs will be crucial to adapting to the evolving needs of the aging population in Thailand (Dr.Kitti Larpsombatsiri, 2019a; JICA, 2022).

## 1.2 Demographic Transition: Urbanization

Urbanization refers to more and more people living in cities. According to the United Nations, over half of the world's population has been living in urban areas since 2008. They predict that by 2050, most people in the developing world (64.1%) and the developed world (85.9%) will be living in cities (Ritchie & Roser, 2018).

Singapore achieved complete urbanization in 2018, meaning all citizens were considered '*urban*'. While this has helped the economy and aligned with Singapore's global goals, it has also had some negative effects on the environment and citizens, especially older adults. To address these issues, the government is taking steps, like incorporating green spaces into new buildings and implementing environmentally friendly policies. Singapore has made progress in promoting healthy aging through the built environment by introducing initiatives like the '*Age-Friendly Singapore*' program, which aims to create a social and physically engaging environment for older adults. Community gardens and parks are also important for healthy aging in the city (n.d., 2021; van Hoof et al., 2021).

Japan, facing an aging population and urbanization, is the second-ranked country in the world for life expectancy. However, it has not achieved a replacement fertility rate since the 1970s, possibly due to traditional gender roles and limited job opportunities for young men. Addressing the challenges of urbanization and aging requires urban governance to plan facilities and infrastructure to support the elderly. Japan has made strides in promoting healthy aging through the built environment, incorporating universal design principles to create barrier-free environments for all, including older individuals and those with disabilities (*See Box 1 below*). Green spaces have also been found to support healthy aging, reducing the likelihood of functional decline in older adults according to research in Japan (Enrico D'Ambrogio, 2020).

### **1.2.1 Barrier free environments**

A barrier-free environment refers to a place where everyone, regardless of age, gender, or condition, can move around freely and safely with access to all necessary functions and services. The main goal is to provide a space or services that can be used by everyone without any obstacles, allowing for dignity and as much independence as possible. The environment includes buildings, roads, parks, other locations, services, transportation methods, and everyday products. The objective is to empower vulnerable groups in society, enabling them to actively participate in society's development and decision-making processes (Yaroshenko et al., 2022).

Barrier-free environments can significantly enhance the quality of life for older adults (Sharma & Kumar, 2022) by removing physical barriers and improving accessibility, mobility, and safety. Here are some ways in which a barrier-free environment can help support older adults:

1) Improved Mobility: A barrier-free environment can make it easier for older adults to move around independently, reducing their reliance on others. Features such as ramps, grab bars, and wider doorways can make it easier for them to navigate their surroundings.

2) Increased Safety: Barrier-free environments can help to reduce the risk of falls and injuries among older adults. Features such as non-slip surfaces, handrails, and adequate lighting can make it easier for them to navigate their surroundings safely.

3) Enhanced Social Interaction: A barrier-free environment can help to facilitate social interaction and reduce social isolation among older adults. Accessible public spaces, such as parks, community centers, and public transportation, can help them to connect with others and participate in community activities.

## **1.3 Built Environment and Health**

In recent years, many research studies have looked into how the physical surroundings we live in affect our health. These studies have explored different topics like obesity, exercise, overall health, childbirth outcomes, mental illness, and illness rates. The Human Ecology Model of a community, suggested by Barton and Grant

(See figure 1.1 below) shows how the built environment and the well-being of people living in that environment, including older adults, are connected. The model emphasizes that we should take into account social, economic, and environmental factors that impact our health, including access to healthcare services, transportation, social support, and housing conditions (Wang et al., 2021).

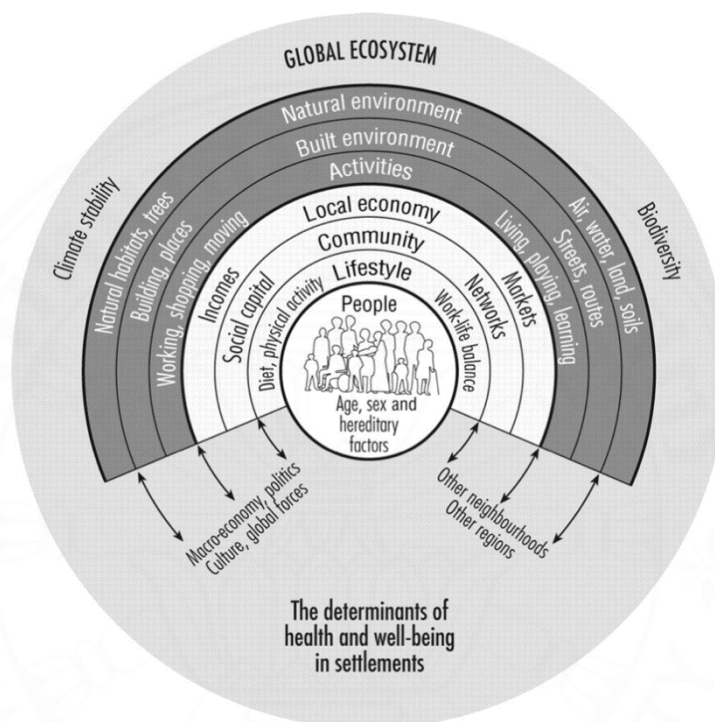


Figure 1.1 The Human Ecology Model of a settlement proposed by Barton and Grant (Barton et al., 2009)

The built environment, which includes buildings, streets, transportation systems, public spaces, and places for social networking, plays a significant role in promoting health and social equity for older adults. It provides opportunities for physical activity, social interaction, and access to healthcare services. By creating an inclusive and accessible environment, the built environment caters to the needs of all individuals, including older adults and people with disabilities (Zhong et al., 2022a). Well-planned outdoor areas and physical surroundings can improve the overall health and well-being of people who use them regularly. This is achieved by reducing the risk of falling and getting injured, promoting physical activity, and decreasing social isolation.

Studies have shown that older adults living in areas with easy access to enjoyable outdoor spaces engage in physical activity and healthy walking twice as often (Yang, 2022). However, for older adults with impairments, less user-friendly environments may increase the risk of falling and make it challenging to go outside, leading to increased loneliness and obstacles due to low socioeconomic status (Barnett et al., 2017). This can increase loneliness and reinforce obstacles caused by low socioeconomic status. According to (Pinter-Wollman et al., 2018) the physical surroundings we live in can directly or indirectly impact our health. This impact can be immediate, like the quality of the indoor environment, or it can influence behaviors that influence health. For example, the built environment can encourage individuals to engage in activities like walking to promote physical activity.

The impact of the environment on a person's physical health is complex, with physical activity playing a crucial role in this relationship. The built environment can either encourage or discourage physical activity, ultimately affecting health and well-being. Creating an environment that promotes physical activity is particularly beneficial for older adults. Factors such as proximity to parks, safe walking and biking paths, traffic safety, neighborhood safety, aesthetics, and overall environmental quality influence physical activity among older adults. Considering the purpose of the activity is essential when studying how the environment affects physical activity, as older adults engage in outdoor physical activities for both leisure and transportation. Social participation is also vital for the health and well-being of older people. It has been linked to diseases, mortality rates, and overall quality of life among older adults. Promoting social participation is a priority recognized by the World Health Organization in response to the challenges posed by an aging population (Aroogh & Shahboulaghi, 2020). In summary, the built environment significantly impacts the health and well-being of older adults by providing opportunities for physical activity and social interaction. Creating an inclusive and accessible environment is essential to cater to the diverse needs of older adults and promote their overall health, as mentioned earlier and shown in figure 1.2



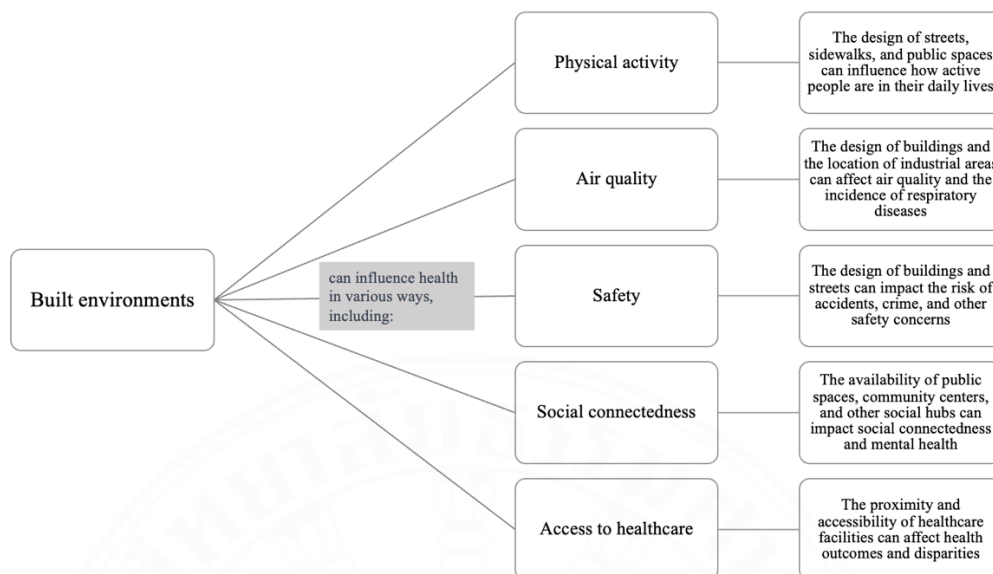


Figure 1.2 A diagrams show the examples of how built environments influence health (Zhong et al., 2022b)

#### 1.4 Promoting Health Aging in Thailand's Urban Settings through the Built Environment

In Thailand, the elderly population has grown from 5% in 1970 to 10% in 2006, and it is projected to reach 30% by 2050. Bangkok's population is aging at a faster rate than other provinces in Thailand, which presents challenges for improving the quality of life for the elderly population. The rapid urbanization of Bangkok has led to inadequate infrastructure, including poor urban design, inadequate transportation, and a lack of basic services. These factors limit the mobility and social participation of older adults, highlighting the need for supportive environments that provide accessible transportation and public spaces. The article focuses on the impact of urbanization on the built environment and quality of life in Thailand by (Prasartkul et al., 2019) highlighting the need for sustainable urban development practices that prioritize public health, safety, and accessibility. This article also discusses the challenges of managing rapid urban growth, such as environmental degradation, traffic congestion, and social inequality. Another article from (Srichuae et al., 2016) examines the impact of population aging on the built environment and urban planning in Thailand.

It discusses the need to adapt urban infrastructure to meet the needs of older adults, such as providing accessible transportation, housing, and healthcare facilities. This article also emphasizes the importance of social inclusion and community engagement in promoting healthy aging in urban areas. Another article from (Teerawichitchainan et al., 2019) explores the challenges of providing affordable housing for older adults in urban areas of Thailand. It discusses the need for policies and programs that address the unique housing needs of older adults, such as adaptable housing designs, social support networks, and financial assistance. This article also highlights the importance of intergenerational housing models that promote social integration and mutual support among older and younger residents.

The aging population in Thailand presents significant challenges for promoting healthy aging through the built environment, particularly in urban settings. Although research on the impact of the built environment on health and social equity in older adults in Thailand is limited, many studies have identified a need for improvement in the built environment to promote better health outcomes and social equity.

Article from (Iamtrakul et al., 2019) discusses the challenges faced by older people in Bangkok related to the built environment, such as limited accessibility, inadequate infrastructure, and lack of community resources that can impact their health and well-being.

Article from (Pitisuttithum, 2017) focuses on the study of age-friendly environments in Thailand, specifically in Bangkok, and the factors that can improve the quality of life for older people. This includes features such as safe and accessible sidewalks, public transportation, and green spaces that can enhance physical activity and social participation.

Article from (Tupanich et al., 2019) examines the relationship between urbanization and the health of older people in Thailand. It suggests that rapid urbanization has led to changes in lifestyle and dietary habits, leading to an increase in chronic diseases, especially among older adults.

Article from (Wang et al., 2015) discusses the impact of air pollution on the health of older people in Bangkok. It highlights the association between poor air quality and an increased risk of respiratory diseases, cardiovascular diseases, and other health problems that can be exacerbated by aging.

## 1.5 The Global Health Problem

In the era of globalization, there has been a widespread misconception that everyone has equal access to the resources necessary for a decent standard of living. The concept of '*equity*' in human rights discourse refers to the idea of fairness and equality. It encompasses the notion of distributive justice, which entails the fair allocation of goods and services within a society, including material possessions, healthcare access, and even basic survival needs. However, it is important to recognize that not all populations, even within modern democratic countries like Thailand, have the same opportunities to benefit from resource allocations or essential services (Aungkulanon et al., 2017).

The World Health Organization's Global Commission on the Social Determinants of Health (CSDH) has highlighted that social injustice is causing a significant loss of life on a large scale. The commission has identified inequalities in the circumstances of people's birth, living conditions, work, and aging as major contributors to health disparities. These disparities are driven by an uneven distribution of power, wealth, and resources, which directly affect people's health outcomes (Donkin et al., 2018).

The socioeconomic status of a particular geographic area has been recognized as a crucial factor influencing the health of the population. The socioeconomic characteristics of an area can impact population health through various factors, including physical aspects like the availability of necessary goods and services and exposure to environmental pollutants, as well as social factors such as community cohesion, collective efficacy (referring to a community's ability to influence the behavior of its members to ensure safety and security), and social support for managing stress.

Despite significant progress in reducing poverty and improving health in Thailand over the past few decades, the adverse health effects associated with poverty still persist. It is vital to address the interconnected challenges of socioeconomic inequality, geographical disparities, and their implications for health outcomes in order to achieve genuine fairness and enhance the well-being of all individuals in society (Apidechkul et al., 2016).

The global issue of population aging is also a major public health concern, particularly in countries like Thailand, where the proportion of older adults is growing

rapidly. As the aging population increases, there is a growing need to create age-friendly environments that promote healthy aging and improve the quality of life for older adults. Enhancing the built environment is one of the most effective strategies for achieving this goal, as it can support active aging, improve access to health services, and reduce social isolation among older adults.

However, Thailand faces several challenges in promoting health equity for its aging population through the built environment. For instance, rapid urbanization has led to the development of urban areas that are often not designed with the needs of older adults in mind. Moreover, many older adults in Thailand face social and economic barriers that limit their ability to access health services and participate in community life (Witthayapipopsakul et al., 2019).

To address these challenges, Japan and Singapore offer compelling role models for Thailand's aim to enhancing the built environment in support health and social equity of its aging population. These countries share common challenges in dealing with rapidly aging demographics, and their comprehensive policies, infrastructure development, community engagement, healthcare systems, and urban planning strategies have proven successful. By studying their experiences and adapting lessons learned in creating a more age-friendly environment that caters to the unique needs of its aging population while fostering social inclusion and well-being.

## CHAPTER 2

### REVIEW OF LITERATURE

#### 2.1 Review of the Literature

Aging is a global phenomenon, and Thailand is no exception to this trend. The country's aging population has been growing rapidly in recent decades, which poses significant challenges to its society and economy. The United Nations predicts that the percentage of people in Thailand who are 65 years old or older will rise from 10% in 2020 to 25% by 2050 (Loo, Mahendran, et al., 2017). One of the most pressing issues is the need to promote health and social equity for the aging population. This study aims to examine the experiences of Japan and Singapore in enhancing their built environment for promoting the health equity of their aging population and what Thailand can learn from them.

Article by (Wang & Fukuda, 2019) highlights the global concern regarding aging populations and the need for cities to become more age friendly. Japan faces a significant challenge due to its long average lifespan, and it predicts a substantial increase in the percentage of the population aged 60 years or older by 2060. This demographic shift has resulted in shrinking cities in Japan. The article emphasizes the importance of sustainable urban design and redevelopment to address these issues, as well as the need for government financial support to facilitate urban regeneration. Recognizing the importance of the physical environment in promoting physical activity is gaining increasing attention, especially when considering the needs of older adults and creating a society that supports their active lifestyle (Koohsari et al., 2018).

Understanding how the built environment can facilitate preferred out-of-home activities and promote physical activity among the elderly is crucial, particularly in urban and transport planning. This knowledge allows for the development of age-friendly communities that cater to the needs of older adults and encourage their active travel (Cheng et al., 2020).

### **2.1.1 Built Environment and Physical Inactivity**

Physical inactivity, defined as a lack of exercise, is a major cause of diseases that are not easily spread among people (non-communicable diseases or NCDs) and plays a crucial role in achieving the UN's goal of promoting good health and well-being (Sustainable Development Goal 3). According to articles mentioned in Koohsari's study, there is a connection between physical activity and the risk of developing type 2 diabetes. Another review also highlights that sitting for long periods of time is associated with the risk of chronic diseases, regardless of how much physical activity one does (Koohsari et al., 2018).

The physical aspects of the environment we live in, such as homes, buildings, streets, parks, open spaces, and transportation infrastructure, significantly impact people's behaviors when it comes to physical activity in various aspects of their lives. Different elements of the environment influence these behaviors, like how densely populated residential areas are, the availability and variety of places for different purposes, and public services like parks, green spaces, and transportation stops.

The attractiveness of the neighborhood surroundings, including the presence of trees and rivers, and safety considerations related to crime and traffic also play a role. For example, having easily accessible public parks and recreational facilities allows individuals, families, and institutions to engage in physical activities during their free time. Well-designed infrastructure, like sidewalks, bike paths, and crosswalks, also encourage people to use active modes of transportation (Elshahat et al., 2020).

International organizations like the United Nations (UN) and World Health Organization (WHO) have issued scientific guidelines emphasizing the importance of increasing physical activity to combat non-communicable diseases (NCDs). Modifying the built environment to support physical activity has been recognized as a crucial focus area within efforts to address NCDs (Adlakha et al., 2017).

### **2.1.2 Social Participation and Functional Decline**

The study conducted by Ide (Ide et al., 2020) focused on examining the relationship between social participation, functional decline, and the health of older adults. It discovered that active social participation, encompassing involvement in various organizations and work, played a critical role in preventing functional decline among older individuals. The study emphasized the significance of social participation as a

key factor in maintaining good health and preventing age-related decline. Specifically, engaging in sports, hobbies, and work were identified as protective factors against functional decline. The findings suggest that promoting social engagement could be an effective strategy to enhance the health and well-being of older adults. Furthermore, the study underscored the importance of public health policies that facilitate social participation and encourage active aging to mitigate the risks of functional decline in older populations.

Another study by Tomioka (Tomioka et al., 2018) highlights the importance of cognitive decline in older adults and its potential impact on their health and functioning. Cognitive decline is associated with adverse outcomes such as premature death, early admission to care facilities, and reduced functional abilities. Therefore, identifying modifiable factors that contribute to cognitive decline is crucial for reducing its occurrence. Social participation is considered a vital aspect of active aging and has been linked to a lower risk of disability, poor self-rated health, and depressive symptoms in older adults.

The article referenced in the study suggests that social participation may be a modifiable risk factor for cognitive decline. There are three plausible mechanisms through which social participation can influence cognitive ability.

Firstly, participating in social events provides mental stimulation, strategic thinking, and positive social relationships, which can help maintain cognitive functioning. Additionally, informal social networks formed through social participation can provide social support and improve physiological functionality, reducing the risk of cardiovascular diseases associated with cognitive decline.

Secondly, social participation can provide older adults with a sense of usefulness and a social role, which may help maintain cognitive ability.

Lastly, engaging in social activities can reduce stress and improve emotional well-being, thereby positively affecting cognitive decline.

### **2.1.3 Built Environment in Promoting Social Participation in Aging Population**

Extensive research has focused on exploring the relationship between the built environment and health, examining various factors such as pollution, safety, green spaces, social connectedness, transportation, and infrastructure. These factors have a significant impact on physical and mental health, physical activity levels,

social inclusion, and overall well-being. Of particular concern is the vulnerability of older individuals to the effects of a dysfunctional built environment, especially within their immediate neighborhood, as it greatly influences their quality of life and health outcomes. Consequently, there is a global commitment to prioritizing healthy policies across all aspects of city governance and assessing the health impact of different activities. Achieving this goal requires an interdisciplinary approach that brings together the expertise of urban planning, architecture, and public health sectors (Bonaccorsi et al., 2023)

#### **2.1.4 Japan's Built Environment in Promoting Health and Social Equity in Aging Population**

Japan has a long history of aging, and its built environment has been adapted to meet the needs of the aging population. In Japan, "*Aging in Place*" has been the mainstream policy approach to promote the health and social equity of the aging population (Chaudhury & Xu, 2022). The country has developed a comprehensive and integrated approach to promote the built environment for aging in place. One of the critical features of Japan's built environment is its transportation system. The public transportation system in Japan is well-developed, affordable, and accessible. The system provides senior citizens with easy access to essential services and activities. Moreover, the system is designed to meet the needs of people with disabilities and mobility impairments.

Another key aspect of Japan's built environment is its housing policy (Yun, 2019). The Japanese government provides a range of subsidies and support to encourage the construction of barrier-free and adaptable housing. Barrier-free design means that a building or structure is designed to be accessible to all people, regardless of their physical abilities. Adaptable housing refers to housing that can be easily modified to meet the changing needs of its occupants. The government also provides subsidies for the renovation of existing housing units to make them more accessible and adaptable.

#### **2.1.5 Major concerns in creating a built environment that promotes physical activity in Japan**

Japan, renowned for its healthy population, is grappling with a rise in physical inactivity. In response, there is an increasing emphasis on promoting physical activity and comprehending the connection between built environments and active



behaviors. Studies conducted in Japan, as mentioned in the article (Koohsari et al., 2018), have explored the influence of perceived neighborhood attributes on physical activity. However, there are specific issues unique to Japan that necessitate further research. These include investigating the effects of shrinking cities on the creation of activity-friendly neighborhoods, understanding the impact of extreme environmental attributes like slope and residential density, examining the temporal aspect of environmental exposure, and considering the role of environmental equity in reducing health disparities. Within Japan, health disparities are on the rise, with variations in life expectancy and disease burden even at smaller geographic levels.

Research has demonstrated that physical activity levels are associated with socioeconomic status, with individuals from disadvantaged backgrounds being less physically active. It is crucial to address the physical activity gap between low and high socioeconomic areas in order to reduce health disparities, particularly among the elderly. The unequal distribution of environmental factors that support physical activity, such as access to parks and well-connected streets, may contribute to this gap. Gaining an understanding of the historical and geographical patterns of these disparities will guide urban design interventions aimed at reducing the physical activity gap and ultimately decreasing health disparities among different groups.

### **2.1.6 Singapore's Built Environment in Promoting Health and Social Equity in Aging Population**

Singapore is a small city-state that has been successful in promoting health and social equity for its aging population. The country's-built environment has been designed to meet the needs of people of all ages, including the elderly (Mulati et al., 2022). Singapore's policy approach emphasizes creating a '*Livable and Sustainable Built Environment*' (Dawodu et al., 2022).

One of the key features of Singapore's built environment is its green spaces. The city-state has an extensive network of parks, gardens, and nature reserves that provide opportunities for outdoor recreation and physical activity. The green spaces are also designed to promote social interaction and community engagement (Yun, 2019). Singapore's transportation system is also designed to be accessible to people of all ages and abilities. The country has a well-developed public transportation system that includes buses, trains, and taxis. The system is affordable, efficient, and accessible. The government

also provides subsidies for the purchase of mobility aids, such as wheelchairs and motorized scooters.

Research journal by (Song et al., 2020), the relationship between physical activity and physical health is not simple. Factors such as obesity or functional disability can decrease older adults' involvement in physical activity, leading to a decline in physical health. Conversely, better health conditions and a stronger belief in one's abilities can increase motivation to participate in physical activity.

Another article by (Hou et al., 2020) focuses on Singapore's successful integration of land use and transportation planning, with a specific emphasis on a well-established public transport network that has encouraged active mobility since the 1970s. The primary goal of the study is to investigate how urban environments can be designed to promote walking and the use of public transport among older adults, as these modes of transportation are commonly preferred by them. Additionally, the study aims to propose urban planning and design interventions that can support healthy travel and active lifestyles for older adults. The findings and recommendations of this study can be valuable not only for Singapore but also other cities dealing with a growing elderly population like Thailand.

Another studied from (Močnik et al., 2022) focuses on understanding the mobility of older adults in Singapore, particularly how the built environment influences their movement and experiences. It recognizes that interventions to improve mobility have traditionally focused on enhancing physical capacities, but there is a growing understanding of the role played by the built environment in supporting or hindering outdoor mobility. The study aims to explore the environmental factors that impact older adults' mobility in their local neighborhoods and examine how they adapt to facilitators and barriers. The study is significant in the context of Singapore, where the aging population is increasing, and urban planning has emphasized integrated land use and transportation.

### **2.1.7 Thailand's Built Environment in Promoting Health and Social Equity in Aging Population**

Thailand's built environment is still developing, and there is a need for the country to learn from the experiences of Japan and Singapore. Thailand has made some progress in promoting the health and social equity of its aging population.

However, there are still significant challenges that need to be addressed. One of the critical challenges is the lack of accessible and affordable public transportation. The country's public transportation system is still developing, and many older people face difficulties accessing essential services and activities (Mulati et al., 2022). Another significant challenge is the lack of barrier-free and adaptable housing. Most of the housing in Thailand is not designed to be accessible to people with disabilities or mobility impairments. There is a need for the government to provide incentives for the construction of barrier-free and adaptable housing (Mulati et al., 2022).

Article from (Tonboot & Wattanadumrong, 2021) concluded the issue of healthcare inequality among the elderly in Thailand, highlighting three main factors contributing to this disparity. Firstly, there is a spatial dimension to the healthcare needs of the elderly, which can result in unequal access to healthcare services across different socioeconomic states. Secondly, changes in socioeconomic characteristics have led to the elderly being left behind, exemplified by challenges such as the disappearance of public transport that affect their mobility and access to healthcare facilities. Lastly, there is an improper distribution of medical resources and healthcare personnel, failing to align with the spatial distribution of the elderly population and lacking specific planning to address their unique needs. These issues collectively contribute to higher health disparities among the elderly in Thailand.

Addressing access disparities requires a comprehensive approach that integrates technology and physical solutions. However, one key concern remains the distribution of doctors, which needs careful attention. Looking at examples from other countries where public transport systems are integrated into national healthcare systems, could serve as a guide for developing policies that promote equitable access to healthcare services in Thailand. By learning from successful approaches implemented elsewhere, Thailand can strive towards reducing healthcare disparities and ensuring that the elderly population receives the necessary healthcare support they deserve.

Studies have found that older adults with high blood pressure in urban areas of Thailand generally enjoy a better quality of life than those in rural areas. Hypertension is an important factor affecting the well-being of older adults, regardless of where they live. When creating interventions for older adults, it's crucial to consider the differences between urban and rural areas, such as urban residency, other medical conditions,

and how they perceive their health. Urban older adults may benefit from additional support like health education and supervised management of chronic conditions to improve self-care practices and overall quality of life.

On the other hand, rural residents with a shorter duration of hypertension may benefit from increased knowledge about hypertension and regular monitoring to improve self-management skills. In another study focusing on elderly individuals in urban housing communities, social interactions were found to have positive effects on their physical and psychological well-being. This makes community facilities and services essential for their overall quality of life. The study aimed to assess the current situation, challenges, and needs of elderly residents in urban housing in Bangkok, considering various aspects like health, environment, social factors, economic aspects, and support services. It highlighted the significance of creating an elderly-friendly living environment that encourages social activities within the community.

Many elderly participants rated their health as good but expressed a desire for improved access to health facilities and services, including medical and long-term care, to further enhance their quality of life. Retired or unemployed elderly individuals engaged in more social activities compared to others, as they had more free time. Social issues, such as personal attitudes, health concerns, and limitations in the usability and accessibility of community facilities (especially in older housing), were identified as important factors influencing the participation of elderly residents in community facilities. The study also revealed a connection between environmental and social issues within urban housing, including safety and security concerns in housing complexes. Addressing facility safety and improving support services through effective housing operations, maintenance, and management could help address these issues. The study stressed the importance of having accessible, usable, and safe community facilities to enhance the health and social lives of the elderly in urban housing. Safer infrastructure, such as ramps and walkways with rails, along with providing elderly clubs, medical and long-term care services, and organizing social activities, were highlighted as necessary to achieve this goal.

To create an elderly-friendly living environment that promotes social activities in urban housing, several recommendations were made, including increasing the quantity, appearance, and quality of green spaces and improving the accessibility of

community facilities. The study findings should be considered when designing urban environments, with elements like green spaces, safety facilities, elderly clubs, and services catering to medical needs and social activities. Future studies should expand the population and sample size to gather comprehensive data, enabling the application of results in policy-making and urban planning to improve the well-being of senior citizens. In conclusion, the built environment plays a crucial role in promoting the health and social equity of aging populations.

Japan and Singapore have made significant efforts to enhance their built environment for healthy aging and social equity. Thailand can learn from its experiences to develop its own strategies and policies to promote health and social equity among its aging population. The literature reviewed provides valuable insights and recommendations for Thailand to consider when creating its policies and strategies. However, it's important to note that each country's situation is unique and requires tailored approaches. Therefore, further research and analysis are necessary to fully understand the needs and challenges faced by Thailand's aging population and develop effective solutions to address them (Besser et al., 2017; Chantakeeree et al., 2022; Somsopon et al., 2022).

### **2.1.8 A Comparative between the Built Environment in Bangkok and Nagoya**

The rapid urbanization and motorization of cities in Asia have brought about profound transformations in their built environments, shifting the emphasis from pedestrians to motorized vehicles. This transition has resulted in reduced walkability, increased pedestrian accidents, inconveniences for walkers, and heightened exposure to pollution. Walkability, defined as the pedestrian-friendliness of an area, has emerged as a pivotal aspect of urban planning and design. Walkable neighborhoods offer a myriad of advantages, encompassing social, economic, environmental, and health-related benefits.

However, despite extensive research on walkability worldwide, its application and the unique challenges it poses in Asian cities remain relatively unexplored. Against this backdrop, this literature review delves into the concept of walkability, dissecting its various components, with a special focus on the built environments of two representative Asian cities: Bangkok and Nagoya. The selection of these cities is driven by their distinctive characteristics and their different stages of urban development

concerning pedestrian spaces. Walkability comprises three fundamental components: street design, walking needs, and walking behavior. Central to this concept are walking needs, which exert a profound influence on individuals' willingness to engage in pedestrian activities. These needs encompass accessibility, safety, comfort, and pleasurable, with the latter being closely related to the notions of attractiveness and interest. The degree to which these needs are satisfied can vary significantly based on the quality of the walking environment.

**Thai Streets (Bangkok):** Historically, Bangkok's built environment has been skewed in favor of motorized traffic, neglecting the needs of pedestrians. Narrow sidewalks, insufficient separation between pedestrians and vehicles, and the presence of obstacles such as street vendors and motorcycles on sidewalks have rendered walking inconvenient and unsafe. In response to these challenges, the Bangkok Metropolitan Administration (BMA) has initiated efforts to enhance pedestrian spaces, including the relocation of street vendors to designated areas. However, this transition has encountered obstacles relating to vendor livelihoods, rental costs, and merchandise quality. Striking a balance between promoting walking and supporting street vendors is a key challenge for the BMA.

**Japanese Streets (Nagoya):** In sharp contrast to Bangkok, Japanese streets, including those in Nagoya, were originally designed with a predominant focus on accommodating motorized traffic. Characterized by wide road structures and minimal attention to pedestrian spaces, they facilitated efficient vehicle flow but compromised walkability. Stringent parking and vending regulations led to a reduction in street vendors and on-street parking. Recent developments, catalyzed by the COVID-19 pandemic, have triggered a shift toward more pedestrian-friendly street designs, marked by the introduction of designated pedestrian streets and flexible street-use policies (Vichiensan & Nakamura, 2021).

This comparative analysis of walking needs within the urban contexts of Bangkok and Nagoya offers critical insights for urban planners, policymakers, and researchers with a focus on Asian cities. The study reaffirms the classification of walking needs into lower-level needs linked to convenience and higher-level needs tied to comfort and pleasurable. In Bangkok, safety emerges as a higher-level need, primarily owing to challenging street conditions and traffic congestion. The study also underscores the

pivotal role played by street activities, including informal vendors, in fulfilling higher-level walking needs, particularly concerning comfort and pleurability. These activities contribute significantly to the unique characteristics of Asian streets and should be integral considerations in street design (Vichiensan & Nakamura, 2021).

Promoting community engagement and encouraging street management by local communities are pivotal strategies to achieve effective street design aligning with the unique needs of Asian cities. Strengthening urban local communities can facilitate the preservation of street activities while ensuring the functionality of streets. Ultimately, promoting walking as both a mode of transportation and leisure contributes significantly to urban sustainability by enhancing economic efficiency, equity, reducing dependence on motorized transport, and minimizing energy consumption and environmental impact. In its entirety, this research contributes significantly to the broader mission of creating more walkable and sustainable urban environments in Asia and beyond, duly recognizing the pivotal role of pedestrians within the urban fabric. Subsequent studies and practical initiatives can build upon these findings to advance active and sustainable modes of transportation, thus enhancing the quality of urban life in rapidly expanding cities (Vichiensan, 2021).

## **2.2 Statement of Purpose**

The purpose of this study is to investigate how the built environment has been utilized in Japan and Singapore to promote health and social equity among their aging populations. This study aims to describe the strategies that have been implemented, as well as the challenges faced and how these challenges were addressed. Furthermore, this research aims to determine whether the socio-economic and socio-cultural context of Thailand differs from those of Japan and Singapore in relation to the built environment, and to identify potential barriers to the transferability of these strategies. The study will also provide recommendations on the steps Thailand can take to successfully implement the built environment to promote health and social equity among their aging population, based on the experiences of Japan and Singapore.

### 2.3 Questions & Objectives

**Question 1:** What have Japan and Singapore done with the built environment to encourage the health and social equity of their aging population?

**Objective 1.1:** To describe the differences between approaches taken in Singapore and Japan and to examine possible reasons for these differences

**Objective 1.2:** To describe the strategies/policies implemented by Japan and Singapore in improving the health and social equity of their aging population.

**Objective 1.3:** To describe the key challenges faced by Japan and Singapore in implementing built environment as well as the strategies they addressed these challenges.

**Question 2:** What can Thailand learn from Japan and Singapore's experienced about using the built environment to encourage health and social equity in the urban settings?

**Objective 2.1:** To describe whether the *socioeconomic* context of Thailand differs from those of Japan and Singapore in relation to the built environment that might affect the transferability of their strategies.

**Objective 1.2:** To describe the potential barrier to implementing these strategies in Thailand.

**Objective 1.3:** To describe the step that Thailand can take to successfully implement the built environment to promote health and social equity of their aging population based on the experiences of Japan and Singapore.

### 2.4 Conceptual Framework

The conceptual framework for this literature review will focus on the key variables related to the built environment influences in elder's health in Japan, Singapore, and Thailand (shown as figure 2.1 below). The conceptual framework will guide the analysis and synthesis of the literature on the built environment for promoting health and social equity of aging population in Thailand, learning from the experiences of Japan and Singapore. By using this framework, I will analyze and compare the strategies/policies implemented by Japan and Singapore and their potential barriers and steps for Thailand



to successfully implement age-friendly strategies and promote health and social equity for their aging population.



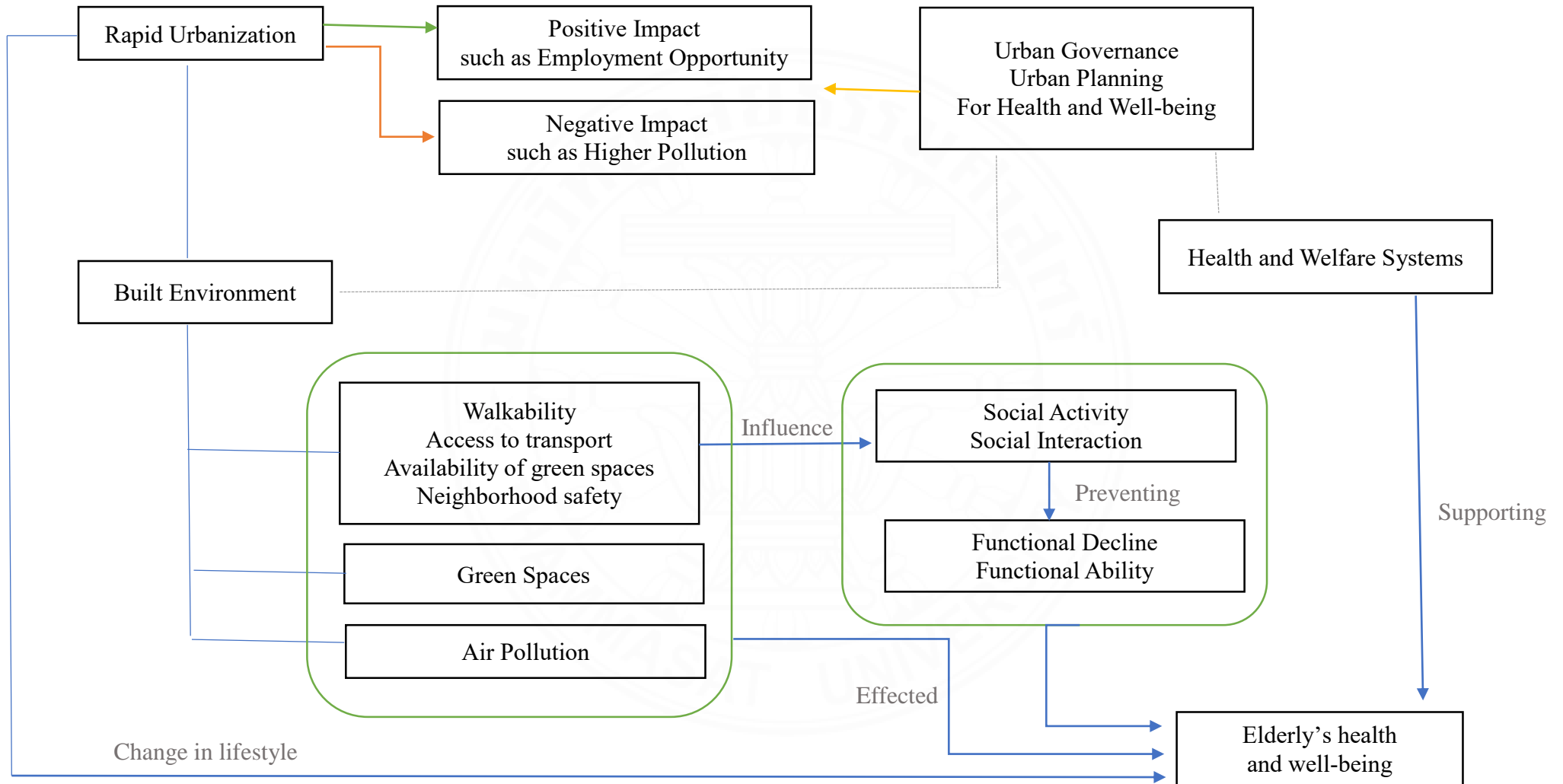


Figure 2.1 Conceptual framework of this literature review

## CHAPTER 3

### METHODOLOGY

This chapter presents the methodology employed to investigate the role of the built environment in promoting health and social equity among aging populations. The chapter outlines the study design, data collection, and analysis plan, which forms the basis for addressing the research questions focused on the initiatives of Japan and Singapore and the lessons Thailand can draw from them to enhance health and social equity within its urban settings.

#### 3.1 Study Design and Sampling

This paper will employ a systematic review methodology to investigate the utilization of the built environment for promoting health and social equity among aging populations. The paper will focus on two key questions: the initiatives undertaken by Japan and Singapore to enhance the well-being and social equity of their aging citizens within their built environment, and the lessons Thailand can learn from these experiences to improve health and social equity within its urban settings. The sampling strategy for this paper involves systematically searching and selecting relevant documents from the specified data sources. The inclusion criteria will be based on the alignment of the titles, abstracts, and content with the study's objectives. The paper will focus on documents published between 2015 and 2023 to ensure the most current and relevant information. However, As Japan has a long history of country development, it is valuable to explore articles published prior to the mentioned period to discern the strategies employed in the country's development. By conducting a systematic review and utilizing the identified keywords and data sources, this paper aims to provide valuable insights into the strategies, challenges, and lessons related to promoting health and social equity among aging populations through the built environment.

**Keywords:** Built Environment, Health Promotion, Social Equity, Aging Population, Social Participation, Urban Setting, Japan, Singapore, Thailand, Policies, Implementation, Urbanization, Socioeconomic Status

### 3.2 Data Collection and Analysis Plan

This table (objectives 1.1-1.3) outlines the data collection and analysis plan for investigating the strategies implemented by Japan and Singapore to encourage health and social equity for their aging populations through the built environment. The objectives, types of documents, data sources, search keywords, and utilization of data are presented for question 1's goal.

**For Question 1:** What have Japan and Singapore done with the built environment to encourage the health and social equity of their aging population?



Table 3.1 : Outlines the objectives 1.1-1.3 and data collection

| Objectives   | Type of document   | Data source  |
|--|--|--|
| <p><b>Objective 1.1:</b> To describe the differences between approaches taken in Singapore and Japan and to examine possible reasons for these differences</p>           | <p>Government reports (Japan and Singapore)<br/>Documents on government programs<br/>NGOs/International organizations report</p>                       | <p><b>Data base:</b> Government websites (Japan and Singapore), The Lancet, PubMed, Thammasat University Library, WHO website, UN-Habitat Website, Google Scholar</p> <p><b>Search words:</b> Japan, Singapore, Built Environment, Social Participation, Physical Activity, Function Decline, Elder people, Aging population, Urbanization, Health Inequity, Social Inequity, Policies, Strategies</p> |
| <p><b>Objective 1.2:</b> To describe the strategies/policies implemented by Japan and Singapore in improving the health and social equity of their aging population.</p> | <p>Government reports (Japan and Singapore)<br/>Documents on government programs<br/>NGOs/International organizations report<br/>Research articles</p> | <p><b>Data base:</b> Government websites (Japan and Singapore), The Lancet, PubMed, Thammasat University Library, WHO website, UN-Habitat Website, Google Scholar</p> <p><b>Search words:</b> Japan, Singapore, Built Environment, Social Participation, Physical Activity, Function Decline, Elder people, Aging population, Urbanization, Health Inequity, Social Inequity, Policies, Strategies</p> |

Table 3.1 Outlines the objectives 1.1-1.3 and data collection (continues )

| Objectives  | Type of document   | Data source  |
|---|--|--|
| <p><b>Objective 1.3:</b> To describe the key challenges faced by Japan and Singapore in implementing built environment as well as the strategies they addressed these challenges.</p> | <p>Documents on government programs<br/>Research articles<br/>Expert’s opinion journal</p> | <p><b>Data base:</b> Government websites (Japan and Singapore), The Lancet, PubMed, Thammasat University Library, WHO website, UN-Habitat Website, Google Scholar</p> <p><b>Search words:</b> Japan, Singapore, Built Environment, Social Participation, Physical Activity, Function Decline, Elder people, Aging population, Urbanization, Health Inequity, Social Inequity, Policies, Strategies</p> |

For each objective, the data collection involves utilizing government websites, academic databases, and reputable sources to obtain relevant information. The collected data will then be used to compare, analyze, and draw conclusions about the strategies and policies implemented by Japan and Singapore as below:

Table 3.2 Outlines of objectives 1.1-1.3 and data analysis

| Objectives   | How the data will be used   |
|--|---|
| <p><b>Objective 1.1:</b> To describe the differences between approaches taken in Singapore and Japan and to examine possible reasons for these differences</p>           | <p>Data on government website (Japan and Singapore) between 2015 and 2023 will be used to describe the current situation (policies/strategies/programs implemented) in Japan and Singapore</p> <p>Academic literatures, Government and non-government organizations documents will be used to describe the current situation (policies/strategies/programs implemented) in Japan and Singapore</p> <p>Compare the two countries from the available data and information from the selected source list above</p> |
| <p><b>Objective 1.2:</b> To describe the strategies/policies implemented by Japan and Singapore in improving the health and social equity of their aging population.</p> | <p>Data on government website (Japan and Singapore) between 2015 and 2023 will be used to describe the current situation (policies/strategies/programs implemented) in Japan and Singapore</p> <p>Consider the research articles describing the <i>'Inequity'</i> regarding the implementing policies/strategies/programs that related to elderly's health and social status.</p>   |

Table 3.2 Outlines of objectives 1.1-1.3 and data analysis (continues)

| Objectives  | How the data will be used  |
|---|--|
| <p><b>Objective 1.3:</b> To describe the key challenges faced by Japan and Singapore in implementing built environment as well as the strategies they addressed these challenges.</p> | <p>Data on government website (Japan and Singapore) between 2015 and 2023 will be used to describe the current situation (policies/strategies/programs implemented) in Japan and Singapore</p> <p>Use International guidelines as a standard for the gaps in Japan and Singapore that need to be addressed in the future</p> |

This table (objectives 2.1-2.3) outlines the objectives and data collection strategy for investigating the lessons Thailand can learn from the experiences of Japan and Singapore in using the built environment to foster health and social equity in urban settings. The objectives, types of documents, data sources, search keywords, and utilization of data are presented to guide question 2's process.

**For Question 2:** What can Thailand learn from Japan and Singapore's experienced about using the built environment to encourage health and social equity in the urban settings?



Table 3.3 Outlines of objectives 2.1-2.3 and data collection

| Objectives  | Type of document   | Data source   |
|---|--|---|
| <p><b>Objective 2.1:</b> To describe whether the <i>socioeconomic</i> context of Thailand differs from those of Japan and Singapore in relation to the built environment that might affect the transferability of their strategies.</p> | <p>Government reports (Thailand)<br/>Documents on government programs (Reports from Bangkok Metropolitan Administration and Metropolitan Wellness Institute)<br/>NGOs/International organizations report<br/>Research articles</p> | <p><b>Data base:</b> Government websites (Thailand), The Lancet, PubMed, Thammasat University Library, WHO website, UN-Habitat Website, Google Scholar<br/><b>Search words:</b> Thailand, Bangkok, Built Environment, Social Participation, Physical Activity, Function Decline, Elder people, Aging population, Urbanization, Health Inequity, Social Inequity, Policies, Strategies, Socioeconomic, NCDs</p>            |
| <p><b>Objective 2.2:</b> To describe the potential barrier to implementing these strategies in Thailand.</p>  | <p>NGOs/International organizations report<br/>Research articles<br/>Expert's opinion journal</p>  | <p><b>Data base:</b> Government websites (Japan and Singapore), The Lancet, PubMed, Thammasat University Library, WHO website, UN-Habitat Website, Google Scholar<br/><b>Search words:</b> Thailand, Bangkok, Built Environment, Social Participation, Physical Activity, Function Decline, Elder people, Aging population, Urbanization, Health Inequity, Social Inequity, Policies, Strategies, Socioeconomic, NCDs</p> |

Table 3.3 Outlines of objectives 2.1-2.3 and data collection (continues)

|   |   |  |
|---|---|--|
| <p><b>Objective 2.3:</b> To describe the step that Thailand can take to successfully implement the built environment to promote health and social equity of their aging population based on the experiences of Japan and Singapore.</p> | <p>Research articles<br/>Expert's opinion journal</p> | <p><b>Data base:</b> Government websites (Japan and Singapore), The Lancet, PubMed, Thammasat University Library, WHO website, UN-Habitat Website, Google Scholar</p> <p><b>Search words:</b> Thailand, Bangkok, Built Environment, Social Participation, Physical Activity, Function Decline, Elder people, Aging population, Urbanization, Health Inequity, Social Inequity, Policies, Strategies, Socioeconomic, NCDs</p> |
|---|---|--|

For each objective, data will be collected from various sources, such as government websites, academic databases, and reputable publications. The collected data will then be used to assess socioeconomic contexts, identify potential barriers, and formulate effective strategies for Thailand. By analyzing the experiences of Japan and Singapore, the study aims to provide valuable insights into how Thailand can enhance health and social equity in its urban areas through the built environment show as below:

Table 3.4 Outlines of objectives 2.1-2.3 and data analysis

| Objectives  | How the data will be used  |
|---|--|
| <p><b>Objective 2.1:</b> To describe whether the <i>socioeconomic</i> context of Thailand differs from those of Japan and Singapore in relation to the built environment that might affect the transferability of their strategies.</p> | <p>Data on government website (Thailand) between 2015 and 2023 will be used to describe the current situation (policies/strategies/programs implemented) in Thailand urban setting</p> <p>Compare the differently implemented by Japan, Singapore, and Thailand from the available data and information from their government websites.</p> <p>NGOs/International organizations report, and research articles will be used to describe the socioeconomic status in Thailand's urban context to see if any inequity issues need to be taken more seriously in adopting the policies especially for aging population</p> |
| <p><b>Objective 2.2:</b> To describe the potential barrier to implementing these strategies in Thailand.</p>  | <p>Data on government website (Thailand) between 2015 and 2023 will be used to describe the current situation (policies/strategies/programs implemented) in Thailand urban setting</p> <p>From Objective 2.1 which will describe the current situation in Thailand, I will list the potential barrier that will be against to implementing the policies in the urban setting.</p>  |

Table 3.4 Outlines of objectives 2.1-2.3 and data analysis

| Objectives  | How the data will be used  |
|---|--|
| <p><b>Objective 2.3:</b> To describe the step that Thailand can take to successfully implement the built environment to promote health and social equity of their aging population based on the experiences of Japan and Singapore.</p> | <p>From the research articles, expert's opinion journal, and the above outcomes, I will then can explain the different situations in Thailand, Japan, and Singapore in promoting the equity in aging population's health and social equity and see how far the situation in Thailand's urban setting from Japan and Singapore and will then I can list the step that Thailand can take from the challenges and opportunities from Japan and Singapore.</p> |

## **CHAPTER 4**

### **FINDINGS AND DISCUSSION**

#### **4.1 Findings**

The systematic search and selection of relevant documents adhered to strict inclusion criteria aligned with the study's objectives. While the primary scope is documents published between 2015 and 2023 for the latest insights, a deliberate effort was made to include articles predating this period, recognizing Japan's extensive developmental history. A total of 215 articles were initially identified, and 7 duplicate articles were removed during the screening process. After further screening based on abstracts and titles, 166 articles that did not meet the criteria were excluded, resulting in the inclusion of 42 articles for the review, encompassing 8 government reports, 4 documents on government programs, 4 articles from international/non-governmental organizations (I/NGOs), 20 research articles, and 6 articles from online databases, including The Lancet, PubMed, Thammasat University Library, and Google Scholar, and the relevant findings are presented below.

#### **4.2 Encouraging the built environment for the health and social equity of Singapore's aging population**

The idea of smart urbanism, which involves using smart technologies and data to improve city living, is often seen as an ideal solution to urban problems. However, the lack of real-world validation for its promises raises doubts and disagreements. In Singapore, the government's "Smart Nation" initiative has been leading the implementation of smart urbanism, building upon the country's extensive history of national ICT planning since 1980.

The idea of the "fourth space" comes from a shared sense of civic duty involving the government, people, and businesses working together in the smart city plan. This concept emphasizes widespread responsibility for the community's well-being, is suggested as a framework to promote fair access and balance of power within the urban environment. Singapore is leading the way in smart urban development by prioritizing

digital transformation, recognizing its crucial role in ensuring future growth and stability. Nevertheless, translating the discourse of smart cities into practical interventions presents significant challenges for urban planners and policymakers, underscoring the importance of clarity and effective implementation. The success of smart urbanism ultimately depends on the translation of ideals into action (Kong & Woods, 2018).

#### **4.2.1 Smart Urbanism and Successful Aging Policies**

Alongside smart urbanism, Singapore also faces the challenge of rapid population aging and the need to transform the face of aging. The number of Singaporeans aged 65 or older is projected to increase significantly, emphasizing the importance of the "*Action Plan for Successful Ageing*". This plan, developed through collaboration between various stakeholders, aims to make Singapore the best place for Singaporeans to grow old and a global model for successful aging. It encompasses key initiatives and targets in areas such as employability, learning, health, transport, research, aged care, intergenerational harmony, and community engagement. By creating opportunities for all ages and promoting a caring and inclusive society, Singapore strives to address the challenges posed by population aging (Ministry of Health, 2016).

The 2023 Action Plan for Successful Ageing in Singapore highlights the progress made since the initial plan's launch in 2015 and the importance of supporting seniors to age well while staying active. Recognizing the need for continuous planning in the face of new realities, including those brought about by the COVID-19 pandemic, the plan emphasizes preventive care, the development of a national aged care system, and inter-Ministry initiatives that can improve seniors' lives. The plan's three thrusts, Care, Contribution, and Connectedness, empower seniors to take care of their well-being, contribute to society, and stay connected through various support networks. Design guidelines for age-friendly public places and investments in aging-related research further support the plan's objectives (Ministry of Health, 2023).

#### **4.2.2 Transport and Neighborhood Design**

Singapore's Age-friendly neighborhoods, considering the unique characteristics of high-density urban environments, are essential in promoting walking and cycling. The cultural and policy context in Singapore emphasizes social integration within families and active strategies among older adults, encouraging their participation in community life through social interactions, network expansion, and giving back

through volunteering. Aligning infrastructure and policies with user expectations, such as wider paths and better signals, plays a crucial role in supporting active mobility. Various studies highlight the association between neighborhood environments, physical activity, and healthy aging, reinforcing the need for age-friendly environments and healthy behaviors (López & Wong, 2017; Nyunt et al., 2015; Song et al., 2020; Yi et al., 2022).

#### **4.2.3 Social Participation of Older Adults**

Examining the social participation of older adults in Singapore within the context of active aging strategies reveals the cultural and policy influences of Asian societies, including the importance of family integration and filial piety. Older adults seek social interactions, expand their networks, and engage in social activities that contribute to society. Individual factors, cultural expectations, and policy contexts shape these patterns of social participation (Aw et al., 2017). Sociodemographic factors, age, gender, race, educational background, and financial status are also associated with successful aging outcomes in Singapore, with certain demographics facing lower odds of successful aging.

Addressing modifiable risk factors, promoting healthy lifestyles, and supporting the adoption of healthy behaviors are vital for facilitating successful aging (Subramaniam et al., 2019). Singapore addresses the challenges of smart urbanism, population aging, and promoting active mobility and healthy aging through comprehensive initiatives and collaborations. The government's vision, supported by stakeholder involvement, aims to create efficient, inclusive, and sustainable urban environments while enabling seniors to age well and actively participate in society. Effective translation and implementation, aligning infrastructure with user expectations, and addressing sociodemographic factors are critical in achieving these objectives.

### **4.3 Creating a Healthy Environments for Japan's Aging Population**

Japan, as an age-friendly country with a high life expectancy, recognizes the importance of the environment and natural factors in supporting the long lives of its population, particularly the elderly (WHO). The Japanese government ensures clean water sources, including safe tap water, through water sanitation regulations and waste

disposal management. Bathing in warm water, whether at home or in public baths and hot springs, is a common practice believed to promote good health and prevent diseases. Japan has relatively good air quality, especially in cities like Tokyo, contributing to a healthy environment.

The Japanese preference for natural foods, including seafood, rice, beans, and vegetables, contributes to their longevity, and traditional Japanese cuisine incorporates beneficial elements such as raw fish and fermented soybean foods. Physical activities like jogging and walking improve the well-being of the elderly in Japan, and the village of Ogimi in Okinawa showcases how utilizing natural resources supports a healthy lifestyle. The combination of consuming natural foods and engaging in physical activities helps maintain health among the elderly, who also participate in various natural activities in groups. Furthermore, the Japanese elderly enjoy traveling abroad to experience nature and local culture, believing that reconnecting with nature provides various benefits for their well-being (Trahutami & Patria, 2020).

#### **4.4 Built Environment's Role in Promoting Active Lifestyles**

Encouraging active lifestyles through the built environment is crucial, especially in countries with a large elderly population like Japan, where there's limited research on its effects (Koohsari et al., 2018). Many studies now focus on how the design of our surroundings affects our activity levels, especially in super-aged societies. There are challenges that need thorough investigation to understand how the physical environment promotes active lifestyles. Future research should look into how shrinking urban spaces impact activity, figuring out the right levels of factors like residential density and slope for healthy aging, determining when and where elderly individuals are most active, and addressing disparities in activity-friendly environments.

To fully grasp how built environments affect the exercise habits of the elderly, collaborative research across different fields, including urban design, sport sciences, public health, transport, geography, and gerontology, is essential. This teamwork is crucial for gathering evidence on developing and maintaining environments that support physical activity in the unique context of super-aged societies (Koohsari et al., 2018).



#### **4.5 Enhancing Social and Environmental Factors for Healthy Aging in Japan**

It is essential to address deficiencies in age-friendly environments in Japan, focusing on areas such as enhancing emergency response training, expanding education, and training opportunities, providing more paid employment options, and improving personal care and assistance services. Notably, certain demographic groups, particularly older adults with lower educational levels, are more likely to perceive lower levels of age-friendly environments.

The focus on built environments in Japan, particularly in relation to policy initiatives, encompasses various facets. Addressing inadequacies in age-friendly environments involves enhancing emergency response training, expanding education and training opportunities, providing more paid employment options, and improving personal care and assistance services. It is crucial to note that certain demographic groups, especially older adults with lower educational levels, are more likely to perceive lower levels of age-friendly environments. In Japan, a notable aspect is the prevalence of active school travel among children, yet there is a scarcity of international studies on Japanese children's school travel.

In Chiba, Japan, a study looked into how the neighborhood environment, safety, and social factors relate to elementary school kids walking to/from school. The results found that walking to school is linked to crime safety, community connections, and schools in new areas. On the other hand, walking from school is associated with traffic safety, neighborhood togetherness, and the presence of CCTVs, but has negative ties with safety volunteers and after-school activities. To keep the high rate of walking to/from school in Japan, it's important for education, public health, and urban planning stakeholders to work together (Hino et al., 2021).

In Fukuoka, a group of scholars forming an epistemic community has played a crucial role in shaping environmental policy through their collective knowledge. This community, with shared beliefs and goals, proves helpful in understanding how Fukuoka manages urban environmental governance. Examining the community's effectiveness in influencing policy, its connection with the public, and how well it communicates its goals is essential. The Fukuoka case gives insights into how epistemic

communities can operate at the city level, especially in dealing with complex and uncertain issues related to urban environmental change (Mabon et al., 2019).

In the Japanese context, structural equation modeling has shown that participation in volunteer work, securing paid employment, and having internet access can significantly increase the diversity of an individual's social network. Importantly, there is a noticeable gender disparity in this dynamic. This underscores the significance of collaboration and age-friendly environments, as highlighted by (Aung et al., 2022). Initiatives involving elderly individuals in social activities have the potential to enhance mental health and influence health behaviors, including physical activity and hypertension rates, as indicated by (Tomioka et al., 2017; Yazawa et al., 2016). Furthermore, individuals' perceptions of the built environment are closely tied to depressive symptoms, and these perceptions may vary between men and women. Therefore, it is crucial to enhance perceptions of neighborhood walkability, access to public transport, and safety, as emphasized by (Koohsari et al., 2023).

#### **4.6 Japan's Community-Based Integrated Care System**

The "Nagayama model" represents a community-based care system established through collaboration among various stakeholders in the Nagayama district. It originated from a 2016 workshop where representatives from different organizations and community groups came together to discuss ways to enhance the neighborhood and meet the needs of the aging population. This workshop laid the foundation for regular meetings and the development of concrete measures. The local government-operated Comprehensive Community Support Center, relocated to the Nagayama district, plays a central role in coordinating and supporting the needs of older adults and people with disabilities. It facilitates regular volunteer visits to vulnerable residents, promotes neighborly support, and provides a social space for residents to interact and engage in volunteer opportunities.

The Nagayama model, a result of collaborative efforts from multiple stakeholders, focuses on revitalizing neighborhoods to address aging concerns, emphasizing improved interaction and support for older residents. Four key themes emerged: promoting 'Choibora' (volunteering by paying attention to the surroundings),

preventing social isolation, providing 'Chokotto service' (daily life support), and promoting multigenerational interaction.

This working together includes groups like residents' associations, non-profit organizations, citizen groups, local business associations, schools, medical associations, urban housing agencies, and a support center for the community (Thang et al., 2023).

In Nagayama 4-chome, there are three services—Comprehensive Community Support Center (run by the local government), Community Cafe (operated by a non-profit organization), and Nekosapo Station (managed by a business)—all working in the same row of shops, relocated after the 2016 workshop, facilitates social interaction, provides consultation, and prevents social isolation. The Community Cafe, existing since 2002, serves as a multi-purpose hub for various activities and support services, promoting cross-generational bonding. Nekosapo Station, a newer venture, offers comprehensive living support services for residents of all ages, contributing to the community-based integrated care system (Thang et al., 2023).

While the Nagayama model showcases the success of collaboration and community-based efforts, it is crucial to maintain a balanced focus on medical and nursing care within the integrated care system. The model has implications for policy and practice, emphasizing the importance of involving stakeholders and fostering age-friendly environments to promote healthy aging in communities (Thang et al., 2023).

Multilevel analysis was conducted to determine the impact of both personal and neighborhood factors on physical and mental health. The analysis showed that while most of the variability in health scores was observed at the individual level, general neighborhood factors still played a significant role (Loo, Lam, et al., 2017). For physical health, factors such as walkability, body mass index (BMI), social capital, walking aid usage, self-reported pains, and the presence of slopes in the neighborhood were found to be significant. For mental health, factors such as BMI, social capital, walking aid usage, weight, the quality of sidewalks, the presence of slopes, and having a companion for outdoor activities were significant. The likelihood of achieving the World Health Organization's (WHO) recommended physical activity thresholds. The findings supported the hypothesis that active travel is more common in urbanized areas and that car ownership has a greater impact on active travel behavior than the built environment (Waygood et al., 2015).

Japan has implemented a community-based integrated care system to support older individuals with chronic illnesses or disabilities and manage social security expenses. This system brings together various healthcare resources, including hospitals, welfare facilities, home-visit care services, and community support initiatives. Interestingly, the system's success originated in rural areas, demonstrating that solutions for aging populations can be developed in rural regions. Other countries with aging populations can learn from these experiences to address their elderly populations' needs. The study also highlighted the need to tailor the system to each community's characteristics, involve residents actively in the system, and ensure its financial sustainability. The system has now become a nationwide policy and is being rapidly implemented.

The national health policy reform in Japan, influenced by JAGES research, focused on three critical areas. Firstly, Japan shifted its long-term care insurance system from focusing on high-risk individuals to a broader population-based approach. However, preventive care programs designed under the high-risk approach did not effectively reach the intended population, so a population approach prioritizing community development and social engagement among older individuals was adopted. The research also brought attention to growing health inequalities in Japan, especially related to income disparities, emphasizing the role of social capital in health outcomes. The health Japan 21 national health promotion policy incorporated goals to reduce health inequalities and create a supportive social environment based on these findings.

JAGES research also led to the development of a data visualization tool called JAGES-HEART, which helped local government officials visualize health issues and inequalities within their communities. This tool laid the foundation for the Ministry of Health, Labor, and Welfare's community-based integrated care visualization system.

In response to the challenges of an aging population and increasing demands for long-term care, Japan implemented policies to promote health and welfare among older individuals. The initial National Health Promotion Movement, Health Japan 21, launched in 2000, set targets for addressing health risk factors and non-communicable diseases but fell short in achieving them. The revised Health Japan 21 policy in 2013 placed greater emphasis on reducing health inequalities and fostering a healthy social environment, incorporating lessons learned from the previous ten years and influenced by AGES research outcomes. The long-term care insurance system in Japan, initially

focused on a high-risk approach, shifted in 2014 due to JAGES research findings, emphasizing community building and social participation in preventing the need for long-term care. Overall, Japan's policies and initiatives for aging populations have evolved over time, shaped by research findings from projects like AGES/JAGES, with an increased understanding of the importance of supportive environments for healthy aging and addressing health inequalities (Hatano et al., 2017; Kondo et al., 2018).

#### **4.7 Urban Planning, Technology, and Societal Well-being in Japan**

Some studies have found no significant associations between street layout attributes and levels of physical activity when objectively assessed. This indicates that factors other than walking may influence cognitive function through street integration (Koohsari et al., 2019) Therefore, considering the topological aspects of street layouts in neighborhood design may be beneficial for supporting cognitive health in the elderly population.

Furthermore, Japan's concept for a superintelligent society, as discussed by (Narvaez Rojas et al., 2021), aligns with the objectives of the United Nations' Sustainable Development Goals (SDGs). The SDGs seek to eliminate poverty, safeguard the environment, and promote global peace and prosperity for everyone by 2030. Society 5.0 represents a vision of a society centered around human well-being, leveraging technological advancements to address social issues, enhance quality of life, and achieve sustainable development. This concept also strives to create fair solutions that cater to individual needs. Successful implementation requires collaboration among various sectors, including government, industry, academia, and citizens.

#### **4.8 Thailand's context in relation to the built environment in promoting healthy aging.**

The examination of Thailand's context reveals a pressing need for transformative measures in public transportation, housing design, healthcare access, and community facilities to foster healthy aging in urban settings. This imperative arises from studies such as that of (Angkurawaranon et al., 2015), which establishes a link between urban exposure and increased behavioral and physiological risk factors for Non-Communicable Diseases (NCDs). These risk factors include inadequate physical activity, insufficient

fruit/vegetable intake, elevated blood pressure, glucose levels, and LDL cholesterol levels. Moreover, (Tiraphat et al., 2021) emphasizes the importance of age-friendly environments and healthy lifestyles in promoting active aging. Their findings underscore the positive association between age-friendly environments—characterized by respect, social inclusion, job support, and accessible transportation—and active aging.

Furthermore, the study's findings in Thailand indicate a high level of satisfaction among older adults with the personal care or assistance they receive at home. This satisfaction is attributed to the widespread availability of strong community-based care across the country, exemplified by the existence of 'elders' clubs' for over two decades. Additionally, the presence of village health volunteers (VHVs) managing older adults at home has gained international recognition from the World Health Organization as a commendable model for community-based public health. These factors contribute to the elevated satisfaction of Thai older adult populations regarding the fulfillment of their personal care or assistance needs within their homes (Tiraphat et al., 2020).

In the context of Bangkok, Thailand, (Alderton et al., 2019) discuss the concept of urban livability. Their study highlights the significance of factors like public transport, walkability, access to parks and open spaces, and the reduction of car dependence in enhancing urban livability and addressing health and well-being outcomes. The study stresses the need for collaborative efforts among diverse sectors to create healthy, livable, and sustainable cities.

#### **4.8.1 Disparities and Challenges Unique to Thailand**

Thailand presents a distinctive landscape in comparison to Japan and Singapore concerning the built environment and its implications for health and social equity. In contrast to the significant investments made by Japan and Singapore in cultivating age-friendly surroundings and fostering urban livability, Thailand confronts multifaceted challenges arising from rapid urbanization, Non-Communicable Disease (NCD) risk factors, and socioeconomic disparities.

A study by (Ozawa et al., 2021) examines the walking environments around urban railway stations in Bangkok, shedding light on factors influencing walkability. Recognizing limitations in the evaluation, such as overlooking elements like land-use mixing, accessibility, weather, user behavior patterns, and disabilities, the study highlights potential hurdles in implementing strategies aimed at enhancing

walkability and creating age-friendly environments. Emphasizing the need to address socioeconomic factors and environmental hazards, the findings suggest a comprehensive approach to promoting health and social equity among older adults in urban settings.

Studies by (Ruengtam, 2017; Somrongthong et al., 2017) underscore the significance of activities, health and security, and exercise facilities in improving the well-being of the elderly. However, the effective implementation of these facilities may hinge on adequate financial resources and supportive policies.

Examining aging mobility, (Champahom et al., 2020) concludes that common characteristics include infrequent travel, morning travel times, and predominant activities such as shopping. Recommendations include improving private car transportation for convenience, developing motorcycle and bike lanes to accommodate those with lower income and shorter travel times, and enhancing public transportation to cater to activities like hospital visits and shopping.

(Tupmongkol, 2020) sheds light on the pivotal role of provincial leadership and policies, using the Khon Kaen example as a noteworthy case. The study highlights Khon Kaen City's distinctive approach to Smart City development, particularly its inception through a collaborative endeavor between local administrative organizations and the private sector, notably represented by Khon Kaen City Development (KKTT) Co., Ltd. Despite encountering obstacles and challenges, primarily linked to insufficient decentralization, the Khon Kaen Urban Development Project took a bottom-up approach. This initiative led to a collective effort involving five local administrative organizations, operating under the umbrella of Khon Kaen Transit System Co., Ltd. (KKTS), alongside active private sector participation (Lhakard, 2023; Pechpakdee, 2020).

The Khon Kaen example serves as a compelling illustration of what is achievable in terms of Smart City development when provincial leadership and policies are effectively leveraged. The bottom-up initiation of the Khon Kaen Urban Development Project not only showcases the potential of collaborative efforts between local administrative bodies and the private sector but also underscores the importance of overcoming barriers associated with decentralization challenges. This collaborative approach resulted in the establishment of Khon Kaen Transit System Co., Ltd. (KKTS), showcasing a model that encourages cooperation between various stakeholders to advance the goal of transforming Khon Kaen into a city characterized by its smile, peacefulness,

innovation, greenery, learning opportunities, and a boundary-free environment for thought (Lhakard, 2023; Wongwiriya, 2019).

#### **4.8.2 Leadership and Innovations in Thailand towards Healthy Aging**

Thailand's leadership in addressing the challenges of an aging population is exemplified by innovative initiatives such as the Preventative Long-Term Care (PLC) model initiated by the Bangkok Metropolitan Administration (BMA) in 2017 (Dr.Kitti Larpsombatsiri, 2019b). This community-based program focuses on promoting the physical and mental well-being of older individuals through activities such as locomotion training and cognitive exercises. The commitment demonstrated by the municipal government, active engagement of district-level public sectors, and collaboration with international partners, including the Japan International Cooperation Agency (JICA), have contributed to the success and expansion of this flagship project (JICA, 2022).

The PLC model, piloted in collaboration with Fukuoka Prefecture, Japan, has rapidly expanded to 69 communities, with plans to reach 345 communities by 2022. The program's success is not only attributed to the core activities like locomotion training and cognitive activities but also to its community-oriented approach. Community trainers, initially trained by instructors, play a vital role in disseminating the benefits of PLC activities. Moreover, recreational events and positive community interactions further contribute to preventing social isolation among participants.

The Bangkok Metropolitan Administration's strategic approach involves thorough planning, resource development, and continuous evaluation. Critical materials, guides, and equipment were developed during the initial pilot phase, laying a robust foundation for scalability. The program's success is evident in the positive outcomes, with participants experiencing improvements in physical and social well-being, reduced caregiver burden, and instances of community members transitioning from participants to volunteer trainers.

Furthermore, Thailand has extended its commitment regionally with the establishment of the ASEAN Centre for Active Ageing and Innovation (ACAI) in 2018. Despite challenges posed by the COVID-19 pandemic, ACAI continues to play a pivotal role as a regional resource center, aligning its strategies with global frameworks for promoting healthy aging (JICA, 2022).



In addition to Bangkok's PLC model, other provinces, such as Chiang Mai, exemplify good models of elderly care through effective community management and mechanisms. The Nong hoi Sub-district Municipality's approach emphasizes integrated healthcare and social services, demonstrating the importance of strong leadership, teamwork, and comprehensive databases in achieving a successful elderly care model (DoH, 2023; Lhakard, 2023).

The comprehensive insights provided by these initiatives showcase Thailand's commitment to addressing the multifaceted challenges of an aging population. However, to ensure sustained success, it is crucial for provincial leaders, particularly in urban centers like Phuket, Khon Kaen, and Chiangmai, to align their actions with both provincial and local levels. By learning from successful models, fostering strong leadership, and integrating smart city policies, Thailand can continue to improve the quality of life for its aging population (Naprathansuk, 2017).

#### **4.9 How Lessons Learned from Singapore and Japan can be applied in Thailand**

Drawing from Singapore's experience, Thailand can derive valuable lessons in addressing challenges related to the aging population and smart urbanism. Singapore's successful integration of the "fourth space" concept, built on broad civic responsibility, is a crucial aspect that Thailand could adopt. This framework, encouraging collaboration between the government, citizens, and the private sector, has proven effective in promoting fair access and balance of power within the urban environment. By fostering a sense of civic responsibility among its citizens and engaging community leaders, Thailand can enhance community participation in decision-making processes, ensuring that smart urban initiatives align with the unique needs of its diverse population.

Moreover, Singapore's approach to successful aging policies provides a comprehensive model for Thailand to consider. The "Action Plan for Successful Ageing" exemplifies collaboration between stakeholders to create opportunities for all ages and build a caring and inclusive society. Thailand could benefit by developing a similar holistic plan that addresses key areas such as employability, health, and community engagement, tailored to its cultural and demographic context. Emphasizing preventive care, a national aged care system, and inter-ministry initiatives can further support seniors

in aging well while staying active, addressing the evolving challenges posed by factors like the COVID-19 pandemic.

In the realm of transport and neighborhood design, Thailand can learn from Singapore's prioritization of active mobility. Creating age-friendly neighborhoods with well-designed infrastructure that aligns with user expectations, such as wider paths and better signals, is essential. Encouraging social integration within families and promoting active strategies among older adults, as seen in Singapore's cultural and policy context, can enhance community life and contribute to healthy aging in Thailand.

Reflecting on Japan's successful strategies in addressing challenges related to aging populations and urban planning, Thailand can draw impactful lessons for its own context. Japan's emphasis on community-based integrated care systems, as exemplified by the Nagayama model, holds particular significance. The success of this model showcases the effectiveness of local community support networks in addressing the needs of the aging population. Thailand, with its own strengths in community support networks, can leverage this lesson by further emphasizing and expanding local community involvement in initiatives aimed at fostering healthy aging. The Nagayama model, developed through collaboration between government, community groups, NPOs, and businesses, highlights the importance of engaging multiple stakeholders to create age-friendly environments and promote intergenerational support. Thailand, in adopting such collaborative models, can strengthen its community fabric and enhance the well-being of its aging population. By incorporating similar community-based care systems, Thailand has the opportunity to tap into the strengths of its local communities, mirroring Japan's success in fostering a supportive and integrated approach to healthy aging. This approach aligns well with the UN's Sustainable Development Goals, emphasizing the importance of collaboration across sectors for societal well-being and sustainable development.

Japan and Singapore's collaborative models, involving government, industry, academia, and citizens, provide a strategic roadmap for Thailand (Edelman, 2022). This underscores the vital role of collaboration across diverse sectors for successful implementation. By adopting this collaborative approach, Thailand can engage stakeholders in the development and execution of age-friendly initiatives. This involvement

ensures that interventions in the built environment are tailored to the specific needs of the aging population, addressing unique challenges in urban settings.

#### **4.10 Discussion**

In reflecting on the challenges faced by Thailand in promoting healthy aging within its urban settings, it is evident that the nation grapples with multifaceted issues arising from rapid urbanization, non-communicable disease risk factors, and socioeconomic disparities. However, there is considerable promise in Thailand's innovative initiatives and community-based care models, as exemplified by programs like the Preventative Long-Term Care (PLC) model initiated by the Bangkok Metropolitan Administration. These efforts showcase a commitment to addressing the evolving needs of the aging population through collaborative endeavors and international partnerships, such as with the Japan International Cooperation Agency (JICA).

While Thailand's landscape differs from that of Japan and Singapore, which have made significant investments in age-friendly environments and urban livability, the experiences of these countries serve as valuable lessons. Both Japan and Singapore faced similar challenges in the past but have successfully navigated them, demonstrating the transformative power of collaborative models and comprehensive strategies.

By drawing inspiration from Singapore's civic responsibility framework and Japan's community-based integrated care systems, Thailand has the potential to overcome its challenges and foster a supportive environment for healthy aging. This discussion highlights the importance of continuous learning from successful models, adaptability to local contexts, and the pivotal role of collaborative efforts.

## **CHAPTER 5**

### **CONCLUSIONS**

#### **5.1 Conclusions**

This study delves into the approaches adopted by Singapore and Japan in addressing the health and social equity challenges posed by their aging populations through the built environment, with a specific focus on urban planning and infrastructure. The investigation also aims to evaluate the adaptability of these strategies to the distinctive socioeconomic context of Thailand, offering meaningful responses to the outlined objectives.

Japan and Singapore, despite facing common challenges associated with aging populations, have approached the enhancement of the built environment in distinct ways. Singapore has embraced the concept of smart urbanism under its "Smart Nation" initiative, leveraging digital transformation and stakeholder collaboration. In contrast, Japan, with a focus on community-based integrated care systems, exemplified by the "Nagayama model", which underscores collaboration at the local level. These divergent strategies are rooted in unique historical, cultural, and policy contexts.

Both countries have implemented comprehensive strategies to address the challenges of aging. Singapore's "Smart Nation" initiative prioritizes digital transformation, emphasizing the concept of the "fourth space" that involves collaboration among the government, citizens, and the private sector. Japan, on the other hand, has implemented community-based care systems, exemplified by the "Nagayama model," focusing on rejuvenating neighborhoods through collaboration among various stakeholders. Challenges faced by both countries include effective implementation, social disparities, gender differences, and balancing community regeneration with medical care. However, stakeholder involvement, continuous planning, and multifaceted strategies tailored to their contexts have enabled them to address these challenges. Thailand presents a distinctive landscape marked by rapid urbanization, NCD risk factors, and socioeconomic disparities. Unlike Japan and Singapore, Thailand faces challenges in public transportation, housing design, and healthcare access. The transferability of strategies must consider

these contextual differences, emphasizing the need for transformative measures to foster healthy aging in urban settings.

Studies in Thailand highlight challenges such as inadequate physical activity, insufficient fruit/vegetable intake, and elevated risk factors for NCDs. The study on walking environments around urban railway stations in Bangkok reveals hurdles in enhancing walkability. Barriers also include financial resources, policy support, and effective implementation of age-friendly environments.

To successfully implement strategies learned from Japan and Singapore, Thailand must focus on collaborative efforts among diverse sectors. Addressing urban livability, creating age-friendly environments, and promoting active aging through community-based programs are essential, explicit policy recommendations, particularly considering Thailand's unique challenges, are essential. Stakeholder engagement, including local communities, NGOs, and the private sector, is crucial for effective strategy implementation.

Sustainability considerations must also be prioritized, with ongoing evaluation and adjustment to ensure the long-term effectiveness of implemented measures. Moreover, cultural sensitivity should guide the adaptation of strategies to align with Thai cultural values and practices.

Lastly, fostering continuous knowledge exchange between Thailand, Singapore, and Japan is recommended. Mechanisms such as joint research initiatives, workshops, or forums should be established to facilitate the sharing of experiences and best practices, fostering a collaboration approach to addressing the challenges of an aging population in urban settings.

In conclusion, this study provides valuable insights into the approaches, strategies, and challenges faced by Japan and Singapore in enhancing the built environment for the health and social equity of their aging populations. The transferability of these strategies to Thailand requires careful consideration of contextual differences, addressing barriers, and taking steps that align with Thailand's unique challenges and opportunities. By learning from the experiences of Japan and Singapore, Thailand can pave the way for a healthier and more socially equitable aging population in its urban settings.

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