

Exploring Mobility of The Elderly in Urban Public Spaces and Transportation Facilities

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ABSTRACT

Ageing is a global issue. As cities grow, the share of residents aged 60 and over also increases. In Malaysia, the population aged 65 years and over increased from 6.5% in 2018 to 6.7% in 2019. Therefore, Malaysia is estimated to reach an ageing nation status in 10 years, and 15% of the population will be at least 60 years old. The World Bank predicts Malaysia will become a "super-aged society" as 20% of the population will be over 65 by 2056. Aligned with the 12th Malaysian Plan (2021-2025), Malaysia has made preparations for the Smart City Initiative, with a primary focus on improving the well-being of its people. In addition, an Intelligent Transport System Blueprint (2017-2022) has been introduced as part of the government's efforts to upgrade the current transportation system. Today's world shows the rise of an ageing population, which has implications in many areas and facilities, such as healthcare, financial services, city planning, transportation, and religious centres. This rising elderly population requires changes in their living environment to make their lives easier. There will be serious problems and challenges in the mobility of the elderly in health service needs and physical areas. Therefore, the primary objective of this conceptual study is to explore the contributing aspects that allow older people with smart mobility to use public spaces and transportation facilities. A qualitative research design is employed to achieve research objectives. This study

is helpful for the development of smart cities and transportation planning to support the sustainable mobility of the elderly in Malaysia, which is facing an increasingly ageing society. Also, the study will address the ageing society in the national development plans and revisit existing planning together with physical areas of development to fulfill the needs of the elderly. It is aligned with the National Sustainable Development Goals (SDGs) of increasing the elderly population's quality of life.

Keywords: Ageing, Mobility, Transport, Smart City Initiative, Urban development

INTRODUCTION

The population of Malaysia is ageing rapidly. It is estimated that Malaysia will reach the ageing nation status in 2030, where 15% of the population will be 60 years old and above [6]. The main issues of older people are related to biological ageing and a decline in functional capacity, inhibiting elderly mobility [5]. Since driving skills deteriorate with age, careful planning is necessary to ensure road safety in addition to the initiative to promote the use of public transport. The government should be prepared to adjust to the demographic changes to deal with the issues brought on by population ageing. This rising ageing population would affect areas and facilities such as healthcare, financial service, city planning, transportation, and religious centres. There will be serious problems and challenges in the mobility of the elderly in these health services and physical areas. Therefore, urban development and planning are essential for supporting elderly mobility.

Mobility is described as the ability of any person to move between points in the community at the desired time with information on travel options and the ability to pay for transportation. Mobility comprises six elements: travel and access to people or places, psychological effects, a sense of freedom, physical well-being and well-being, group participation in social activities, and possible travel in an emergency. Mobility is also connected to the frequency of travel, distance travel, and mode of transport [20]. To be aligned with the 12th Malaysian Plan (2021-2025), Malaysia has been prepared for Smart City Initiative to focus on the well-being of its people, including the ageing community. Therefore, smart mobility and reliable transport are crucial for the elderly to be part of society as age-related health issues and access to public space travel will become more complex.

The elderly needs supportive environments, including transportation and public spaces. Understanding the elderly travel habits, access to public areas, and transportation use is essential for promoting sustainable mobility. Therefore, this study is proposed to explore contributing factors toward elder smart mobility accessing public spaces and transportation facilities in urban areas. The outcomes of this study will be significant to policy maker and concerned industries as it addresses the ageing society in the national development plans.

LITERATURE REVIEW

Transportation Modes

Transportation is an essential instrument for regional development and is directly linked to various economic activities [21]. Transportation has been defined as moving whatever comes from one location to the following location. It shows that transportation is essential for humans to move around and perform daily activities without exception for the elderly. With an ageing

population in many societies, the transportation needs of the elderly are gaining increasing attention. Therefore, the proper distribution of various transportation modes for the elderly will improve urban life quality [1]. When the government can provide easy access to the transport system, it will help the elderly to access goods, services, and other targeted facilities without much hassle. The elderly commonly depends on transportation modes that involve minimal physical exertion, such as walking and buses. [14]. Modes of transport and elderly mobility in urban areas are important factors to consider when designing cities. An ageing population, rapid urbanization, increased urban congestion and changing lifestyles influence how modes of transport and elderly mobility evolve [9].

Travel Pattern and Destination

Certain factors and environments play a significant role in influencing the travel patterns and destinations of the elderly. The varying levels of economic development across different counties and regions, coupled with local government policies tailored to specific situations, have resulted in distinct patterns of travel behavior among older individuals [15]. Research conducted in Malaysia revealed that seniors living in cities have a maximum feasible travel distance of 190 meters, and they predominantly prefer private transportation options [3]. The frequency of elderly trips is statistically influenced by variables such as location (city), education level, private vehicle ownership, physical condition, and participation in exercise [18].

To promote mobility among older individuals without compromising the historical significance of cities, it is recommended that officials strategically develop transportation systems [18]. Vehicle ownership has a positive impact on trip frequency, as individuals who own a private automobile tend to travel more frequently compared to those who rely on other modes of transportation [30]. This trend is observed across cities and age groups, likely due to the convenience and comfort associated with private vehicles over public or active transportation options.

While the elderly generally prefers using private vehicles over walking, walking poses numerous challenges due to inadequate infrastructure [19]. The health status of the elderly significantly influences their travel frequency, with those experiencing at least one chronic illness reporting fewer trips compared to those without chronic illnesses [19][18]. The predicted travel frequency for elderly individuals without chronic diseases was 1.268, while those with at least one chronic illness reported a lower frequency of 1.044 [18].

Overall, these findings emphasize the importance of considering factors such as economic development, government policies, private vehicle ownership, infrastructure, and health conditions when analyzing the travel behavior of the elderly population. Developing transportation systems that cater to their needs while addressing existing challenges can greatly enhance their mobility and overall well-being.

Urban Spatial Environment

Urban spatial environmental factors may affect the health and well-being of the elderly [31]. For example, the environment may provide more opportunities for social interaction and recreation, which can improve mental health and cognitive function in older adults. The built environment can also affect physical health by providing features that encourage or discourage

physical activity. Therefore, improving mobility is crucial for older adults to maintain their health and quality of life. The inability to participate in social activities due to limited mobility makes older persons depressed and lonely [26]; [31]. It is now understood that the elderly environment plays a vital role in improving their quality of life. Hence, many governments provide public transit discounts to entice senior citizens to engage in social activities [12], which is a significant contributor to the development of their well-being.

The increasing population in urban areas is attributed to the accessibility of healthcare, education, employment, and social services for the elderly [24]. Living in urban areas has advantages for the elderly; they provide numerous social, economic, and physical benefits. First off, the elderly is more likely to live in cities where there are more services for them [24]; [29]. This is because cities are better equipped to cater to their needs as they age. For example, they have more space to live in and more medical professionals. Furthermore, cities have more jobs for the elderly, which makes it easier for them to stay on their feet. They can also move around with less worry since there is safety in numbers and accessible infrastructure.

Cities are often assumed to be the primary habitat for the elderly, as they offer more significant opportunities for social integration and health care than rural areas [2]. However, many older adults live in rural areas and suffer from similar noise and spatial isolation issues as urban dwellers [8]. Understanding how cities differ from rural areas and encouraging greater integration between the two can help all age groups.

Living in an urban area provides many benefits over rural areas, such as shorter travel times and less noise than in rural areas, especially after sunset [2]. In addition, urban poverty is more pronounced than rural poverty, making city life difficult for low-income people. Despite these factors, cities have much to offer in terms of health and well-being for their residents.

Elderly Smart Mobility

Smart Mobility is a concept currently being looked forward to by people worldwide. Smart Mobility is an emerging concept increasingly aligned with sustainable world development, considering the 17 sustainable development goals set by the United Nations for 2030 [27]. As for that, many cities are investing in Smart Mobility due to technological advances and the interest of large enterprises in the transport sector. Usually, the concept of intelligent mobility will relate to the city's planning and the logistics of transporting goods and people, and it will experience drastic changes in the coming years. According to [13], smart mobility can be defined as a network system mainly characterized by connections, both digital and physical, to satisfy people's needs, the use of appropriate technologies to enhance the performance and attractiveness of the mobility system; sustainability to reduce the need of travel and consequently energy consumption and carbon emissions.

Smart mobility is a valuable means both for transcending distance and optimizing traffic fluxes and, simultaneously, for collecting citizens' feedback about liveability in cities and the quality of public transport services. Therefore, smart mobility should have an integrated combination of multiple aspects such as accessibility, safety, and ICTs are necessary to consider its users' needs, including the elderly ones [10]. Furthermore, the strategies should positively impact older adults' ability to lead autonomous life and participate actively in society according to their needs [4].

The concept of smart mobility has recently gained momentum. Undeniably, Malaysia is moving and integrating with machines through smart cities for the future. These smart cities will have high walls, streetlights, and traffic lights that automatically adjust their settings to suit the current time of day, weather, and other parameters [8]; [25]. The elderly living in these cities will be able to move quickly and gracefully while interacting with technology.

Smart cities are designed to be easy to navigate and live in for all their citizens; the elderly living in these cities can access health services, education, and financial institutions easily [17]; [22]. These are some critical aspects of making a city smart. Through communication technologies, the citizens of smart cities can access information at any time without difficulty. Smart cities also reduce traffic by using sensors and timers on traffic lights to regulate when lights are on and off. This has several advantages. Not only does it reduce carbon emissions, but it also makes it safer to walk or drive through intersections.

Many scholars believe that smart cities need age-friendly environments so that their population does not age as quickly as other cities [16]; [17]. Age-friendly towns make up a concept that aims to improve the quality of life as they age [7]; [11]; [23]. These are cities where residents feel safe and secure as they grow older. The concept is also relevant for making cities more innovative and efficient. By keeping these principles in mind, city planners can create an environment that supports healthy ageing for its citizen.

Moreover, a smart city improves the quality and accessibility of urban space for the elderly [7]; [11]; [23]. The elderly finds smart cities more accessible and comfortable than other places. It is believed that by optimizing urban space, we can create healthier, more convenient, and more liveable cities for the citizens and the elderly. Therefore, this research would have been more relevant if a broader range of elderly who live in urban and suburban areas had been explored.

METHODOLOGY

Research Design and Data Collection Procedures

This research study has received ethical approval from the Faculty Research Ethics Committee (approval no). A qualitative research approach will be utilized in this study to achieve the stated research objectives. A qualitative research design will be employed to gain an in-depth understanding of the variation in the behaviour of the elderly, particularly in their mobility activities and expectations. Face-to-face interviews have several advantages, one of which is the ability to collect rich data relevant to the study objective. The interviewer may also explain the questions to the interviewee. As a result, all doubts will be dispelled, and the accuracy of the obtained data will increase. Based on the responses, new questions will be added if necessary. The technique of purposive sampling, in which respondents are selected based on specific criteria, will be utilized. A group of older adults who are 1) relatively healthy, 2) physically independent, and 3) community-dwelling will be interviewed regarding their perspectives and experiences with mobility activities. Shah Alam in Selangor will be selected due to its favourable built environment and dense population.

Data Analysis

After data collection, the interviews will be recorded and transcribed, and the data will be analysed using thematic analysis. To ensure the reliability and validity of the qualitative data, appropriate codes will be generated from the transcribed data and compared with the data

collected from a maximum of 10 participants until information saturation and convergence are attained. All respondents will be asked the same questions and their responses will be meticulously recorded and transcribed. The obtained responses will be analysed, coded, and compared to identify shared insights and quotes that will be used to derive critical themes. An audit trail will be recorded, and coder triangulation will be implemented to avoid the three common threats to data validity (i.e., researcher bias, reactivity, and respondent bias). The researcher will interpret the interpretation of findings that are based on the theme.

CONCLUSION

The current study is primarily concerned with investigating the factors that contribute to elderly smart mobility accessing public areas and transportation facilities in urban areas. This qualitative study's findings will help improve the understanding of factors related to elderly smart mobility, specifically in urban areas, which is beneficial to the respected parties. It also contributes to providing users with the current body of knowledge. Several significant limitations need to be considered. The results cannot be generalised to other elderly in other areas. In future research, it is hoped that researchers will expand to the other elements that might influence the mobility of the elderly. Future research should seek to explore additional factors that may influence the mobility of the elderly. By broadening the scope of the investigation, researchers can gain a more comprehensive understanding of the various elements impacting elderly mobility. Finally, a valuable avenue for future research would be to conduct comparisons between elderly individuals living in urban areas and in rural areas. This comparative analysis could shed light on the unique challenges and opportunities faced by elderly individuals in different geographical settings, allowing for a more nuanced understanding of their mobility needs. Taking these constraints into account will help to ensure a more accurate interpretation and application of the study's findings while providing guidance for future research directions in the field of elderly smart mobility.

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