

Designing an Elderly Friendly Housing: The Relationship Between Architectural Design and The Safety of Elderly Residents

By

Sharifah Hana Binti Abd Rahman

Assoc. Prof, Lecturer, Faculty of Syariah and Law

Corresponding Author Email: sharifahhana@kuis.edu.my

Nor 'Adha Ab Hamid

Assoc. Prof, Lecturer, Faculty of Syariah and Law

Mohd Farok Mat Nor

Assoc. Prof, Lecturer, Faculty of Syariah and Law

Nur Zulfah Md Abdul Salam

Assoc. Prof, Lecturer, Faculty of Syariah and Law

Mashitah Binti Nabees Khan

Postgraduate Student, Faculty of Syariah and Law,
Kolej Universiti Islam Antarabangsa Selangor (KUIS), Bandar Seri Putra,
43000 Kajang Selangor

Abstract

According to a study conducted by the United Nations [21] the population of elderly people worldwide has increased rapidly and this will continue until the year 2050. The recent increase in human life expectancy gives rise to the expectation that most elderly people are likely to have to continue living in deteriorating health and lack of ability to continue living alone in the future. Housing design plays an important role in the psychological and physiological aspects of the people living in it. There are several studies that prove residential design has a significant impact on the emotions, psychology and safety of the elderly. However, a constraint on the part of architects and interior designers is the lack of information on how these factors can be manipulated to improve the lives of the elderly. Therefore, the main goal of this study is to examine the relationship between the physical factors of architecture and its role in maximizing the safety of the elderly and how these factors can be absorbed and implemented in the form of architectural guidelines and policies for the design of a more elderly-friendly home to enable them to continue living alone and independently without being overly dependent on others. This study was carried out using a qualitative method through literature reviews, interviews with various experts, the experiences of residents and those who have experience as caregivers of the elderly, families and also professional staff of elderly care homes. The extent to which the role of residential design can minimize the level of care for the elderly and maximize the safety of this group has yet to be ascertained. However, the preliminary findings of this study found that there are some common safety risks in the elderly's residence that are influenced by the physical condition of the elderly's residence itself such as the condition of the floor surface, lighting levels, furniture layout and others. Therefore, it is hoped that this study will to some extent be able to contribute to the improvement of safety in the homes of the elderly and be able to provide information and ideas to the authorities responsible for starting initiatives that focus on this issue.

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1. Introduction

The expeditious growth observed amongst the elderly community occurring globally indicates that there is a need for increased understanding and research on the role of surrounding physical and environmental conditions that have a direct impact on the physical, psychological and emotional well-being of the elderly. Good knowledge about this issue is very important to help the elderly to preserve or to re-establish their self-dependency for survival [5]. According to Hampson [11], there is a direct consequence between the environment and an individual's emotions, behavior, general health and productivity. Nevertheless, awareness and knowledge about the influence of architecture and the environment on the well-being of human life and its role in reducing the risk of injury to the occupants living in it is still at a minimal level.

In addition, the physical environment designed with well-planned architecture are also able to provide a good consequence on the health and well-being of the elderly living in care centers with health problems [21]. This is in line with the view of Oswald et. al. [23] who thinks that housing design can have an impact on the quality of life and survival of its residents, especially for the aging residents. Furthermore, housing design plays an important role in providing basic needs to its occupants in matters relating to identity, health, and well-being [25]. Humans are closely related to their place of residence and it is impossible to separate between the two. Therefore, the main focus of this study is how the local authorities who are responsible for approving policies related to residential construction and the management of elderly care centers can improve the level of safety for the elderly through improved design and a better environment.

2. Literature Review

Dwellings and housing have a clear direct impact on the health of its occupants. However, the characteristics of a good home is that it is affordable and able to protect its occupants from danger and able to maintain well-being. Specifically for the elderly, there are several dangers and implications if they are allowed to inhabit the normal type of residence inhabited by normal individuals. For example, the negative effects of natural climate and construction on health are exacerbated by the unconducive and unfriendly indoor environment. For example, most homes have a humid environment and temperatures can put the risk to respiratory, coronary problems and hypothermia worse for the elderly [15].

Recent developments show an increase in demand for housing with a senior citizen-friendly concept following the increase in the statistics of citizens belonging to the senior citizen group. Clearly, homes and buildings for the elderly require specific features and specifications and have the privilege of providing the best for the lives of the elderly. Therefore, careful evaluation needs to be done to meet the features of sustainable design [2].

2.1 Exploring Special Housing Needs for the Elderly

The latest developments in the modern world have seen the movement from an institutional care model to a more independent and more individualistic care solution [6], for example through a care model in their respective homes that allows the elderly to age in their own homes without having to move elsewhere. With a better understanding of the relationship between residential design and care, it gives us new information about why

building design has its own function in supporting care and accessibility without forcing the elderly to move outside.

From the aspect of social structure, in general, the elderly live in various different forms of housing, whether standard housing or care centers created specifically for those who need special care. Care centers are categorized as special group housing or residences specially built for the elderly [3]. Elderly people living in common residential areas are found to be more exposed to various physical health risks than the average person in the same residential area. This is because the elderly have various weaknesses from the aspects of physical, economic and social well-being and are at risk of poor health and a shorter life expectancy [31].

It is clear that based on several previous studies there is evidence that links housing with the health and well-being of the elderly. Among the factors that are taken into account include the physical aspect of the residence. For example, homes with poor thermal insulation or dampness can have adverse health effects on older individuals [9]. In addition, the position and location of the residence is also an important factor that needs to be paid attention to. A residential location that is too isolated can have a negative emotional impact on the elderly. This is because the elderly are often associated with depression due to loneliness, which in turn has negative effects on the physical health of the elderly such as high blood pressure and poor quality sleep [22]. Another study also found that one in three elderly individuals aged 65 and over and living alone at home suffer from loneliness and depression (19) [12].

2.2 Collaboration Between Technology, Medicine and Landscape Architecture

It is suggested that the design of social housing in the future should be more adapted to the special needs of the elderly. One of the proposed designs is a home design revolution that optimally uses internet technology. Among the examples of senior-friendly home design are homes built with the integration of assistive technology such as security alarms that can help seniors or those with dementia live alone in their homes [1]. Among other examples that are able to meet the needs of the elderly are adjustable lights that are blue during the day and amber at night so as not to disturb the melatonin levels of the elderly which are effective in maintaining the level and duration of normal sleep [4].

According to Marquesh and McIntosh [20], among the latest trends in the world of architects is a concept that combines landscape elements with health and the interaction between social, affective and material elements which is also known as the term therapeutic landscape. The concept of therapeutic landscape has evolved to reflect the current values of society providing exposure and focus on how place-based values can influence and maintain physical and emotional health and well-being in the context of a therapeutic landscape.

3. Research Methodology

To better understand the potential and demands related to elderly and seniors-friendly architecture so as to support the seniors' wellbeing, self-reliance living and ageing, the authors have consulted and analysed the relevant literatures and related studies from journal articles, relevant books, newspaper articles and relevant reports taking into account the opinions of experts from various disciplines including interior design, health and engineering aspects.

4. Results

The results of this study have found a big gap in the current role of architecture and interior design for seniors' residences in maintaining emotional and physical well-being and extending the lifespan of seniors. Analysis of studies and findings of the most effective method to improve the well-being of the elderly is to adapt their homes to their needs in a combination that balances treatment and medical approaches, internet technology architects ensure that every aspect of the care of this group is carried out well.

Indeed, there are still much rooms and opportunities for further study in the future that is able to fill these gaps and needs. In fact, more focus and improvement should be given to the design aspects of buildings that are categorized as elderly friendly should be given special attention by the care home managers.

Among the studies that need to be focused on are formulating new design strategies and identifying the unique needs of each user, especially in the field of gerontology and integrating internet technology into the living environment of the elderly. Studies also show that although seniors experience problems and difficulties in understanding and using the internet and technology, they are also very open and willing to learn how to use it and then try to be independent [24]. There are many studies that prove the use of technology may help the elderly to live better and improve the accessibility of their environment. However, further research is still needed to better understand the willingness of this group to adapt to technology and the best elements that can maximize the level of well-being of this group [16].

5. Discussions And Findings

5.1 Measures to Improve Nursing Home Care

The findings of the study indicate the need for improvements and changes in the residential design process, especially in care centers for the elderly so that the architectural model is able to meet both the needs and wants of the elderly. The use of existing designs that are more inclined to medical models in nursing home design was found to be slightly at odds with efforts to meet the non-medical needs of seniors living in nursing homes [27].

In order to meet the unique needs of the elderly, Stamenovic has introduced a design principle known as Universal Design. These design principles aim to ensure, among others, accessibility, equity, flexibility, simplicity and clarity and tolerance for errors. This principle emphasizes that a space should also challenge and enhance activities that stimulate the physical and mental of the elderly. Joy becomes important in creating a proactive environment for seniors. Improving the survival of patients in the nursing home environment is also among the very important things especially for their motivation and self-esteem. One of the ways to attract residents is through an ongoing commitment to creating cooperation of all parties. [26].

5.2 Improving Architectural Design to Promote Longevity among the Elderly

According to Fox et al [6] seniors living in common public housing have been proven to have a greater risk of being exposed to various diseases and disabilities. This group of senior citizens has also been expressing more worries about the future and the feeling of unsafety while staying in their own residences.

Although there are some good existing design approaches and philosophies already exist to cater the needs of the senior citizens, such as those with emphasis on accessibility, universal design and habilitative design, the greater challenge is to ensure that the effectiveness of such approaches for every user especially the vulnerable ones such as the disabled people who are tested with mental and physical impairment [17]. For example, the design of a home that is friendly to the elderly with senility or dementia where this disease normally causes the patient to lose their ability to respond, recall, remember and to interact with the environment surrounding them as a result of the deterioration of brain function [10].

5.3 New Approaches in Interior Designs for Senior Citizens

The increase in seniors which is expected to double in a few years will change demographic statistics around the world. The issue is what will happen with this increase in the elderly population and the consequences. From the point of view of care, what are the special needs of the elderly in terms of their accommodation and residence. Architects are beginning to realize that there are gaps, challenges and new roles that need to be filled when designing unique and distinctive homes for seniors. Architects need to come up with more genius and modern designs and action plans.

Each elderly individual has different capacity in terms of ability and disability. Therefore, a design that is able to meet their unique needs on a daily basis allows them to achieve maximum capabilities in their daily lives [30].

One of the new emerging architectural designs identified is called habilitative design. This is a new model for the physical design of a home that meets the unique needs of individuals such as the elderly. This concept comes from one of the branches of the field of rehabilitation in health care for the disabled where it helps and enables an individual to maintain or restore their autonomy and independence. This concept of habilitative design is different from the typical universal design. This is because it was founded and created not to be implemented on all users but rather to identify and address each individual's unique needs and situations [16].

Although ageing at home can provide the seniors a sense of security in their own home environment, another new branch of knowledge known as environmental gerontology is also said to be able to maintain the same safety and independence when they are outside their homes [28]. Therefore, it can be said that environmental gerontology is a new division of architecture stemming out of a noble purpose to enhance the ability of the elderly so as to provide the best possible care for them through the combination of knowledge and multiple expertise of environmental design, medical professionals, human service professionals and physical therapists.

6. Conclusion

There are no limits as to how designs and architectures may be able to continue to improve the occupants and react to the changing needs of our society. Undoubtedly, architectural design has an impact and plays an important role in human life. It also has a personal impact on a deeper level to its occupants. All aspects from the layout of the space to the finishing of materials if used with the right method may provide a positive impact on health, emotions and subsequently increase the productivity of each occupant. Studies prove that individuals who work in well-organized and designed spaces experience less pain, focus more on daily tasks and are more productive. Knowledge of the effects and effects of environmental factors is essential for a good living environment for the elderly, meeting the

needs of each individual effectively and addressing the unique and specific needs of the elderly.

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