

ELDERLY LIVING ENVIRONMENT: GARDENING AS RESTORATIVE BENEFITS IN RETIREMENT HOMES

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ABSTRACT

Elderly people are part of our community and population aging is a global phenomenon and implication for all facets of human life. The pace of population aging around the world is rising dramatically. In Asia, the population of the elderly was said to be 16.3% in 1995 and increased by 22.9% in 2025 (UN: 1994). Malaysian's aging population is one of the fastest-growing segments of society. This scenario has indirectly influenced the physical and healthy environment of the elderly. To ensure an active and healthy life of the elderly, gardening is one of the best activities for the outdoor space. Gardening helps to stimulate the elderly senses and attached them with nature. Researchers had revealed that gardening has a positive effect on the elderly's quality of life if practiced regularly. Therefore, this research aims to review the gardening approach for restorative benefits to the elderly in Retirement Homes. To achieve the aim, the following research objectives are formulated which are (i) to identify the design of Kaplan's Theory on ART (Attention Restoration Theory) for the restorative garden, (ii) to determine the gardening effects to the elderly health, and (iii) to analyze the relationship between ART and significant of gardening in Retirement Homes. Preliminary studies methods are used through a literature review on the effects of gardening on the elderly in Retirement Homes. These data were gained from various journals and articles. The data were analyzed by using tables, diagrams, and charts for the comparison and summary of the importance of gardening as a restorative element for the elderly. The results of this study revealed that experience of gardening have in relationship with the ART and was improve the elderly of well-being and quality of life. The ample greenery (garden) in outdoor space at residential facilities for older people appears to promote experiences of being away and fascination, more frequent visitation and better health.

Key words: Gardening, Restorative, Outdoor Space, Elderly, Living Environment

INTRODUCTION

In Malaysia, the revolution of demographic issues especially on aging in the elderly is on early tsunami or phenomenon in the twenty-first century. The retiring senior citizens or the elderly have increased to extraordinary numbers. According to the Department of Statistic Malaysia (2017-2020), stated that Malaysians aged 60 years above is estimated to be 3.44 million in the year 2020 and is projected to 5.284 million in the year 2030. The statistic showing that the rising of the aged population was connected with an increase in the prevalence of poor in the physical and social health of the elderly at retirement homes. This scenario is positive and negative influences the elderly environment on physical activity and social connections. The elderly environments become more astringent due by shifting on their social roles. It is also can create of age-segregated environments. The transition of life courses and environmental changes by the elderly was influenced their physical and social health. The elderly would face physical and mental challenges. Loneliness and health is a subjective phenomenon mostly associated with the elderly physical challenges in Malaysia. It is revealed by Ministry of Health Malaysia (2016) that the most common health issues for the elderly are hypertension, stress, heart failure and visual impairment among others. This challenge has major consequences for governments as they address the socio-economic and health issues of the elderly worldwide (Imrie, R., 2003). The reason of

poor in physical and social health, much evidence that supports nature base in their daily life can improve and give effect on their health and well-being.

The increase concentration of the elderly in Malaysia's means the existing green or recreational facilities and public space for elder community are crucial and still inadequate. The increasingly concerned on declining levels of their health. The social spaces (green and nature environment) for the elder citizens are not always obvious at first glance and can often become threatened because their psychology and physically well-being is not fully appreciated and overcome. However, In Malaysia the existing facilities for physical and social space (green and nature environment) for the elderly in retirement housing, old folk or nursing home are not providing. Besides, the elderly people who live in a retirement homes does not have any physical exercise and not connecting with green or natural environment.

According to (Lim Pei Li & Hayat Khan, 2012; Othman & Fadzil, 2015) results from numerous studies have suggested that gardening activities at retirement homes or nursing care played a significant role in making health promotion activities possible which contributes to the health and life quality for the aged individual. Garden and gardening were related activities that can be an attractive way of getting the elderly more physically and engaged. Gardening provides substantial physical and social benefits. (Clatworthy et al., 2013) reported that gardening is the second most vital leisure-time physical activity among the elderly. These activities also provide stimulation for physical and social interaction and reminiscence for the elderly at Retirement Homes (Imrie, R., 2003).

Hence, the purpose and aim of the study are to review the gardening approach for restorative benefits to the elderly in Retirement Homes in Malaysia. To achieve the aim, the following research objectives are formulated which are (i) to identify the significant of gardening to the elderly (ii) to determine the gardening effects to the elderly health and well-being by Kaplan's Theory on ART (Attention Restoration Theory), and (iii) to analyze the relationship between ART and significant of gardening in Retirement Homes. The research question as are following: (i) why gardening activities is significance for the elderly? (ii) What the benefits of gardening in the elderly health and well-being as a restorative? and (iii) Why gardening area need to provide at retirement homes?

There, this study is to focus on the collected articles or journal relate to the health and well-being of the elderly in gardening activities. As a result, gardening is one of the special adaptations and required for the elderly health and social interactions. Which are gardening can exacerbate isolation, loneliness and loss of ability and identity for the elderly.

METHODOLOGY

The methodology of this research based on systematic review includes identifying, screening and legibility processes of journals and articles (refer to diagram 1.0). This research focused on the literature of benefits in gardening and restoration to the elderly. The methodology of this study was gained from various journals and articles by a used online search of Google Scholar, Science Directs and Scopus. The database took place in the title and related with the main key concepts which are; (i) gardening, (ii) the elderly, (iii) attention restorative and (iv) retirement homes. The keywords used for the search included exact terms (enclosed in quotation marks ") and combinations of terms (with use of "or" and "and") (refer to table 1.0). The search database was published in the past 10 years Citation searches were also performed in Web of Science using these key references: (Kaplan, 1995; Pappas, 2006). The entire journal and articles were recorded and established by qualitative and quantitative (mix-method) analyses. Only articles and journals from English language sources were included in the research.

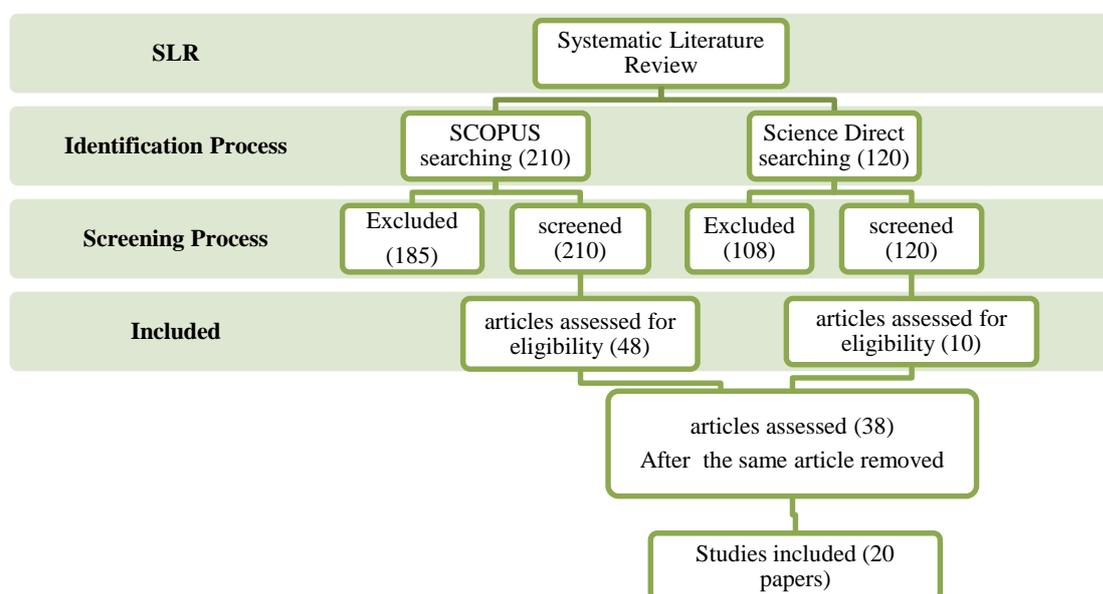
The Science Direct result were searched and it is found 210 records in total and the similar queries on Science Direct searched, and it is found 120 files in total. Then we impartial examined the first 50 relevant for all. Studies identified through Scopus and Science Direct were screened on topic, title, abstract and 38 full-articles were assessed for eligibility. The lastly includes 20 articles (refer to table 02). The study selection process was shown in diagram 1.0. The basic information was collected for these studies, including author's name, year and name of publication and detail information on gardening in Retirement Homes, gardening for the elderly and gardening for the elderly health and well-being.

The systematic review of gardening as restorative are essential to evaluate the current evidence-base for gardening-based mental health. Attention Restorative Theory (ART) propose that contact with the natural environment can serve a restorative function to the elderly. ART offers that the elderly benefit starting the chance to (a) "be away" from daily stresses, (b) experience extensive spaces and contexts ("extent"), (c) engage in activities that are "compatible" with our inherent motivations, and (d) critically experience stimuli that are "softly fascinating" (Kaplan, 1995).

Table 1.0: Search key term/words used in three search phase and the number of publications

Search Phase	Key term/words
1	“history of gardening” and/or “first garden” and/or “chronology of gardening” and/or “History of horticulture” and/or “Planting” AND
2	“Gardening for the elderly” or “Garden and the elderly” or “gardening on spatial aspect” or “gardening and physical aspect” AND
3	“Garden and Restorative” or “Gardening and Restorative” or “Garden and Healing” or “Garden and Therapeutic” or “gardening and Therapy” or “Garden and Attention” AND
4	The Elderly Health or well-being or quality of life or mental health or psychology health or social and physical health

Diagram 1.0: The systematic of Literature Review process: Keywords, search engine and analysis (Identifying, screening and legibility)



FINDINGS

The findings of 20 studies presented in Table 2.0. The results of 20 papers specified on significance of gardening for the elderly in retirement homes. The systematic review of 20 papers that have included on gardening and the elderly: (i) spatial and physical aspect, (ii) the impact of gardening in retirement homes in physiological and psychological effect and (iii) the effects of gardening on the elderly wellbeing towards art (Attention Restorative Theory).

Table 2.0: Characteristics of 20 case studies

Study (authors and year)	Green/ Gardening-physiological and psychological effect	Health outcome- ART (Attention Restorative Theory)
Artmann, M., Chenb, X., Iojăc, C., Hofd, A., Onosec, D., Ponižye, L., Lamovšekf, A. Z., & Breusted, J. (2017).	Gardening activities as a daily basis for the elderly	Gardening served for “being away”- therapies and passive recreation area.
Brascamp and Kidd (2004)	Gardening- Retirement Homes	“Compatibility”- looking from windows and excursions into outdoor recreational areas are important constituents of well-being and life satisfaction
Clatworthy, J., Hinds, J., & Camic, P.	Engagement with the	As a restorative area: Reduce the cost of the medicine

M. (2013).	gardening	of value-effective health to the elderly.
Dahlkvist, n.d.; Dahlkvist et al., (2016)	Gardening area: walking and outdoor activities.	The space for gardening activities must safe and functionality to the elderly.
Grant, 2006; Lindsay Smith et al., (2017)	Gardening and plants	"Fascination"- Planting design and plant selection for edible and therapy.
Hansmann et al., (2007)	Gardening activities	Horticultural therapy- lead to health improvements such as the reduction in headaches and stress
Imrie, R., (2003)	Gardening- Retirement Homes	Stimulation for physical and social interaction and reminiscence for the elderly
Lim Pei Li & Hayat Khan, (2012); Othman & Fadzil, (2015)	Gardening- Retirement Homes	Gardening activities at retirement homes or nursing care played a significant role in making health promotion activities
Othman, A. R., & Fadzil, F. (2015).	The visual aids and green views	Garden nature provides therapeutic physically and psychologically and promotes an inner sense of serenity and peacefulness.
Othman, A. R., &Fadzil, F. (2015).	Green and gardening	Social and emotional health.
Ousset et al. (1998), Pennix et al. (2002)	Gardening	"Compatibility"- environmental stimulate from seasonal plant variations can affect mental capacity, maintain time awareness and reduce boredom on this gardening activity.
Perveen (2013)	Gardening and healing	The elderly can strengthen weak muscles, increase limited joint flexibility, and improve physically lifting and reaching motions of ranges
Perveen, (2013); Toyoda, (2012)	Gardening and healing	Gardening helps to increase physical stamina and skills.
Relf (2002)	Gardening area: Accessibility	Pathway for the gardens should be designed to fit with the walking aids.
Salehi et al., 2010; Shamsuddin et al., (2011)	Gardening activity and exposure	Improved muscle and physical health.
Soga, Gaston, & Yamaura. (2017)	Gardening activities	The therapeutic gardening activities have a positive impact on increase an individual's psychological wellbeing, cognitive abilities and engagement.
Soga, Gaston, & Yamaura. (2017)	Emotion and loneliness	Gardening leads to stress reduction among the elderly and positively prevents loneliness that could cause dementia, depression and anxiety symptoms
Toyoda (2012)	Gardening and plants	"Fascination"- Aesthetic value from the plant; aroma, texture, and colour highly effected the elderly emotional and helps to stimulate the sensory organs
Takano et al., (2002)	The visual of the garden	Give relaxation and reduce stress level and improve recovery to the elderly.
Talbot and Kaplan (1991)	Gardening- Retirement Homes	Gardening area are significant at retirement homes.

GARDENING AND THE ELDERLY: SPATIAL & PHYSICAL ASPECT

Research had shown that gardening activities could cc, positive atmospheres, cognitive function and psychological ability (Soga, Gaston, & Yamaura, 2017). However, physically, older people have usually experienced difficulties in standing, bending, stooping and stretching during the gardening activities. Therefore, space created for the elderly should take into consideration the elderly especially those with special needs either physically or visually impaired. These include the elderly with walking aids; wheelchair, walking frame or walking stick.

Safe and functionality: Gardens are usually equipped with facilities and utilities to ensure the safety and the maximum usage of the space. For the older people, all elements provided in the garden especially those involved with gardening activities must have safety aspects to ensure maximum enjoyment of the garden. For the elderly, a rest area is one of the preferable elements in the gardens as it provides seating and protects them from the sun (Dahlkvist, n.d.; Dahlkvist et al., 2016). A rest area or a rest stop is needed once they spent considerable time in the garden. Moreover, a rest area gives them the effect of refreshing. Besides rest area, raised beds are also important to minimize the injurious during gardening activities. A good raised bed should allow enough room on all sides to reach the centre, and designed to fit individual needs, strength and endurance (Grant, 2006; Lindsay Smith et al., 2017). Hence, the elderly with a disability could easily involve in the gardening process without kneeling and bending.

Besides built elements, planting elements are also crucial in designing a safe space for the elderly. Edible plants and flowers are examples of common plants planted in the gardens. Thorough selection plants are needed to ensure they would not bring harm to the senior gardener. The best way is to choose easy to grow plants that are tolerant of weather and easy maintenance to cater to the stamina of the elderly.

Accessibility: As mentioned earlier, low stamina and limited mobility are a common issue experienced by the elderly. To ensure the gardens are benefited by the elder gardener, mobility and accessibility are very important. Pathway for the gardens should be designed to fit with the walking aids. Dimensions and materials selected need to cater to the needs of the elderly. For example, "ramps, along with gates, doorways, walks, and space between raised beds should be a minimum of three feet wide for single-person travel and six feet for two persons" (Relf, 2002). As for the surfaces, it must be non-slip with porous materials. Lawn, grassy area and stepping stone should be avoided as it not appropriate for the elderly with walking aids.

THE IMPACT OF GARDENING IN RETIREMENT HOMES: PHYSIOLOGICAL AND PSYCHOLOGICAL EFFECT

The impact of gardening in retirement homes is diverse either from the physiological or psychological aspects (Salehi et al., 2010; Shamsuddin et al., 2011). From the physiological effect, gardening activities among the elderly can strengthen weak muscles, increase limited joint flexibility, and improve physically lifting and reaching motions of ranges (Perveen, 2013). Additionally, gardening helps to increase physical stamina and skills especially movement-related functions, hand and eye coordination, and sitting or standing balance (Perveen, 2013; Toyoda, 2012). Indirectly, gardening encouraged the elderly to undertake physical exercise that contributes to improving the physical and psychological health of gardeners (Soga, Gaston, & Yamaura, 2017). Psychological results showed that the elderly feel more "comfortable and relaxed" after the gardening activities (Salehi et al., 2010; Shamsuddin et al., 2011). Aesthetic value from the plant; aroma, texture, and colour highly effected the elderly emotional and helps to stimulate the sensory organs (Toyoda, 2012). Gardening helps to motivate the elderly to go outside daily to see vegetation they are growing. On the other hand, gardening also improves social skills among the residents of retirement homes through communication, interpersonal interactions, and relationships. Gardening activities encourage the elderly to share their feelings and emotions in a group. Hence, socializing with other residents while garden leads to stress reduction among the elderly and positively prevents loneliness that could cause dementia, depression and anxiety symptoms (Soga, Gaston, & Yamaura, 2017).

THE EFFECTS OF GARDENING ON THE ELDERLY WELLBEING TOWARDS ART (ATTENTION RESTORATIVE THEORY)

Studies of the elderly wellbeing indicate positive associations between elderly people and gardening. The importance of gardens related to care facilities for the quality of life for the seniors (Artmann et al., 2017). A gardening can develop positive health impacts since older people living within a walking distance to the green (Takano et al., 2002). Activities in green areas such as gardening, walking and relaxing can lead to health improvements such as the reduction in headaches and stress, and physical activities lead to larger improvements comparing to passive recreation (Hansmann et al., 2007). The retirement communities and homes for the elderly are very significant for the residents (Talbot and Kaplan 1991). For retirement home resident's passive involvement with a green environment by looking from windows and excursions into outdoor recreational areas are important constituents of well-being and life satisfaction (Brascamp and Kidd 2004).

There are many positive effects of gardening activity on the elderly. Firstly, the elderly can improve psychological well-being through the aesthetic value of the garden. In addition to creating a positive atmosphere, aesthetics, plants and aesthetic gardening play a major role in creating good psychology. Gardening habits offer a variety of experiences through natural observation and diverse plants can enhance the well-being of the mind and the feeling. For those with limitations of movement, the view on nature from the window is important as it is capable of being translated in visual form.

Secondly, environmental stimulate from seasonal plant variations can affect mental capacity, maintain time awareness and reduce boredom on this gardening activity. Thirdly, gardening provides the opportunity to express their self and personality and help elderly people to be more interested and spend more time in the places they are gardening. Fourthly, visual interaction with plants is important in encouraging the elderly to go for walks and recreation and leisure. Finally, the plant gives effect for social interactions and the network through shared activities and directly it also provided a topic for conversation. On the other side, the availability of outdoor settings also that permitted sitting and observing, enjoying flower gardens, and relaxing in the context of nature, enhancing their quality of life. These are implicated in preventing many diseases, maintaining the functional ability and reducing symptoms of depression (Ousset et al. 1998, Pennix et al. 2002).

CONCLUSION

These different forms of benefits are important factors for improving older people's quality of life and also reducing costs for long-term care. For the elderly community garden general, includes of the triple bottom line concept involve the consideration of social sustainability. Social sustainability, on the other hand, can be identified as including design for flexibility, comfort, safety, security, belongingness and social engagement of gardening activities. All of these prove that gardens are important elements in working towards healthy elderly communities. The most valued social benefits include social diversity, a place to the garden, economy, increased self-sufficiency, production of good quality food, and providing a livelihood, especially for older seniors. The relationship between ART theories for elderly well-being was significant for the treatment of emotion and mood (refer to diagram 02). This is particularly relevant for the cognitively impaired, the mentally disabled and the critically ill. The Garden settings and gardening activities, both viewed and experienced actively, have already been associated with stress reduction in the elderly. The elderly, staff and family members felt that the space of garden decreased inappropriate behaviours and improved mood and quality of life of the elderly or community in retirement homes. Most importantly, gardening activities most create the elderly on new skills, self-esteem development.

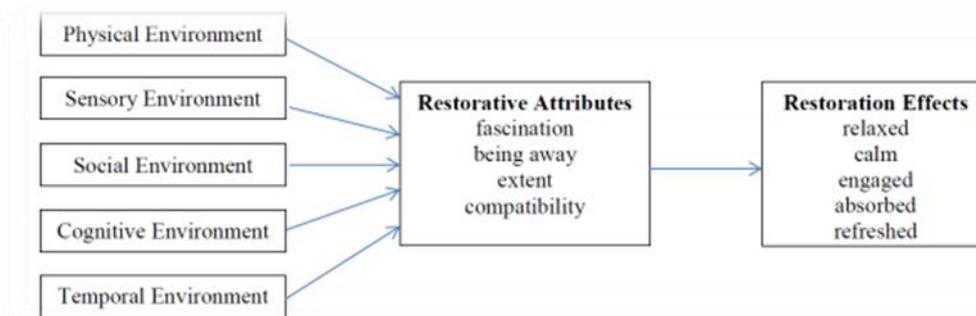


Diagram 2.0: The relationship of ART with nature and environment
Source:(Kaplan and Kaplan 1989, Kaplan 1995)

Gardening also the restorative technique in improving their memory, attention, sense of responsibility and social interaction. These activities become a treatment space for them to free access to outdoor and promote movement and encourage contact with plants. Hence, a little thought and planning can ensure safe and productive gardens for senior citizens. A well-designed garden healing, sensory and therapeutic gardens, and landscape treatments are seen as important support tools to the health facilities which not only look good but work well and help to build a sustainable and healthy green activities area for the aging communities. This research can improve the segmentation of the elderly in physical, social and mental at retirement homes or care facilities. This research will be useful as a guideline and design consideration when creating garden and gardening space activities for the elderly.

The systematic reviews by 20 articles revealed that there is empirical evidence from ART to suggest that exposure to gardening activities and a plant has a restorative effect on the capacity of directed attention to the elderly in retirement homes. Many researchers have shown that restoration from stress and from mental fatigue relates to exposure to nature. Thus, a well guideline of gardening activities or garden space should be considering as an outdoor space for the elderly at retirement homes. This research finding may contribute to future research in many professional and policies makers in involved in the design of facilities for the elderly. This finding significantly lead towards the development of gardening activities as an aging in place, place attachment, health promotions and psychologically well-being engaged between the elderly with society and community.

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