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DEVELOPING A FRAMEWORK OF EDIBLE GARDEN CONCEPT FOR HORTICULTURAL THERAPY FOR THE ELDERLY PEOPLE

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ABSTRACT

Around one in every nine persons in the world are aged 60 years old and the proportion one in five persons is expected to be increased by 2050. Aging will create new challenges for health and social services in our country. The current research has established that spending time in the outdoor environment can provide notable health benefits especially for elderly people including by improving sleep patterns, moods, and also hormone balance. Horticultural therapy through Edible Garden is one of the best approaches that should be considered in the making of a productive senior community. The purpose of this research is to investigate the effects of horticultural therapy on the psychologic, physical, cognitive function and quality of life among elderly in Pusat Aktiviti Warga Emas (PAWE). The goal is to determine how gardening activities can increase their quality of life and prevent the elderly from dementia problems as well. The methodology used mainly involves six stages using quantitative and qualitative methods. Finding the effects of horticultural therapy through Edible Garden can be used as a module in PAWE as guidelines in providing a better lifestyle. This research will give benefits to society by promoting a healthy lifestyle among the elderly through gardening activities and reduce dementia problem. This research will contribute to new knowledge in dealing with elderly people not only in Malaysia but similar to the global elderly issues especially in urban areas around the world.

1.0 INTRODUCTION

Around one in every nine persons in the world are aged 60 years old and the proportion one in five persons is expected to be increased by 2050 (Chan, Ho, Mahendran, Ng, & Tam, 2019). Besides, be an older adult mostly bring health challenges, however, people's life expectation gets longer due to new surgical techniques and medications. Moreover, during this period, the person is retiring from active daily activities where therefore leads to differing psycho-social problems including anxiety, dementia, agitation, social exclusion and also loneliness. Hence, tend to people's psychological depression through its following effects towards the individual health (Chong & Shureen, 2016).

Previous research has established that there are five basic measures in way to establish that the older adults get a normal life including: 1) Allow them to live in environment that familiar with them as much as possible; 2) Desist from taking quarantine measures; 3) Prepare services and also facilities as part to maintain the quality of life as the institutionalized care be compulsory; 4) Encourage older adult social exchanges with shared assistance, and lastly 5) Incorporate medical and health, social welfare, and environmental maintenance policies to create a suitable living environment (Zheng C. & Meng, 2018).

According to Chong et al., (2016), spending time in the outdoor environment can provide notable health benefits especially for elderly people including by improving sleep patterns, moods, and also hormone balance.

Those benefits may have connected with outdoor activities, partially based on the exposure due to bright outdoor light, increase in physical activities and also connection towards nature elements. Moreover, based on the previous study also mention that the experience by an elder adult in connecting with nature is different than before engaging with nature, in which those perceptions prove that one's relationship with the natural environment become differ especially during life experience (Gonzalez & Gonzalez, 2018).

Accordingly, the landscape treatments such as healing garden, therapeutic garden, sensory garden and also include edible garden are being significant support tools towards the health care facilities which provide work well, good view, and also in the same way to assemble healthy and sustainable green activities space especially for being used for the older adult communities.

2.0 PROBLEM STATEMENT

According to the United Nations by 2030 Malaysia will achieve the status of Ageing Country due to the high population of an elderly citizen aged 60 years and above according to the National Policy for the Elderly. The status will be achieved when 15 percent of its population consists of those aged 60 years and above. Changes in the demographic structure between an increasing number of the aging population which is not balanced with young and adults could pose various challenges to the social and economic environment of our country. Aging will create new challenges for health and social services in our country. No pharmacologic therapies include music, reminiscence, art, and reality orientation therapies and have been shown to improve quality of life (QOL) and prevent disability among elderly people (Masuya et.al, 2014).

Other than that, there is also limited in public health promoting through the applied healthcare system itself likewise the socio-

ecological aspects for better health are needed for the public health strategies. Consequently, according to Chan et al., (2019), the easy accessibility for community-dwelling individuals at urban parks area being an ideal asset as a method due to support the encouragement towards the aspects of well-being as the previous study be a goal-oriented interference which tend to build up the cognitive, mental and also the physical health especially for older adult contributors.

There are also lacking in the discovery of nature as part of the activities. According to Wang, (2017), it is indicated that there are only indoor activities was held instead of outdoor activities at the center through the interview feedback. Hence, the participants still expect more time and opportunities to spend in an outdoor natural environment even there are scheduled weekly community programs as this activity serves an important need, especially for the participants.

Besides, based on the previous study by (Wang, 2017), deficiency of an organized planting and ornamental plant layout also be one of the major problems through the community. It is indicated that both staff members and the community are not satisfied with the present landscape design of the communities. So, a better solution is being expected in a way to produce an organized and pleasing community landscape.

Other than that, a lack of a possibility to grow own food also be one of the problems in this research. Through field trip and also on-site observation was done at PAWE, Kemumin, it is being identified that there are no such opportunities that provide gardening spaces as to meet the need among the participants that use this center.

Among the factors that contribute to the increasing number of elderly is the decline of fertility rates which relatively reduced the number of young people, as well as increased access quality of health services now. The 4th Malaysian Population and Family study by the National Population and Family Development

Board which was matched the result of the population and housing census in 2010 found that about 23 percent or 538,000 of the 2.4 million senior citizens in Malaysia suffered from the "empty nest" syndrome.

3.0 HYPOTHESIS

Through the existing literature found, it is hypothesized that: 1) Horticultural therapy brings numerous health and therapeutic benefits for the elderly especially through an ideal edible garden. 2) The advantages of producing a good plan edible garden can create a safe, accessible, interesting and pleasant space for seniors. 3) The participants, which consist of older adults that being inactive treatment groups will have greater improvement in the aspect of cognitive functioning, get better mental health and physical health. 4) The result of the study will discover the effects of horticultural therapy activities program on the psychologic, physical, and cognitive function and quality of life in the elderly at PAWE, Kemumin, Kelantan. Indirectly, the result of this study can be used as guidelines for producing more edible garden in other PAWE all over Malaysia.

4.0 RESEARCH QUESTIONS

The specific questions which drive the research are: 1) How incorporating edible landscape in healing environments of retirement community (elderly adult) can promote active aging? 2) How to nature exposure in terms of education through the design applied? 3) How the module for horticultural therapy can be blending towards the existing activities and attract the older adult to involve with it?

5.0 LITERATURE REVIEWS

The elderly population is growing rapidly in Malaysia and caring for the elderly becoming one of the important agendas to look into. A recent study by the ministry showed that the life expectancy rate in the country had increased from 71.4 years in 2005 to 72.5 in 2015 for males and 76.2 years (2005) to 77.4 years (2015) for females (NST: 22 Feb 2016). Many elderly people suffer from depression related to grief or loneliness. Referring to D. Tang (2017), in Design Guidelines for Therapeutic Gardens in Singapore state that the findings prove that horticultural therapy gains the participants' scores for living memory, satisfaction, and also psychological well-being.

Besides, according to Kim & Lee, (2018), horticultural therapy which also involved with horticultural activities are included: 1) Direct and active activities, and 2) Indirect and passive activities especially connecting with plants which act as a medium as a method to earn therapeutic designs through horticultural therapy. Thus, horticultural therapy can address many of the psycho-social, emotional, and physical needs of individuals with Alzheimer's disease, as engaging in activities related to horticultural therapy helps maintain a positive attitude and sense of self. Therefore, horticultural therapy may become increasingly important as a valuable, inexpensive, and readily available alternative therapy for Alzheimer's disease (Sonia et.al, 2007).

The horticultural activities continuously provided a sense of responsibility in the daily care of plants. Additionally, the participants were able to eat and share their harvest with others. (Masuya et.al, 2014). Factors found to be significantly associated with cognitive impairment in the elderly were age, gender, marital status, education level, and ethnicity. The failure to detect and treat cognitive impairment in the elderly may have serious clinical and public health consequences, as cognitive impairment is associated with an increased risk of dementia. (Sherina et.al,2004).

The active interaction through horticultural activities between the therapist and participants enables the therapeutic intervention effect of horticultural therapy be appearing. As an alternative when the circumstances of the participant changes depend on the one-sided therapeutic activity conducted by the therapist. As a result, the priority of the participant for the horticultural therapy activities aspect which affects the decision of this program for the participants' active participation (Kim & Lee, 2018).

Meanwhile, Rylee (2015) shows that both positive and negative stereotypes of aging can have to enable and constraining effects on the actions, performance, decisions, attitudes, and, consequently, holistic health of an older adult. The study by Robert C. Abrams, Blanca Boné, M. Cary Reid, et al. (2015) is one of the best examples of how Psychiatric Assessment and Screening for the elderly in Primary Care can be designed and implemented to get preliminary results in the study of elderly people. In this case, data will be collected together with help from the medical part which can be useful in planning a guide for the elderly.

6.0 RELEVANCE TO GOVERNMENT POLICY

The rationale of this research is to emphasize the potential of horticultural therapy to be considered as one of the important approaches that can be implemented for elderly people as their productive lifestyle. This is very crucial since Malaysia will become an Ageing Country status by 2030. The policy involves including Senior Citizen Policy (Dasar Warga Emas) and National Family Policy Malaysia. The finding can be used to National Population and Family Development Board in enhancing their family planning especially to support Government's development objectives by complementing the Government Transformation Programme (GTP) through the 1Malaysia program, the New Economic Model

(NEM) and The Eleventh Malaysia Plan (RMK-11).

7.0 OBJECTIVE (S) OF THE RESEARCH

The purpose of this research is to investigate the effects of horticultural therapy on the psychologic, physical, cognitive function and quality of life among elderly in Pusat Aktiviti Warga Emas (PAWE) Kemumin, Kelantan. The goal is to determine how gardening activities can increase their quality of life and prevent the elderly from dementia problems as well. To do this, a Self-Cultivation Gardening Kit for horticultural therapeutic of gardening activity and proposed design of Edible Garden for the elderly community at Pusat Aktiviti Warga Emas (PAWE) Kemumin. The prototype and the proposed design of Edible Garden will be applied as part of the future development of an Inspire Environmental Awareness Project in all PAWE in Malaysia.

The objectives of the research are including:

- 1) To find solutions towards the exposure of the elderly people with the natural environment;
- 2) To provide healing spaces that offer the community activities which is for elderly outdoor activities within its surrounding;
- 3) To create an organized and ecofriendly design that beneficial for elderly people for recreational needs and also imply environmental education and social connection at PAWE.

8.0 RESEARCH METHODOLOGY

The approaches that will be used included literature reviews, site inventory, and analysis, primary data collection, produce a prototype of Self-Cultivation Kit and proposed design of Edible Garden for elderly in Pusat Aktiviti Warga Emas (PAWE) Kemumin, secondary data collection, data analysis and

documentation on proposal of manual and guidelines for horticultural therapy through edible garden for elderly in Pusat Aktiviti Warga Emas (PAWE). This research involves both quantitative and qualitative methods.

8.1 First Stage

Understanding the issues and problems related to the elderly. The definition of horticultural therapy and edible garden also will be going through in-depth. Background of Pusat Aktiviti Warga Emas (PAWE) will be studied as well.

8.2 Second Stage

Site survey analysis will be carried out, where the major aims were to record physical and social use of the environment, to prepare photographic records and to undertake a landscape design analysis. When doing the physical and social observation, the mapping criteria concerned the overall outdoor environment and lawn area in PAWE Kemumin, the existing characters, sense of place, trees or planting, hardscape elements, open space, existing buildings, and other buildings. Photographs will be taken as an additional way of reinforcing the site analysis. The studies also have to concentrate on the potential of the lawn area which is essential in designing proposed ideal Edible Garden for elderly.

8.3 Third Stage

The next stage involved structured interviews with the elderly community which is actively involved with the daily program in PAWE

Kemumin. Average of around 30-50 people come to the center daily. Quality of Life (QOL) questionnaire will be used to measure results. The interviews were very important sources in supplementing information from documentary sources and site visits, as well as obtaining personal insights. The objectives of the interviews with the elderly are to obtain their quality of life before and after, to seek ideas and suggestions in enhancing the ideal landscape design of Edible Garden, as well as to obtaining ideas about promoting horticultural therapy. Further, the questionnaire will be given and guided. In this case, views from the elderly will be remarked in acquiring a better understanding of creating horticultural therapy through an ideal Edible Garden.

8.4 Forth Stage

During this stage, a prototype of the Self-Cultivation Gardening Kit for horticultural therapeutic of gardening activity is proposed. The kit contains complete gardening tools, seeds, prepared substrate and also planting instructions. Indirectly, it is a nice method to inspire environmental awareness and love for nature. Besides, the proposed design of Edible Garden and 3D model also will be produced. In this case, the garden design will be based on creating a safe, accessible, interesting and pleasant environment for the elderly.

Based on the research from Design Guidelines for Therapeutic Gardens in Singapore (2017), there is also a framework for designing the edible garden for horticultural therapy that will be applied and used in this research. Refer Figure 1.

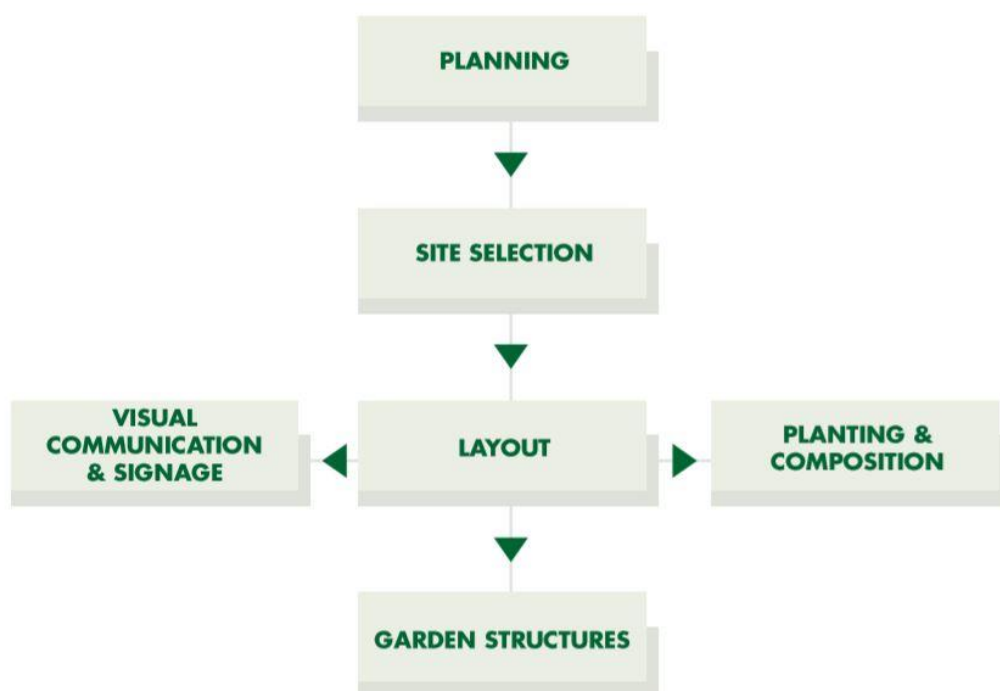


Figure 1. The framework towards the designing of edible gardens

(Source: Tang, D., 2017, Design Guidelines for Therapeutic Gardens in Singapore. National Park Board, NParks' Publication)

Furthermore, as to support that framework, the strategic programs also are conducted. So, there are several types of horticulture programs that can be contributed through this study including: 1) Social horticulture; 2) Therapeutic horticulture; and 3) Horticultural therapy.

- 1) Social Horticulture Programme (SHP). SHP are broad-based horticulture engagement programs that aim to improve participants' well-being through horticulture activities in a social setting. They are suitable for a group of people with a wide range of abilities and can be enjoyed with or without a facilitator.
- 2) Therapeutic Horticulture Programme (THP). THP are long-term programs that utilize plant-related activities to achieve group goals. The sessions are linked and build on previous sessions. Program design and assessments are

done in consultation with a trained person (individual trained in therapy); assessments may be designed into the plan and usually occur before, during and after the programme.

- 3) Horticultural Therapy Programme (HTP). HTP is individualized treatment plans with prescribed horticultural activities administered by trained therapists to achieve clinically documented goals. It adopts a person-centered approach that emphasizes the outcome over the output, adapts the environment, and modifies the task to increase participation in the prescribed horticultural activities to reach the goals. HTP is usually practiced in healthcare institutions and long-term care centers.

8.5 Fifth Stage

Secondary Data collection will be conducted to gain data after finishing the gardening activities with various programs that will be organized on-site using Quality of Life (QOL) questionnaire. This study uses a qualitative case study approach to investigate by using secondary data collection will be based on the comparison between before and after the garden has been completed within the time frame. The data will be useful in comparing how proper gardening may reflect their quality of lifestyles.

Other than that, through this survey the types of questions such as suggestion on the improvement, the continuity of the activities such as visiting the parks or/and gardening and also the effectiveness of the helpful part of class done. So, all of this survey will be done only during the stage of the post-intervention assessment. Hence, all the responses are

informally tallied and also be listed in categories (Chan et al., 2017).

This stage also is positively related to another questionnaire and survey (Kim & Lee, 2018) which also be conducted which are including:

- 1) Survey on the general characteristics of subjects and perception of horticulture and horticultural therapy. General characteristics in term of age and gender are investigated while the survey on the perception of the horticultural activities are conducted through four types of classification which are including: decorating; feeling; growing and others.
- 2) Survey on preference for horticultural therapy activities. Previous research has established that 28 horticultural activities were chosen from those that were applied to previous research. Refer Table 1.

Table 1. The list of the horticultural therapy activities

Item No.	Horticultural Activity	Categorization
1	Flower arrangement	Indoor cultivation
2	Indoor flower gardening	
3	Building a mini garden	
4	Building a terrarium	
5	Rooftop gardening	Outdoor cultivation
6	Vegetable gardening	
7	Transplanting	
8	Making a flower bed and growing herbs	
9	Making pressed flower cards/name cards	Arts and crafts
10	Making an herb scented candle or soap	
11	Making/Growing a grass doll	
12	Making a fall leaf collage	

13	Watching horticulture videos and discussing	Group activity
14	Watching plant slideshows and discussing	
15	Selling horticultural products	
16	Harvesting and sharing the products	
17	Visiting the arboretum	Picnic
18	Walking in the botanic garden	
19	Walking in the nearby park	
20	Walking in the urban forest	
21	Making sprouts and vegetable salad	Cooking
22	Baking herb bread	
23	Drinking herbal tea	
24	Making edible flower canapés	
25	Plant names quiz	Learning about plants
26	Collecting wild plants	
27	Stories behind flower names and color	
28	Plant classification	

8.6 Final Stage

Analyzing Primary and Secondary Data will be carried out. The results will be used as evidence for further discussion and conclusion. Manual and guidelines will be planned in enhancing the elderly quality of life through horticultural therapy in the Edible Garden. This finding may help the Malaysian Government in preparing alternative approaches for senior citizen especially in providing a productive lifestyle in their daily life.

9.0 EXPECTED RESULTS/BENEFIT

1. Novel theories/New findings/Knowledge:
Finding of the effects of horticultural therapy through Edible Garden can be used as a module in Pusat Aktiviti Warga Emas (PAWE) as a guideline in

providing a better lifestyle to the senior citizen.

By 2030 the guidelines still can be used as one of the gardening approaches that are very useful for the elderly community. Overall, the findings will be useful in developing horticultural therapy as an alternative for elderly people, especially in urban areas. By referring to Japan and the UK for example, this study may be an example for the other countries in using the edible garden as an alternative in gaining a better quality lifestyle of elderly people in the future.

1. Specific or Potential Applications:
Potential applications can be utilized as:
 - 1) Proposal on Manual and Guidelines in Horticultural

Therapy through Edible Garden for Elderly - best practices in promoting productive life style for senior citizen.

- 2) Book on Ideal Edible Garden Design for Elderly - Gardening with Fun.
- 3) Prototype of Self-Cultivation Kit for horticultural therapeutic gardening.

2. Impact on Society, Economy and Nation:

This research will give benefits towards:

- 1) The society- to promote healthy life style among elderly through gardening activities and reduce dementia problem. They can have positive social relationship between all races and sharing good values of lifestyle among them.
- 2) Economy - By having their own edible garden may save their budget on kitchen allocation. Harvesting their own vegetables and selling to the community can increase PAWE funding.
- 3) Nation - Improving understanding and good relationship among races in Malaysia. More respect to each other and promote good examples to young generation.

10.0 CONCLUSION

As a conclusion, with such horticultural therapy through edible garden is one of the best approaches that should be considered in the making of a productive senior community, this research purpose is to investigate horticultural therapy on the psychologic, physical, cognitive function and quality of life while this research aimed to determine how gardening activities can increase their quality of life.

Notable, horticultural activity through garden environs also brings many benefits especially towards older adults including being a way to reduce the reflection and hardness of depression as it promotes relaxation especially from the urban environment and also promotes attraction to the garden environment itself. In particular, horticulture also produces a positive perspective besides bringing down the negative spirit. Horticultural therapy also is a creative outlet that provides the opportunity for an absorbing, restful, and rejuvenating state of mental alertness not derived from other settings; it is a pleasurable activity in a social interactive setting. Thus, it addresses many of the psycho-social, emotional, and physical needs of individuals with Alzheimer's disease, as engaging in activities related to horticultural therapy helps maintain a positive attitude and sense of self.

As to produce a successful work phase through this research study, several effective guidelines about the edible garden for horticultural therapy and also right research methodology are applied in every single part of the study process and also the design development in this research. Hence, from the research study that is conducted, hopefully, would gain benefits in the various medium of design field which not only limited towards the site study area but also towards another Pusat Aktiviti Warga Emas (PAWE) in Malaysia.

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