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Geriatric Horticultural Therapy (GHT): An Approach to Geriatric Wellness

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ABSTRACT

The geriatric population in India is the second largest in the world, next to China. Among the states, Kerala has the highest proportion of elderly population in India. The problems of senior citizens were multiple and all these problems are interdependent. Hence, it is essential to make the senior citizens independent and self-sufficient so that they can build up their inherent potentialities to cope up with their problems. Geriatric Horticultural Therapy (GHT) which is an emerging area in India and relatively new discipline that can be used as a method of healing many geriatric problems which includes hands-on activities, such as potting up plants and the focus is on multisensory experiences and engaging all the senses. GHT is rooted in the idea that interacting with plants can bring about well-being old people, which will also enhance the attention of society towards the problems experienced by senior citizens. Thus, GHT may find a way for the betterment of lifestyle of senior citizens.

Key words: Geriatric horticultural therapy (GHT), Geriatric wellness, Healing gardens.

According to the state of world population 2019 report by the United Nations Population Fund (UNFPA), India's population in 2019 was 1.36 billion. It was also reported that six per cent of India's population was at the age 65 and above (Bongaarts, 2009). According to the World Health Organization, the proportion of the world's population over 60 years old, is predicted to nearly double from twelve percent to 22% between 2015 and 2050, reaching two billion by 2050 (Qiu *et al.,* 2021). The geriatric population in India is the second largest in the world, next to China (Thankappan, 2020). Among the states, Kerala has the highest proportion of elderly population which range between seven percent to ten per cent (Sivaramakrishnan and Bardhan, 2020).

In India, most of the population relies on agricul-ture for its livelihood (Mohan Lal *et al*., 2011). Agriculture is a standout amongst the most critical imperative segments of our country. Farming contributes almost around 17.01% of India's GDP (Anupam Barh and Balakrishnan, 2018).

As humans are the smartest living species on this planet, so their smartness always provokes them to change and to innovate. This provoking has led to invention of wheel, advancements in living standards and styles, languages, life spending methodologies and countless more achievements (Poornima and Ayyanagowadar, 2018). Old age people are becoming inactive, dependent, sick and weak in terms of economic, physical and psychological conditions which lead to several social economic problems (Amiri, 2018). Due to urbanization, there is family nuclearization and this diminished the Indian traditional values that earlier had a vested authority with old age people (Singh, 2015). The traditional Indian joint family system is now declining and more families are becoming nuclear. Majority of old age people who were admitted in institution belong to nuclear families. Institutionalized old age people will be facing many social and psychological problems compared to non-institutionalised whereas non-institutionalised old age people were found to suffer from high financial problems (Hemavathi and Rani, 2014). And it stated that there is decline in physical and mental health, the loss of functional capabilities and the weakening of family and social ties represent a significant barrier to active ageing in a context of institutionalization (Mayoralasa *et al*., 2015).

The problems of senior citizens in urban areas are multiple rather than single and all these problems are interdependent. Hence, it is essential to make the senior citizens independent and self-sufficient so that they can build up their inherent potentialities to cope up with their problems.

Geriatric Horticultural Therapy (GHT) which is an emerging area in India can be used as a method of healing many geriatric problems. Many innate as well as acquired diseases can be cured by involving the elders in different steps of cultivation practices of crops. The involvement in various cultural operations would help to develop mental as well as physical confidence which helped them to overcome the difficulties.

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Geriatric horticultural therapy (GHT)

Geriatric horticultural therapy (GHT) is operationally defined as the professionally conducted client-cantered specific list of horticultural therapeutic activities developed to meet specific therapeutic or rehabilitative goals of elderly which focus to maximize cognitive, psychological, physical and social well-being of the geriatric population.

Direct contact with plants is believed to guide a person's focus away from stress enhancing their overall quality of life (Lin *et al.*, 2014). The AHTA believes that horticultural therapy is an active process which occurs in the context of an established treatment plan. Horticultural therapists are specially educated and trained members of rehabilitation teams (with doctors, psychiatrists, psychologists, occupational therapists) who involve the client in all phases of gardening, from propagation to selling products, as a means of bringing about improvement in their life.

Horticultural therapy describes a process, either active or passive, of purposefully using plants and gardens in therapeutic and rehabilitative activities designed to positively affect a set of defined health outcomes for individuals (Wong *et al*.,1997) (*e.g*. improved mood, improved self-esteem, enhanced social interaction). Horticultural therapy can include hands-on activities, such as potting up plants and the focus is on multisensory experiences and engaging all the senses (Steinwald *et al.,* 2014).

Horticultural therapy is a nature-based intervention that takes place in a garden setting (Stigsdotter *et al.*, 2011). Participants engage in gardening activities and learn new skills, guided by a horticultural therapist who helps them make connections between gardening and their own experiences (Perrins-Margalis *et al.,* 2000). Horticultural therapy is administered in the context of an individual's treatment goals and enhances traditional treatment therapies by looking at a variety of problems in new ways. Horticultural therapy is effective in increasing mental wellbeing, engagement in meaningful activities (Siu *et al.,* 2020). Contemporary healthcare systems should consider horticultural therapy as an important intervention for improving patients' cognitive function (Tu and Chiu, 2020). Governments and policymakers should consider horticultural therapy as an important tool to prevent the decline of cognitive function in cognitive impairment population. Studies have reported positive benefits of horticultural therapy for older adults that include relaxation and relief from stress (Kaplan,1973) (Relf, 1992) (Scott *et al.*, 2014), reduction in pain perception (Ulrich,1984). Horticultural Therapy 1147 H increased attention (Hartig *et al*., 1991), modulation of agitation (Whall *et al*., 1997), improved mood, enhanced social interaction (Kingsley and Townsend,2006) (Yee Tse, 2010), meaningful engagement, improved self-esteem (Scott *et al*., 2014) and enhanced physical well-being (Wannamethee *et al*., 2000). Indoor gardening has been reported to be effective for improving sleep, agitation and cognition (Epstein *et al.,* 1991) and improving the quality of life (Yee Tse, 2010) of persons with dementia. Memory can be stimulated by being exposed to the sights and smells of plants in planned horticultural therapy activities (Hartig *et al*., 1991). Outdoor gardens provide access to fresh air and sunshine and exercise, which helps regulate circadian rhythms that regulate sleep and appetite (Park *et al.,* 2009).

History

GHT is a relatively new discipline; however, recognition of the therapeutic effects of plants and horticulture to calm the senses dates as far back as 2000 BC in ancient Mesopotamia and around 500 BC, ancient Persians created gardens to soothe the senses by involving beauty, fragrance, flowing water and cool temperatures (Simson *et al*., 2007). According to the American Horticultural Therapy Association, Ancient Egyptian physicians prescribed walks around a garden for patients with mental illness, which makes the first sign of the therapeutic process in Alexandria and Ancient Egypt through Renaissance Europe. During the Middle Ages, on the grounds of a monastery hospital, plants were used to express purpose of cheering up melancholy patients. Also, the gardens were used to treat both physical and mental ailments of sickness who visited them.

The first modern documentation of horticulture being used as a treatment for mental health purposes was in the 1800s. Dr.Benjamin Rush was the first to suggest that field labour in a farm setting helped attain positive outcomes for clients with mental illness. This discovery leads many hospitals in the western world to begin using horticulture as a means to start therapeutically treating patients with mental health and developmental disabilities. In 1817, the Asylum for Persons Deprived of Their Reason, now known as Friends Hospital, constructed an environment with landscaping, paths and a park atmosphere in effort to assist patients in their recovery. In 1879 Friends Hospital built the first greenhouse that was used for therapy. Post World War 1 horticultural therapy was used to help servicemen rehabilitate, in the 1940s garden club members brought garden activities to the servicemen and in 1960 the first published book on horticultural therapy was written. The first degree in horticultural therapy was established in 1972.

The first formal training programs in horticultural therapy began in the United States in the early 1970s. However, the term "horticultural therapy" was uncommon in the health sciences until the early 1980s, following the first systematic and empirical studies to examine the purposeful use of plants and gardening activities to improve or maximize an individual's social, cognitive, psychological and physiological functioning (Kaplan,1973); (Ulrich,1984); (Langer and Rodin,1976).

In 1973 the Council for Therapy and Rehabilitation through Horticulture (NCTRH) was established by a group of horticulture therapy professionals. In 1988, they changed their name to the American Horticulture Therapy Association

(AHTA) (AHTA,2013) which they are still called today. AHTA is a non-profit organization with about 25 per cent off their members being professionally registered.

Today, horticultural therapy is practiced in many countries and area in the world, such as in Japan, Korea, Hong Kong, the United Kingdom, Germany, Italy and Sweden. Many universities in these countries have education programs and research in horticultural therapy. Special laboratories have also been built, such as Alnarp Rehabilitation Garden at the Swedish University of Agricultural Sciences campus area in Alnarp.

Geriatric wellness

Geriatric Wellness may be defined as a concept of building upon individual strengths and optimizing potential of senior citizens by providing variety of health benefits. Geriatric wellness guides behaviours, habits and lifestyle enhances quality of life for many senior citizens.

Benefits of GHT

Benefits of involvement in GHT activities and exposure to nature can be seen in cognitive, psychological, social and physical realms.

Cognitive benefits

Enhance cognitive functioning, improve concentration, stimulate memory, improve goal achievement, improve attentional capacity.

Psychological benefits

Improve quality of life, increase self-esteem, improve sense of well-being, reduce stress, improve mood, decrease anxiety, alleviate depression, increase sense of control, improve sense of personal worth, increase feelings of calm and relaxation, increase sense of stability, improve personal satisfaction, increase sense of pride and accomplishment.

Social benefits

Improve social integration, increase social interaction, provide for healthier patterns of social functioning, improved group cohesiveness.

Physical benefits

Improve immune response, decrease stress, decrease heart rate, promote physical health, improve fine and gross motor skills and eye-hand coordination.

Comprehension of the psychological, physiological and social responses of people towards plants can be a valid tool for the improvement of physical and psychic conditions, both of single individuals and of whole communities (Ferrini, 2003).

Limitations of GHT

1. These include professionals overestimating the abilities or misinterpreting the skill set required for participation, the need for one-to-one input while in a group setting when there is only one facilitator available, the absence of appropriate clothing and footwear and reduced motivation of some patients, leading to low participation rates at times.
2. Level of psychiatric disorder in in-patient population, sometimes incompatible with participation in horticultural therapy due to factors such as reduced concentration, reduced executive function, inability to sustain activity for prolonged periods, reduced strength or stamina, risk of aggression and of absconsion, as well as, at times, intentional or unintentional destruction of the task environment.
3. Horticultural therapy is one of the aspects of treatment on offer among a plethora of intensive interventions available in an in-patient unit, it becomes difficult to measure the impact of this specific intervention.
4. High level of education required to be able to work with people during the time. People who aspire to be a part of this therapy may not be able to gain a bachelor's degree or even a doctorate.
5. Finally, time limitations and weather can also affect the ability to complete necessary tasks, such as digging over an entire allotment ready for spring (de Seixas *et al*., 2017).

Types of geriatric horticultural therapy

Vocational geriatric horticultural therapy (VGHT)

VGHT may be defined as therapy that is intended to teach skill and enhance behaviour of the senior citizen which may enhance their skill for learning new things. People undergoing vocational geriatric therapy can learn skills involving greenhouses, vegetable gardening, tree and shrub care, indoor gardening, as well as learn about plant production, sales and services. The major activities include how to water and move plants within their space. VGHT teaches the elder person how to grow and work with plants while also learning the benefits of supporting themselves mentally and financially (Simson *et al.,* 2007).

Benefits of VGHT

Self-worth

Very often elderly in a vocational training program have experienced repeated failures or rejections and have an exceptionally low self-esteem. However, given the proper care plants will respond positively for anyone regardless of physical and mental limitations. A skillful selection of plants to be grown can insure a degree of success and accomplishment. The ensuring pride and sense of responsibility can lead to improved self-concept and increased sense of worth.

Increased self-mastery

Opportunities present themselves to relieve the negative emotions of anger and aggression in a socially acceptable way such as pulling out and discarding old plants from a flower bed or pinching plants back to increase bushy, compact growth. Through these activities, the client may learn appropriate methods of dealing with love-hate conflicts within himself and develop better methods of self-control.

Physical involvement

Horticulture is not a sedentary activity. Most of the time is spent in action, moving plants, watering, pulling weeds and similar activities. This constant use of the body presents many opportunities to improve muscle coordination.

Interaction with peers

Workshop or training centers frequently serve as socialization, information and have limited access to the community. In addition to the socialization process which occurs during nonwork time such as coffee breaks and lunch, the activities of a horticulture program lend themselves well to interpersonal relationships.

Interaction with public

As public comes to buy plants repeatedly, so they will have opportunity to interact with them.

Mastery of academic areas

With this real work settings they may motivated to learn many basic academic skills.

Development of work habits

In addition to establishing an atmosphere in which the client develops physically, mentally, emotionally and socially, horticulture provides an effective medium in which to help the client develop work attitudes and abilities which will be of assistance in becoming an effective employee in any work situation.

Horticultural skill development

Here people who has this horticulture therapy programme can develop some horticultural skills like plant propagation transplanting and soil mixing *etc*.

According to Shieh *et al*. (2006), in Taiwan, a garden must be developed by elderly people with mental and physical disabilities in a home care as a part of VGHT training programme on home gardening. With the development of the garden the participants enjoyed the experience of making a hyper-futa for the physical exercise group work that enhance social relationships and creating various types of client containers. This experience in designing a garden provided participants with comprehensive knowledge of plants and enhanced their cognitive attributes.

Therapeutic geriatric horticultural therapy (TGHT)

TGHT has its focus on medical and illness recovery of the aged person. TGHT might be used to try and improve physical activity, social skills and engagement. Activities encompassed by TGHT vary widely, some activities include repetitive actions such as digging and watering, making observations about plant growth and change, relating plant life cycle to human life and starting seeds. The impact that TGHT has on both mind and body.

Activities encompassed by therapeutic horticulture vary widely, some activities include repetitive actions such as digging and watering, making observations about plant growth and change, relating plant life cycle to human life and starting seeds. It has been suggested that things such as new growth on their plants can excite the caretaker, building up their confidence and increasing enthusiasm towards horticultural activities (Detweiler *et al.,*2012). The impact that therapeutic horticulture has on both mind and body, as well as its ability to be undertaken in small spaces makes therapeutic horticulture an attractive option for smaller facilities (Soga *et al.,* 2017).

According to Wichrowski *et al*., (2005) changes in the POMS (Profile of Mood States), total mood disturbances and heart rate were observed before and after the intervention of horticultural therapy programme in the cardiac rehabilitation patients. From the results obtained they concluded that horticultural therapy improves the mood state and acts as a useful tool in reducing stress. Their findings also support the role of horticultural therapy as an effective component of cardiac rehabilitation.

TGHT also decrease in the cortisol levels and the test scores of senior fitness tests where improved in elderly with the mental health problems who participated in 10 horticultural therapy sessions once in a week (Han *et al*., 2018).

Social geriatric horticultural therapy (SGHT)

SGHT is focused on leisure activity and enhancement of life quality. Unlike TGHT, SGHT is more likely to be activity based. SGHT works to create a community that focuses on plant growth and teaches self-reliance to all while providing a support system.

SGHT improved the social self-efficacy and promoted the competence dimension of quality of life in elderly with dementia when they participated in SGHT for 12 weeks. Also, participants who took part in this SGHT mentioned that it was a pleasurable intervention for them (Lai *et al.*, 2017). Social horticultural therapy programs fit a psychosocial model of treatment as well as the model of successful aging (Fetherman *et al*., 2005). In addition, community gardening programs encourage ongoing involvement and repeat interactions between participants and therefore increased social cohesion (Kingsley and Townsend, 2006).

The benefits of a sustained and active interest in gardening include:

- Better physical health through exercise and learning how to use or strengthen muscles to improve mobility.
- Improved mental health through a sense of purpose and achievement.
- The opportunity to connect with others-reducing feelings of isolation or exclusion.
- Acquiring new skills to improve the chances of finding employment.
- Just feeling better for being outside, in touch with nature and in the ‘great outdoors’.

Garden

A garden is a planned space, set aside for the display, cultivation, or enjoyment of plants and other forms of nature,

as an ideal setting for social or solitary human life. Rehabilitation gardens host more vigorous activities. They provide opportunities for patients to develop life skills and rebuild strength. Patients may be in rehabilitation for physical, emotional, or mental disabilities (Erickson, 2012).

Healing gardens

Healing gardens are plant dominated environments including green plants, flowers, water and other aspects of nature. They are generally associated with hospitals and other healthcare settings, designated as healing gardens by the facility, accessible to all and designed to have beneficial effects on most users. A healing garden is designed as a retreat and a place of respite for clients, visitors and staff and to be used at their desire (Vapaa, 2002). We believe that the healing garden is about perception as well as activity. However, it is crucial to find the balance between just being in the garden experiencing it and working with gardening (Stigsdotter and Grahn, 2002).

Healing gardens may be further divided into specific following types.

Therapeutic garden

Therapeutic garden is an outdoor garden space that has been specifically designed to meet the physical, psychological, social and spiritual needs of the people using the garden as well as their caregivers, family members and friends.

The Joel Schnaper Memorial Garden is a therapeutic garden which is a part of the Terence Cardinal Cooke Medical Center in New York City. In 1989, the center became the first long-term care skilled nursing facility to designate a unit to care for HIV / AIDS patients. The garden provides opportunity for everyone to connect with nature on their own terms, in their own way and at their own pace, regardless of their capabilities and sense of wellbeing for long-term health care patients (Kamp, 1997).

Horticultural therapy garden

A horticultural therapy garden is a type of therapeutic garden; it is designed to accommodate client treatment goals, but it is designed to support primarily horticultural activities. A horticultural therapy garden is also designed in such a manner that the clients themselves can take care of plant material in the garden.

This Enid A. Haupt Glass Garden is best example for HT garden. Built in 1959, the garden is part of the Rusk Institute of Rehabilitation Medicine at New York University. Dr. Howard Rusk, a pioneer in rehabilitation of physical disabilities convinced Enid Haupt to donate a greenhouse amidst the increase of returning World War II soldiers and polio patients. The garden started simply as a peaceful retreat from hospital treatment or rehabilitation; but has grown to incorporate a program of horticultural therapy in the 1970s. Trained horticultural therapists work with patients in the therapeutic garden to identify, nurture and learn from plants (Bergman, 2007).

Restorative gardens

A Restorative Gardens or meditation garden may be a public or private garden that is not necessarily associated with a healthcare setting (Marcus and Barnes,1999). This type of garden employs the restorative value of nature to provide an environment conducive to mental repose, stress-reduction, emotional recovery and the enhancement of mental and physical energy. The design of a restorative garden focuses on the psychological, physical, social needs of the users (Erickson, 2012).

Elizabeth and Nona Evans Restorative Garden within the botanically diverse Cleveland Botanical Garden is best example for restorative garden (Marcus and Sachs,2013). This restorative garden uses a “best practice” approach to therapeutic gardens. It combines design and medical technology advances learned in a hospital setting and applied in a publicly accessible space. The result is a deep understanding of the dynamic between public and private spaces.

GHT is used across the lifespan with individuals with a wide range of physical, social and cognitive abilities. Older adults make up a large group of participants in horticultural activities. As the population of older adults grows, more adults face the risk of experiencing a dementing illness. Many families turn to institutional care programs such as nursing homes and adult day service (ADS) programs, for assistance with the care of their relative with dementia. GHT may be an appropriate activity to incorporate into dementia care activity programs, but formal evaluations of such programs are limited.

Participants affect during the horticultural and nonhorticultural activities was comparable. GHT is appropriate for dementia care programs serving adults with a wide range of cognitive, physical and social needs and it should be considered as a viable alternative to more typical dementia care program activities (Jarrott *et al*., 2002). Senior citizens who were suffering from joint pain and rheumatism could gradually overcome from all their physical discomforts a little by little and turned to be a promising practitioners of terrace cultivation of vegetables as they started terrace cultivation of vegetables (Sreedaya, 2000). GHT reduces the depression among elderly and it is cost effective non-invasive nonpharmacological and complementary and alternated to reduce levels of depression among elderly (Rani, 2015). The significant decrease in loneliness supports the therapeutic effect of horticultural programs in reducing perceived loneliness. Gardening is a good strategy to foster socialization and decrease perceptions of loneliness (Chen *et al*., 2015). Aswagandha root contains maximum amount of alkaloids-nicotine, sominine,somniferin, somniferinine, withanine, withanonine, pseudo-withanine, tropin, withanolides *etc*. These compounds show relaxant and antispasmotic effects against several plasmogens on intestine, uterine, bronchial, tracheal and blood vascular muscles (Verma, 2010).

GHT could potentially be useful for reducing inflammation and protecting neuronal functions in healthy elderly adults by reducing plasma IL-6 levels and maintaining plasma levels (Ng *et al*., 2018). Horticultural therapy program on patients with mild cognitive impairment and mild dementia showed an increase in life satisfaction and a decrease in depression (Kim *et al*., 2020).

CONCLUSION

GHT is rooted in the idea that interacting with plants can bring about well-being old people, which will also enhance the attention of society towards the problems experienced by senior citizens. Thus, GHT may find a way for the betterment of lifestyle of senior citizens (Nasir *et al*., 2020).

Conflict of interest

All authors declared that there is no conflict of interest.

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