Active garden therapy for the elderly and people with disabilities

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Abstract. Garden therapy has been used in the world medical practice for many decades. There are many examples where human interaction with plants has a positive impact or facilitates the lives of various segments and groups of society: children, youth, elderly people, with mental health problems, people with disabilities, crime victims, patients with cancer and Alzheimer’s disease, mental health problems, drug addicts and alcoholics, combatants, victims of military or terrorist acts, etc. Garden therapy is the process of using plants and the garden to improve well-being through the effects on the mind, body and soul. Garden therapy combines gardening and rehabilitation and is a synthesis of landscape design, medicine and psychology. It can help work with different target groups: in hospitals, nursing homes, rehabilitation and cancer centers, hospices, as well as other medical and residential complexes. Despite this, garden therapy is still not widespread in Ukraine and requires wider development. This is due to the general set of social and health problems, as well as regional problems of modern times, including the post-Chernobyl factor, the mass factor of post-traumatic stress disorders among the affected population of the temporarily occupied territories and the contingent of ATO participants. Undoubtedly, the urgent task today is to develop garden therapy programs for recovery from illness and combating the stressful effects of prolonged self-isolation during quarantine activities related to the COVID-19 pandemic. The article considers an example of creating a location for active garden therapy for visitors to the Center for medical and social rehabilitation services in Melitopol, Zaporozhzhia region.

1. Introduction

Horticultural therapy is a relatively new discipline combining horticulture and rehabilitation disciplines. It uses plants and gardening activities in therapeutic and rehabilitative activities to improve human well being. Historically, the use of horticulture to calm the senses dates as far back as 2000 BC in Mesopotamia. Around 500 BC, the Persians began creating gardens to please all of the senses by combining beauty, fragrance, music (flowing water) and cooling temperatures \([1, 2]\). Around the world, there is growing interest in research results showing the impact of the physical environment on the health and well-being of people \([3, 4]\). The importance of gardening in human well-being, social development and the study of the role of gardening as an active recreation reveal the work of M. B. Detweiler et al. \([1]\), J. A. Spring \([5]\), G. C. Butură \([6]\), T. Korah et al. \([7]\), O. F. Alkaïsiet al. \([8]\) etc. Of particular interest in this matter is garden
therapy. The horticultural therapy is a time-tested practice. The therapeutic benefits of a
garden environment have been documented since ancient times [9].

According to the American Association of Horticultural Therapy (AHTA), the horticultural
therapy can be used for different categories of the population: by age, origin and abilities. Due
to recent pandemic events, the participants in this therapy have expanded significantly. Social
distancing and home sickness during the first COVID-19 outbreak were instrumental in helping
to flatten the infection curve, but raised concerns about potential negative impacts such as
prolonged isolation or sedentary lifestyles [10, 11]. In this scenario, gardening was identified as
a reliable tool for protecting mental health and exposure to potential presence. Engaging in
gardening is thought to promote psychological health by reducing COVID-related stress [12,13].

Thus, the development of garden therapy programs for recovery after illness and combating
the stressful consequences of prolonged self-isolation during quarantine measures related to the
COVID-19 pandemic is becoming an urgent task today [14,15].

2. Research aim and objectives
Horticultural therapy has four major types of benefits: emotional, intellectual, social, and
physical. The Hort Park Therapeutic Horticulture Program uses plants and related activities
to improve people’s well-being through active or passive participation [16].

The purpose of this article is to develop the principles of designing locations for active garden
therapy.

3. Material and methods
All the necessary research has been performed to develop a project to create a location
for active garden therapy. Inventory of existing plantations was carried out in accordance
with the Instruction on inventory of green plantations in settlements of Ukraine [17–19].
Recommendations for the establishment of therapeutic gardens in Singapore were chosen as the
basis for the future project [20]. Taxonomic identification of plant species composition is given
according to the List of Plants [21, 22]. The Therapeutic Horticulture Programme at HortPark
uses plants and plant-related activities to improve the well-being of individuals through active
or passive involvement.

The programme aims to [20]:

• provide an enriching experience with nature
• promote social interaction and physical activity
• stimulate the senses through interaction with nature
• enhance physical and mental well-being
• promote interest in plants and gardening.

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environments have been documented since ancient times. All over the world there is an increasing
interest in research results showing the impact of the physical environment on people’s health and
well-being [4].

4. Results and discussion
In pursuance of the Law of Ukraine “On Rehabilitation of Disabled People in Ukraine” in 2003,
the Center for Social Rehabilitation for Disabled Children of the Melitopol City Council of
Zaporizhia region was established. The main task of the center is to provide rehabilitation
services to people with disabilities through a range of social, psychological, pedagogical and
physical rehabilitation measures.
In November 2011, Melitopol City Council decided to establish a Mixed type of Rehabilitation Center for the disabled people and children with disabilities in the city, which allowed not only children with disabilities aged 2 to 18, but people with disabilities aged 18 to receive services social, psychological and pedagogical, physical rehabilitation and vocational guidance in order to adapt and integrate them into society. The structure of the Center has two departments: rehabilitation of children with disabilities aged 2 to 18 years and rehabilitation of people with disabilities aged 18 years.

In 2017 the institution was transformed into the Center for Comprehensive Rehabilitation for People with Disabilities, due to changes in the legal framework of the Ministry of Social Policy of Ukraine. Center for Comprehensive Rehabilitation for People with Disabilities from July 1, 2020 – municipal non-profit enterprise “Center for Social Services and Medical Rehabilitation” Melitopol City Council of Zaporozhye region (KNE “CFSS&MR” MCC ZR). The territory of KNE “CFSS&MR” MCC ZR has a total area of 1,003 hectares. For many years, the Center has been cooperating with the city’s higher educational institutions, in particular the Bogdan Khmelnitsky Melitopol State Pedagogical University.

As a result of the inventory, it was established that there are three buildings on the territory of the center, an inclusive sports ground on which are located: a football and basketball field, a playground with sports equipment, an spectator zone, and part of the territory with green plantings. Green plantations are represented by such species as the *Pinus nigra* subsp. *Pallasiana* (Lamb.) Holmboe, *Platycladus occidentalis* (L.) Franco, *Juniperus sabina* L., *Morus alba* “Pendula”, as well as ornamental herbaceous plants.

The area where we propose to place a rectangular garden therapy area (6.5 × 14 m) and is located in the southwestern part of the territory near the inclusive sports ground (figure 1). Its total area is 93 m². On the western and southern sides it is separated from the private sector by a fence. The relief of the territory is flat. The garden therapy area will be covered with paving slabs, as well as a path leading to this area. The width of the track should be at least 1.2 m, which will ensure the convenience of people in wheelchairs.

![Figure 1](image1.jpg)

**Figure 1.** Territory for creating a location for active garden therapy.

We offer to place tables for growing plants in the amount of 3 pieces in this area (figure 2). It will be developed according to the recommendations of the Chicago and Singapore Botanic Gardens, which will ensure the convenience of working for people of different ages with disabilities, including in wheelchairs. The parameters of the tables (width 120 cm, length 2 m,
height 70 and 15-25 cm tray for planting) provide the opportunity to carry out the work process without obstacles. Such tables can be modular, on wheels for convenience of their movement or stationary. The frame can be made of metal or wood. In our case stationary tables made of a wooden bar will be more convenient and economic. We offer to grow different cultivated plants on different tables: on the first – vegetable crops, on the second – spicy-aromatic and medicinal and on the third – ornamental and flowering plants.

Figure 2. Visualization of the location of garden therapy on the territory KNE “CFSS&MR” MCC ZR.

The garden therapy area will be covered with paving slabs, as well as a path leading to this area. The width of the track should be at least 1.2 m, which will ensure the convenience of people in wheelchairs.

We have chosen paving slabs of the Ukrainian manufacturer of the “Kvadrat” brand (400 × 400 × 60 mm) of gray color, in the tone of the existing covering on the territory the center. When we arrange the following locations, there are certain standards for paving pavements: level with good traction to prevent slipping when it is getting wet, without glare with a stable, light color.

We plan to install 2 benches along the fence for the convenience of recreation during the work for visitors to the center. Their form is designed with the specific characteristics of the institution, that is, it will be convenient for people with disabilities. In addition, it will have armrests with a width of at least 10 cm, which will provide comfort when a person gets up. The location of the backrest in relation to the seat will be at right angles.

According the specifics of our climate (very high temperatures in summer) benches can be equipped with frame canopies with twisted plants.

The territory of the center is very well maintained and landscaped. It is fenced with monolithic and metal sections. But part of the fence, namely on the western side of the development zone, is made of handy materials and has an unattractive appearance. Therefore, for its decoration and fence of metal sections, we propose to use vertical landscaping. For this we suggest to use Lonicera caprifolium L. with a planting scheme of 1.5 m. Many plants can be used for garden therapy, but the most important is that it must be safe.

It is desirable to use plants that emit phytoncides or have a pleasant aroma. People with visual impairments has a special interest of fragrant plants or those that are unusual and pleasant
to the touch texture. Of course, when you choose plants you need to choose those that do not require heavy care. If you want to have a competent selection of plants for garden therapy, you need a consultation with a landscape design specialist.

Do not use plants with the following characteristics:

- poisonous;
- prickly;
- plants-allergens;
- with caustic juice;
- contain narcotic or hallucinogenic substances.

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Medicinal and aromatic plants are very significant today. It occupies an important place in the aesthetic and functional aspects of the study of plant design with leaf shapes of different color textures and flowers of different shapes and colors. Unlike other landscaping works, plants used in therapeutic gardens should provide sensory perception, memory and stimulate creativity. In this context, choosing the right types of plants for use and placing them in the direction of the desired effect are the main factors influencing the success of plant design.

Aromatic and medicinal plants are usually easy to grow on garden therapy tables. Many plants are annuals and are grown by sowing seeds in the soil (fennel, salad mustard) or through seedlings (parsley, basil, savory, mint). Such perennial spices as thyme, lemon balm, oregano are well overwinter in the ridge, but it is desirable to mulch them for the winter with peat or humus. Rosemary is grown as a houseplant and taken to the garden in the summer. Most spicy-aromatic plants prefer the sun and nutritious soil.

Many herbaceous plants grown on the table can be brought into the room in the fall and continue to harvest in the winter. Many herbs can be dried and used in winter for cooking and fragrant teas.

Annual flowers. No garden can do without them. They are usually easy to grow, grow quickly, feel good in containers and on tables, add bright colors from mid-May (when planting flowering seedlings) and until the frosts. The huge variety of species and varieties makes it possible to choose the range of annuals for any conditions and for every taste. Many of them have a pleasant smell, many are used for bouquets.

Perennial flowers. You can choose the appropriate species for sunny or shady areas, from a wide range of perennial flowering plants. You can choose different plants in height, shape, color of leaves and flowers, flowering time of the plant.

Vegetable crops. They are easy to grow in containers, on raised beds and tables. Choosing compact varieties, you can grow almost the full range of vegetables (radishes, onions, tomatoes, peppers, eggplant, cucumbers, zucchini, peas, beans, lettuce, parsley, etc.).

Salad vegetables are annual plants which leaves are eaten. Leafy vegetables are especially decorative in urban conditions. They quickly converge and develop rapidly. If you want, crops can be resumed several times a season. Salad vegetable plants include lettuce, spinach, watercress, chard.

An assortment of plants that meet these requirements was selected for this project: medicinal (Thymus citriodorus (Pers.) Schreb.; Thymus serpyllum L; Origanum vulgare L.; Melissa officinalis L.; Mentha piperita L.), vegetables (Tagetes patula L.; Calendula officinalis L.; Callistephus chinensis (L.) Nees; Pelargonium L’Hér), annual and perennial decorative plants (Capsicum annuum L.; Capsicum chinense Jacq.; Capsicum frutescens L.; Capsicum baccatum
L.; *Capsicum pubescens* Ruiz & Pav.; *Lactuca sativa* L.; *Brassica juncea* (L.) Czern.; *Spinacia oleracea* L.; *Beta vulgaris* L.; *Lepidium sativum* L.).

5. Conclusion
Recently, many garden therapy programs have appeared in the world for rehabilitation after the COVID-19 viral disease. Unfortunately, today the use of garden therapy technologies in Ukraine is limited due to the lack of methodological developments and specialists, specialized locations and the low level of popularization of garden therapy among the population. In view of the above, it can be argued that the development of this area in Ukraine is very important and the solution of these problems today is the main task of scientists. This project can be an example of creating a therapeutic environment to ensure the physical and psychological rehabilitation of their visitors.

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