

USING THE PRINCIPLES OF THERAPEUTIC GARDENS IN THE PROPOSED REDEVELOPMENT OF THE GREEN SPACE OF THE "PROF. DR. NICOLAE OBLU" HOSPITAL IN IASI

Codrina GRECU, Mirela COJOCARIU, Clara-Teodora BALAN, Doina-Mira DASCĂLU

University of Life Sciences "Ion Ionescu de la Brad" of Iasi, 3 Mihail Sadoveanu Alley, Iasi,
Romania

Corresponding author email: mirela_c@uaiasi.ro

Abstract

The paper presents a study on therapeutic gardens with an example of applying their composition rules within a landscaping project proposal for the green space of the Hospital "Prof. Dr. Nicolae Obilu" in Iasi. These therapeutic gardens have been used over the years as specially landscaped outdoor spaces near hospitals or in the inner courtyards of various rehabilitation or treatment centers. These gardens' design and construction principles help improve and heal patients' ailments more quickly and contribute to the well-being of all institution staff and visitors. The same rules and principles underlie the garden design concept of the Iasi Clinical Neurological Hospital, which, through this redesign proposal, has been given the possible status of a public garden with a warm and welcoming atmosphere, which also meets the criteria specific to therapeutic gardens.

Key words: therapeutic gardens, hospitals green areas landscaping, landscape design principles.

INTRODUCTION

Historical documents indicate that designing the green spaces associated with healthcare facilities was essential to making patients feel comfortable and heal quickly.

The notion of a healing space has its roots in ancient Greece, where there were temples such as the Sanctuary of Epidauros, where sick people went in the hope of having dreams in which cures for their illnesses was revealed.

At the same time, Egypt's great gardens were also built to escape the everyday external environment and induce healing relief.

Since the Middle Ages, therapeutic gardens have been places of recuperation, restoring mind, soul and body. Monastery hospitals used indoor gardens as areas for therapy and healing. The Zaragossa Hospital in Spain, built in 1409, is an example used as an inspiration for landscape architects of the time, especially regarding how patients could interact. Patients were encouraged to go out into the hospital courtyard and communicate with each other throughout the day in the open air. Non-disabled patients were involved in activities such as gardening.

The European Romanticism movement of the 18th century brought about essential changes in

the layout of hospital units and grounds. The theory linking successful medical therapy to a natural environment around hospitals was revived. Cooper Marcus noted that in the 19th century, Dorothea Linde Dix (1802-1887) was the first to take an interest in modifying patient therapy methods and, by extension, the hospital environment. She proposed to the American Legislature certain basic principles regarding the arrangement of areas in these institutions.

However, in the 20th century, advances in medicine, urbanization, technological developments, and other economic forces gradually led to neglecting of hospital green areas, and many parking lots replaced them.

In 1984, a study by the American psychologist Roger Ulrich brought the importance of hospital gardens back to the fore. Ulrich demonstrated that patients who had a view of the hospital's outdoor green spaces in their rooms recovered faster after surgery and spent less time in the hospital than those who did not. Since the 1990s, the idea of healing gardens has regained interest, and various research in sustainable landscaping began to appear (Vapaa, 2002).

Horticultural therapy developed from occupational therapy in the USA in the 1950s. Subsequently, many hospitals in Europe added so-called Horticultural Therapy to their

therapeutic programs to keep patients' minds occupied and lead to creative action. Nowadays, horticultural activity therapy is becoming increasingly widespread, as Buru et al. (2022) point out in their paper on its influence on the quality of human life. Other research has shown that some medicinal plants in urban gardens can improve air and soil quality by absorbing atmospheric or soil pollutants, which can be an added advantage for a therapeutic garden in a hospital (Hangan et al., 2020).

The benefits of patient exposure to a therapeutically landscaped hospital garden are listed and described by Professor Emeritus P.D. Relf (2019) in his paper on institutional healthcare gardens. Both Relf and other researchers have described in their work the benefits observed in users of these types of therapeutic gardens as follows:

- Physiological benefits: lower pulse rate and muscle and blood pressure, lower consumption of pain relievers, and faster recovery after surgery or other types of trauma (Gerlach et al., 1998);
- Psychological benefits: patient compliance with therapy, security, reduced stress, aiding sensory development, employee job satisfaction (Ulrich, 1999; Cooper Marcus and Barnes, 1995; Ulrich, 1992);
- Social benefits: encourage social contact and interaction and allow visitors to enjoy nature (Dascălu and Cojocariu, 2016; Cooper Marcus and Barnes, 1995).

As a result of the information previously described, the present work aims to design green spaces with therapeutic value on the premises of the Emergency Clinical Hospital "Prof. Dr. Nicolae Oblu" in Iasi. The main objective of this proposal is to enhance medical recovery by increasing the quality of the hospital environment and ensuring a higher degree of comfort for patients, medical staff, and visitors.

MATERIALS AND METHODS

When designing a space for a healthcare facility, the focus should be on location, accessibility, patient requirements and preferences, and design elements to be included. The garden should have opportunities for mobility and exercise, present a choice between social and

solitary spaces, and facilitate healthy recreation and direct or indirect interaction with nature.

Variety criterion

To enable the most significant therapeutic benefits, the therapeutic garden should have a variety of spaces for groups and solitary individuals, giving the patients choice and an increased sense of control, leading to lower stress levels. Equally, variety should apply to vegetation. The design should include seasonal flowering species, plants that attract small and safe wildlife (birds, squirrels, butterflies), and species with different foliage or grasses that move under the influence of air currents. Natural features such as trees, shrubs, flowers, and water feature lower stress levels. Other activities, such as working with plants and gardening, can also provide users with relaxing moments in the garden. Hard landscaping should be kept to a minimum, and plant materials should dominate the space. Hospital spaces should minimize negative factors such as urban noise, smoke, and artificial lighting and enhance the therapeutic value of natural light and sound. Gardens that appeal to different senses are often ideal, although strongly scented flowers and other odors should be avoided for chemotherapy patients. In general, it is advisable to have open views of the sky and clouds and, if possible, the horizon. Pools with fish or water lilies or moving water that can be seen and heard should be introduced.

Accessibility criterion

Gardens can be attractively designed and landscaped, but people need to know that they exist and are easily accessible via entrances and pathways. This is an essential requirement within the hospital and its external environment. It is also essential that they are usable by all users, regardless of age or different mobility impairments, and at the same time only facilitate certain activities.

Visibility criterion

The more visible a garden is, and the more people are aware of it, the more they will prefer its activity areas. At least one outdoor area should be visible, or its location should be indicated from the main entrance. Patients' rooms should have a view of the garden to enjoy it even if they cannot visit it.

Feelings of control and security criteria

Patients often feel physically and psychologically vulnerable in hospitals, so providing them with a sense of security is advisable. Research shows that a lack of control can induce or worsen depression, passivity, increased blood pressure, and decreased immune system function. A sense of control in the hospital yard can be improved by involving users in its design. This can be done by including sufficient lighting and other design elements. The space should be enclosed but not give the impression that someone is being watched. Features should include railings and seating at various intervals, especially near the entrance, to help seniors and people with disabilities or reduced mobility.

Sound criteria

Research in four hospital gardens showed that users were disturbed by the sounds of cars, air conditioners, and traffic noise. Areas should be pre-planned to be located away from traffic, parking, and supply areas. A garden designed for therapeutic purposes should be quiet and somewhat removed from the sounds inside the hospital, which range from public announcements and television sets to catering trolleys. Visitors to the garden should feel calm and be able to hear soothing sounds, such as birds singing, wind chimes, or water flowing.

The flexibility criterion

Outdoor spaces should attract people, invite them and involve them in different activities. They need to be designed around the human factor of the users and the way these spaces are used: for a lunch break, exercise, or socializing. To maintain interest and interaction throughout the park

visitors, each of these spaces having several functions. The location and connection between these areas were made according to the type of activity that can be carried out in the proposed perimeter so that the dimensions of the spaces comply with the recommended rules. Their layout aims to ensure an optimal space for each beneficiary and satisfy a potential need for privacy. The entire layout (Fig. 1) has been designed in an eclectic style. This style combines the geometric shapes of functional areas and pathways with the arrangement of green spaces and plant compositions in irregular, curved, circular, or semi-circular shapes. The resulting forms have a cumulative effect of balancing and energizing the whole space. The whole design aims to provide a pleasant ambiance and a healing environment. The design style aims to satisfy the landscape principle of unity in diversity.

In order to meet this requirement, the same types of materials were used for the furnishings, and the same types of paving materials were used for the paths and decorative pools (Dascălu and Cojocariu, 2016).

Following an overall analysis of the needs of the hospital's beneficiaries, the following functional areas were proposed in the spaces of the main building:

1. Area for road access and ecological parking;
2. Recreation area for medical and administrative staff;
3. Visitors' area;
4. Recreation and social area for patients;
5. Relaxation and meditation area;
6. Recreation and occupational therapy area;
7. Area for physical therapy and medical gymnastics;
8. Children's play area.

Zone 1 - Employee parking area

The proposed redevelopment of the car park involves the introduction of an environmentally friendly grid paving of 60 x 40 x 4 cm slab size for all parking spaces. The advantages of this type of paving are aesthetic by increasing the surface area of the pavement. However, unlike poured concrete, they are also linked to their resistance to repeated freeze and thaw cycles. The dimensions of the parking spaces are 2.5 x 5 m, arranged at 45 angles. Near the parking area, landscaping is proposed, including a

RESULTS AND DISCUSSIONS

The proposed solution for landscaping the premises of the Emergency Clinical Hospital "Prof. Dr. Nicolae Oblu" in Iasi aims to improve the green areas to maximize the therapeutic effects these areas can have on all beneficiaries in this health institution.

The first step in elaborating the proposal consisted of the judicious establishment of all the areas, each intended for specific categories of users. The zoning of space was done according to the needs of patients, staff, and

decorative pond with water and plant compositions (Figure 1).



Figure 1. Functional zonation of the developed site

Zone 2 - Recreation area for medical and administrative staff

This area is primarily for medical and administrative staff (Figure 2). These people spend a large part of their day under stressful conditions, which, over time, can affect the quality of their work and their quality of life. For this reason, it is essential to have a space for relaxation and recreation in a peaceful environment surrounded by vegetation. The area is located on the SE side of the hospital building, near an entrance to the building. Access to this area is via a 2 m wide main pathway. The path of the central alley runs through all the functional areas, giving them unity.

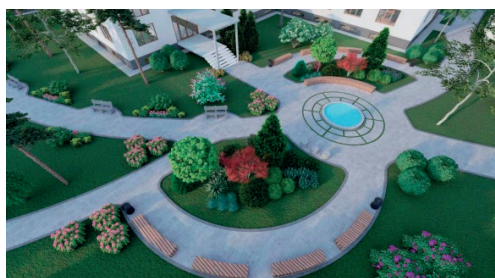


Figure 2. Area 2 for recreation of employed staff

The area's focal point is represented by a circular pool of water enclosed at the level of the paved surface by inserts of green strips of grass. A series of wooden seating areas are arranged around this basin. From this central circular area converge two 2 m wide secondary alleys. The width of the alleys allows for the placement of

new wooden seating areas for the beneficiaries of this space. The green spaces shaped by the alleys feature two plant compositions, which can be admired from the area of the wooden seats. The species of trees, shrubs, decorative grasses, and flower species used for the two compositions are: *Juniperus scopulorum*, *Acer platanoides* 'Globosum', *Thuja orientalis* 'Aurea Nana', *Acer palmatum* 'Atropurpureum', *Buxus sempervirens* 'Elegantissima', *Pinus mugo* 'Pumilio', *Juniperus horizontalis*, *Lavandula angustifolia*, *Festuca glauca*.

Zone 3 - Area for patients and their visitors

In this area, in-patients and their visitors can socialize in a pleasant environment where they can recreate. The area runs along the main pathway and in the area to the south of it. Access to the southern area is directly from the central alley, on a 1.5 m wide secondary alley. There are two significant points of interest along the secondary path. These consist of 4 semicircular basins, with seats and planters in the center (Figure 3). Also, in this area, along the route of the main path, there are a series of alcoves with wooden seats and an expansion inside which there are semicircular benches.

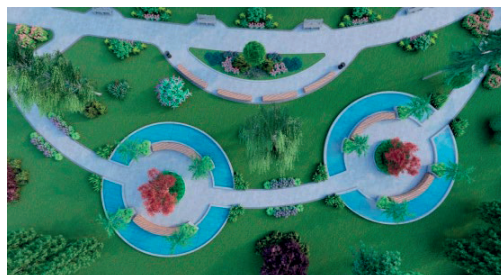


Figure 3. Area 3 for the recreation of patients and their visitors

The whole space is set with groups and plant compositions along the alleys, grassy spaces, and central areas of interest. In the center of the areas with semicircular basins, there are two relict compositions of the following species: *Acer palmatum* 'Atropurpureum' and *Lonicera pileata*. In the garden beds bordering the water basins are specimens of *Betula pendula* 'Youngii' and *Carex morrowii* 'Variegata'. In the center of the dilations with state seats, there is a composition of *Acer platanoides*

'Globosum', *Pinus mugo* 'Golden Glow', *Pinus mugo* 'Pumilio', *Spiraea japonica* 'Little Princess', *Juniperus horizontalis* 'Blue Chip', *Phlox drummondii*, *Sedum spectabile*, *Salvia nemorosa* 'Caradonna'.

Area 4 - Recreation and social area for patients

In this area, patients can spend time in nature, relax and socialize with each other. The area runs along the main pathway, with an expansion with semicircular benches and an area to the south (Figure 4). Access to the southern area is directly from the central alley, along a 1.5 m wide secondary alley.



Figure 4. Area 4 for patient recreation

In the area south of the central alley are three circular points of interest. These areas are landscaped with semi-circular pergolas with wooden benches, tables, and seating (Figure 5).



Figure 5. Detail of the center of interest in zone 4 for patient recreation

The pergola posts are decorated with *Clematis* sp. 'Jackmanii' specimens, and in the center of each circular area, there are spaces for plant compositions consisting of the following species: *Hydrangea macrophylla*, *Sedum spectabile*, *Astilbe japonica*, *Salvia nemorosa* 'Caradonna', *Yucca filamentosa*, *Heuchera micrantha* 'Palace Purple', 53 *Pennisetum*

alopecuroides 'Red Head'. Six clumps of *Lupinus polyphyllus* are placed along the paths.

Zone 5 - Area for relaxation and meditation

This area allowed patients to retreat to a more intimate and introverted place conducive to relaxation, meditation, and inner reflection. Access to the space is via a 1.5 m wide secondary pathway. This place has two semicircular wooden pergolas, at the base of which is a bench. In the center is a circular water basin with aquatic plants, enclosed at the level of the paved surface by inserts with green grass strips. The pergola posts are decorated with specimens of *Wisteria sinensis* to give patients color, shade and privacy (Figure 6).



Figure 6. Zone 5 for relaxation and meditation

Two identical plant compositions, consisting of the following species, were designed in the vicinity to the north of this area: *Juniperus scopulorum*, *Thuja orientalis* 'Aurea Nana', *Pinus mugo* 'Pumilio', *Juniperus sabina*, *Berberis thunbergii* 'Red Rocket', *Heuchera micrantha* 'Palace Purple', *Euonymus fortunei* 'Emerald Gaiety', *Picea pungens* 'Glaucia Globosa', *Salvia nemorosa* 'Caradonna', *Yucca filamentosa*, *Phlox drummondii*, *Pennisetum alopecuroides* 'Red Head', *Carex morrowii* 'Variegata'. To screen and increase privacy in the southern part of the circular area, it is planned to introduce *Juniperus scopulorum* 'Skyrocket' and *Buddleja davidii*.

Area 6 - Recreation and horticultural therapy area

This area is intended for so-called horticultural therapy, a type of occupational therapy. For this activity, a circular space has been provided. Inside are six flower boxes where various species of horticultural plants can be planted and

four wooden benches for relaxation when this space is used for recreation.



Figure 7. Area 6 for recreation and horticultural therapy

In this case, the following species were proposed for the herb and medicinal plant garden: *Ocimum basilicum* 'Rubrum', *Ocimum basilicum*, *Mentha piperita*, *Salvia officinalis*, *Rosmarinus officinalis*, *Echinacea purpurea*, *Lavandula angustifolia*. The perimeter of this circular area was planted with groups of *Hosta plantaginea* and *Hemerocallis fulva* (Figure 7).

Zone 7 - Area for physical therapy and medical gymnastics

This area is designed as a space for exercise therapy and medical gymnastics with the help of nurses and outdoor exercise equipment. These exercises allow patients to maintain or improve their physical abilities, thus speeding up healing. This space provided wooden seating areas of semicircular and circular shapes around a planter. These places facilitate socializing during the breaks patients can take between exercise sets. In order to avoid injuries in this area, it was proposed to install a flexible tartan-type slab in two different colors (Figure 8). A specimen of *Betula pendula* 'Youngii' was placed, bordered at the base by specimens of *Euonymus fortunei* 'Emerald Gold'.

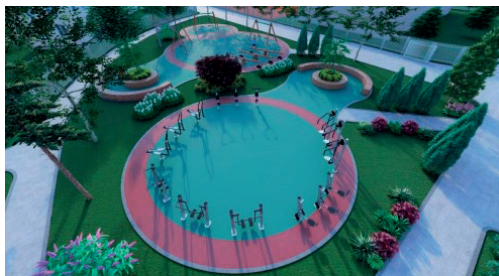


Figure 8. Area 7 for physical therapy and medical gymnastics

Zone 8 - Children's play area

This area has been designed as a space for children and their visitors. In this area, child patients can play, thus being positively distracted from the many ailments and stressors they experience. The area has various swings on a surface covered with flexible tartan tiles to avoid possible injuries. Similar to the medical gymnastics area, this area also has wooden seating areas in semicircular and circular shapes around a planter, facilitating socializing and resting (Figure 9).



Figure 9. Children's play area

The green space provided to separate zones seven and eight includes, in order to partially and aesthetically screen the two zones, groups of three *Hydrangea macrophylla* specimens, provided in the basal zone with *Lonicera pileata* specimens, and a group composed of a *Cotinus coggygria* 'Royal Purple' specimen based on *Cornus alba* 'Elegantissima' specimens.

CONCLUSIONS

This project was conceived to revitalize the green spaces in the Emergency Clinical Hospital "Prof. Dr. Nicolae Oblu" premises in Iasi. Currently, these spaces are in a state of degradation, thus requiring a series of transformations to offer patients and staff the opportunity to spend quality time in a natural environment with actual healing properties. The existence of therapeutic gardens has been recorded since medieval times, and they were considered essential for relieving patients' ailments. In recent centuries, the importance of these gardens has been neglected, and concrete surfaces or car parks have replaced them. Fortunately, this holistic concept, which combines natural elements with patients' physical, psychological, and social recovery, has

recently been brought back to the fore. Preliminary research clarified and systematized the main psycho-emotional and physical benefits a therapeutic garden can produce for patients and medical staff. Also, the primary criteria for designing a therapeutic garden were identified at this initial stage. A series of areas of interest to the potential beneficiary of this space was crystallized through the analysis of the study materials and the application of landscape design principles. The functional zoning of the available space on the site involved the establishment of eight zones: an area for road access and ecological parking, a recreation area for medical and administrative staff, a visitor area, a recreation and socialization area for patients, a relaxation and meditation area, a recreation and occupational therapy area, a physical therapy and medical gymnastics area and a children's play area. The design proposal considered patients' physical and psychological needs and medical and administrative staff. All these categories of beneficiaries can experience different levels of stress. This stress may be related to medical conditions in the case of patients or may be generated by the work environment in the case of staff. The design aims to provide an escape into a natural environment with healing properties and to accelerate the process of healing and emotional and spiritual balancing through spaces for rest, movement, contemplation, and meditation.

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