



Landscape Design in Hospital Gardens: The Example of Selcuk University Medical Faculty Hospital

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ABSTRACT

Hospital gardens, located within urban open-green areas, are places created for patients coming to the hospital, their relatives and the staff working in the hospital to spend time in an environment where they can renew themselves. The importance of these places is increasing day by day. The purpose of this study is to examine the landscape design of the Selcuk University Faculty of Medicine hospital garden located on the Selcuk University Alaeddin Keykubad Campus. The findings show that the hospital garden was generally not designed in accordance with landscape design principles. With the suggestions developed, this hospital garden can be redesigned in accordance with landscape design principles and made more comfortable for people using the hospital garden.

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Introduction

Throughout history, people have used nature for various purposes to find health. It is possible to define the garden, which is a part of nature, as safe areas they choose to relax, have fun and engage in activities (Bulut ve Göktuğ, 2006).

From the perspective of the landscape architecture discipline, every detail that forms the city and affects the city image and identity should be considered and evaluated as a research subject. Hospital gardens, which are a part of public outdoor spaces, are one of the important issues to be evaluated in landscape design. Hospital gardens are important not only for their impact on people's psychological health, but also for the meaning and image they add to the environment and urban architecture (Bulut ve Göktuğ, 2006).

Hospital gardens are open areas where passive or semi-passive activities are carried out, providing effects such as physical relaxation, stress reduction, increasing the feeling of well-being, memory renewal, increasing physical mobility and motivation (Elings, 2006).

In order to reduce the stress factor, which is the leading cause of all diseases, more peaceful, comfortable and safe spaces should be created outside the building. In other words, hospital gardens need to be planned in light of certain design criteria. In this way, patients treated in the hospital recover faster and the staff can do their job better (Ayan, 2009).

While the outdoor features and designs of hospitals have a positive impact on patients, they are also important in spiritual, physical and social terms during the treatment of patients. Well-designed hospital gardens create a social environment by saving patients from the monotony of the clinical environment and positively affect patients' clinical outcomes by reducing stress (Sakıcı, 2009).

The landscape is part of the land, as perceived by local people or visitors, which evolves through time as a result of being acted upon by natural forces and human beings according to the European Landscape Convention (Anonymus, 2023a). Landscape design focuses on both the integrated master landscape planning of a property and the specific garden design of landscape elements and plants within it (Anonymus, 2023b).

Landscape design, which is the field of study of landscape architecture at lower scales, is the process in which outdoor spaces are shaped in line with planning decisions. In landscape design, the use of the space is revealed in line with its needs. The main purpose of landscape design is to present the best possible spatial composition of the work area in the context of sustainability and in the light of design principles. Features such as the designer's vision, aesthetic understanding, and cultural background offer an endless number of solutions in landscape design (Korkut ve ark., 2010).

Landscape Design in Hospital Gardens

Structural Landscape Design

Entrances

The functionality of the entrance points to the garden and whether there are security booths, entrance gates and entrance arches at these entrances should be evaluated in terms of their adequacy and aesthetics. There must be a suitable entrance unit, an arch or door defining the entrance, directional signs identifying the institution, and a security unit. The entrance system is very important as it is a structure that reflects the general design approach and corporate structure of the garden and the institution to the outside (Atabeyoğlu ve Bulut, 2007).

Orientation

Orientation should be provided through construction, gardens, plant materials, and roads connecting spaces that create a sense of space. Aesthetic images should be created with vegetative and structural designs that will provide an emphasis effect by drawing the direction line (Atabeyoğlu ve Bulut, 2007).

Car park

It covers the existence and adequacy of areas designed directly for parking purposes that can serve the employees and visitors of the institution. Parking areas should be established in shaded areas as much as possible by using plant or structural materials. The floors of parking lots must be paved and drained. In addition, car parks should be located at distances that allow easy access to buildings and functions (Atabeyoğlu ve Bulut, 2007).

Reinforcement elements

Erdem (1995) stated the reinforcement elements as base elements, top cover elements, screening and surrounding elements, water elements, urban furniture, children's playgrounds, sports areas and equipment requiring technical infrastructure. Aksu (2012) classified the reinforcement elements as floor coverings, seating areas, lighting elements, information signs, delimiters, water elements, floor covering elements, sales units, artistic objects, children's playgrounds and other elements.

Uses for disabled people

Uses for disabled people in hospital gardens include garden activities and uses that cover the entire area (Atabeyoğlu ve Bulut, 2007).

Physical movement spaces

According to Hazen (1995), exercise provides many physical and psychological benefits, as well as having a positive effect on the cardiovascular system and reducing the risk of depression. For this reason, a horticultural therapy program should be created in hospitals and a suitable activity program should be created. In this way, visitors can also enjoy the garden.

Vegetative Landscape Design

Balance

It is defined as the distribution of landscape design elements at equal intervals within the framework of a layout (Austin, 1982). The principle of balance in design is equality or parity of visual impact (Hansen, 2010). In design, the use of a central axis is a frequently applied method. Design elements such as size, form, shape, color and texture to be created on both sides of this axis ensure balance (Gültekin, 1994).

Repetition

The principle of repetition is defined as the character or quality of an object whose color, texture, form, size and line elements are repeated (Engstrom, 2005; Uzun, 2020). Repetition is the use of an object in the design in more than one or similar ways (Güngör, 1969; Korkut vd., 2010).

Emphasis and Sovereignty

Emphasis, which can be achieved through contrasts of design elements such as color, form, texture and line, is a design principle used to draw attention to a point in the space (Uzun, 1999).

In design, the superiority of a certain plant or group of plants over other objects around it is called sovereignty. There may be sovereignty in terms of size, texture, color and texture. Sovereignty is also an emphasis (Önder, 2020).

Contrast

It is done by making an important and distinct feature of a living or inanimate object stronger with another living or inanimate object that is opposite to it. Any of the features of nature such as size, shape, color, texture may be the most obvious. This distinctive feature becomes even more prominent and more noticeable when a contrasting material is used together (Korkut vd., 2010).

Simplicity

In vegetative design studies, it is very difficult to create a purposeful, functional, easily perceptible, creative, original, but simple composition by using design principles. Simplicity is one of the elusive design principles. Because, when evaluating many design principles together, creating a simple composition that is free from complexity depends on the knowledge, experience and skills of the designer (Önder, 2020).

Proportion

Proportion is defined as finding an appropriate balance in terms of area, mass and volume between the sections that make up the order in the field of plant design. For example; Living elements used in parks and gardens are trees, shrubs, grass areas and flower beds. These must be used in a certain proportion. It is wrong in terms of proportion to give too much space to one and not the other (Önder, 2020).

Variety

Variety is the difference of design elements in a composition. In other words, variety is the contrast or change in line, form, texture and color to attract the eye's attention, hold the observer's attention and satisfy the mind's need for change. It is the state of lack of uniformity and uniformity. An orderly and interesting landscape can be created with variety. The dose of variety in the design should be adjusted well. Too little causes monotony, too much causes complexity (Önder, 2020).

Hierarchy

It is a design principle that provides a regular change, mobility or transition in design features. The transition from one part of the design composition to another can be created by changes in colors, textures, forms and dimensions (Nelson, 2004). Hierarchy is called cascading. While successive elements are in harmonic relationships, there is a deep contrast between the beginning and the end (Özbilen, 2000).

Unity

It is the combination of structural and vegetative elements in the design to create a balanced integrity. Unity ensures that the designed space is perceived holistically. Displaying different design models or concepts that are not related to each other throughout the space creates a situation that contradicts the concept of unity. Unity means that the elements in the space complement each other and create a holistic organization (Korkut ve ark., 2010).

Materials and Methods

The main material of the study is the garden of the Faculty of Medicine hospital located in Selcuk University Alaeddin Keykubat Campus. The study area is located in Selcuklu district of Konya province.

First, the study area and the purpose of the study were determined. Afterwards, a literature review was conducted on the concepts that form the basis of the research. Selcuk University Faculty of Medicine hospital garden was visited and the materials forming the structural and vegetal landscape designs in the area were examined and photographs were obtained from the area (Güngör, 2016). The landscape design of the garden was examined and evaluated in the light of literature sources. As a result of the evaluations, conclusions and recommendations on the subject were developed.

Results and Discussion

Evaluation of the Structural Landscape Design of Selcuk University Faculty of Medicine Hospital Garden Entrances

Selcuk University Faculty of Medicine hospital has five hospital building entrances: Chief physician entrance (Figure 1), B block entrance, D block entrance, E block entrance and emergency entrance. However, at the entrance to the hospital garden, there is neither a suitable entrance unit, nor an arch or gate defining the entrance, nor directional signs and security unit identifying the institution. Security units are inside the hospital building.

Orientation

Direction in the garden of Selcuk University Faculty of Medicine hospital is provided by roads connecting the spaces. In addition, the emphasis effect that draws the direction line is supported by the plant and structural designs that will ensure this.

Car park

The parking area in the garden of Selcuk University Faculty of Medicine hospital was designed with hospital staff, patients and visitors in mind. The car park is designed to accommodate 1600 vehicles.

Reinforcement elements

Seating area: There are 24 benches and 23 gazebos in the seating areas in the garden of Selcuk University Faculty of Medicine hospital (Figure 2). There are also 40 garbage bins in the garden.

Children's play area: There is a children's playground in the garden of Selcuk University Faculty of Medicine hospital (Figure 3). There are two slides, two swings and three seesaws in the children's playground.



Figure 1. Selcuk University Faculty of Medicine hospital chief physician entrance



Figure 2. Seating areas in the garden of Selcuk University Faculty of Medicine hospital



Figure 3. Children's playground in the garden of Selcuk University Faculty of Medicine hospital



Figure 5. Water elements in the garden of Selcuk University Faculty of Medicine hospital



Figure 4. Floor covering in the garden of Selcuk University Faculty of Medicine hospital



Figure 6. Ibn-i Sina statue in the garden of Selcuk University Faculty of Medicine hospital



Figure 7. Example of balance principle in the garden of Selcuk University Faculty of Medicine hospital

Lighting element: 11 large lighting elements and 7 luminaire lighting elements were used in the garden of Selcuk University Faculty of Medicine hospital.

Floor covering: Square rubber was used as floor covering material in the children's playground located in the garden of Selcuk University Faculty of Medicine hospital. Additionally, interlocking paving stone flooring was used on all pedestrian paths in the area (Figure 4). There are stepping stones on the grass to reach the gazebos around the children's playground.

Water element: There is an ornamental pool in the garden of Selcuk University Faculty of Medicine hospital. There is also a fountain in the hospital garden (Figure 5).

Artistic object: There are two statues in the garden of Selcuk University Faculty of Medicine hospital. One of the statues is located next to the children's playground, while the other is located near the emergency entrance (Figure 6).

Uses for disabled people

There are ramps for the use of disabled people at the B block and emergency entrances of Selcuk University Faculty of Medicine hospital, but the slope of the ramps is not suitable for disabled people to use. Because the ramps are very steep, disabled people have difficulty or cannot use the ramps. Materials for the use of disabled people are not included in children's playgrounds and seating areas. Some of the perceivable surfaces used on pedestrian paths have become worn, deformed or even disintegrated. For this reason, it can be said that disabled people were not taken into consideration when designing the hospital garden.

Physical movement spaces

Gardens for horticultural therapy have not been created in the garden of Selcuk University Faculty of Medicine hospital. Additionally, there are no areas where people using the garden can do physical exercise. For this reason, it can be said that there are no places for physical movement in the hospital garden.

Evaluation of the Vegetative Landscape Design of Selcuk University Faculty of Medicine Hospital Garden Balance

In the garden of Selcuk University Faculty of Medicine hospital, the principle of balance is achieved with various plant designs. In Figure 7, the balance principle applied with *Lavandula angustifolia* (Lavender) and *Robinia pseudoacacia 'Umbraculifera'* used on both sides of the road is given as an example. This design which features symmetry is balanced.

Repetition

In the garden of Selcuk University Faculty of Medicine hospital, the principle of repetition is achieved with various plant designs. In the example in Figure 8, the principle of repetition was applied by creating a repeating design with the plants *Lavandula angustifolia* (Lavender) and *Prunus cerasifera 'Pisardi Nigra'*.

Emphasis and Sovereignty

The principle of emphasis in the garden of Selcuk University Faculty of Medicine hospital was tried to be achieved through plants, water elements and sculptures. In the example in Figure 9, the emphasis principle was used with the color effect of *Acer platanoides 'Crimson King'* (Maple with red sycamore leaves). Evergreen coniferous plants were used as the dominant species in the hospital garden. Especially *Pinus nigra* (Black Pine), *Cupressus arizonica* (Arizona Cypress) and *Cedrus libani* (Lebanon Cedar) are the dominant species.



Figure 8. Example of repetition principle in the garden of Selcuk University Faculty of Medicine hospital



Figure 9. Example of emphasis principle in the garden of Selcuk University Faculty of Medicine hospital

Contrast

In the garden of Selcuk University Faculty of Medicine hospital, the principle of contrast is achieved by using plants used together in different colors and sizes. In the example in Figure 10, the principle of contrast is realized with the plants *Salix babylonica* (Willow) and *Lavandula angustifolia* (Lavender).

Simplicity

The use of plants irregularly and intertwined in the designs made in a part of the garden of Selcuk University Faculty of Medicine hospital caused the garden to move away from the principle of simplicity. The designs created with plants in many parts of the garden are complex.

Proportion

An appropriate balance has been achieved in terms of area, mass and volume in the Selcuk University Faculty of Medicine hospital garden. Trees, shrubs, grass and flowers were used in a certain proportion.



Figure 10. Example of the principle of contrast in the garden of Selcuk University Faculty of Medicine hospital



Figure 11. Example of variety principle in the garden of Selcuk University Faculty of Medicine hospital

Table 1. Evaluation of the Structural Landscape Design of Selcuk University Faculty of Medicine Hospital Garden

Structural Landscape Design	Suitable	Not suitable
1- Entrances		X
2- Orientation	√	
3- Car park	√	
4- Reinforcement Elements	√	
5- Uses for Disabled People		X
6- Physical Movement Spaces		X

Table 2. Evaluation of the Vegetative Landscape Design of Selcuk University Faculty of Medicine Hospital Garden

Vegetative Landscape Design	Suitable	Not suitable
1. Balance	√	
2. Repetition	√	
3. Emphasis and Sovereignty	√	
4. Contrast	√	
5. Simplicity		X
6. Proportion	√	
7. Variety	√	
8. Hierarchy		X
9. Unity		X

Variety

Although there are the same plants in the garden of Selcuk University Faculty of Medicine hospital, this principle has been achieved by the juxtaposition of different species. In the example in Figure 11, the variety principle has been created with *Lavandula angustifolia* (Lavender), *Acer platanoides* "Crimson King", *Picea pungens glauca* (Blue Spruce), *Prunus cerasifera* "Pisardi Nigra" and grasses.

Hierarchy

In the vegetative design of the hospital garden of Selcuk University Faculty of Medicine, designs were not made in accordance with the principle of hierarchy.

Unity

The structural and vegetative elements in the design of the Selcuk University Faculty of Medicine hospital garden could not come together to create a balanced unity. The elements in the space could not complement each other and become a whole.

Conclusion and Recommendations

Conclusion

When the structural landscape design applied in the garden of Selcuk University Faculty of Medicine hospital was examined, it was noted that the garden entrances were

not created considering sufficient criteria. Additionally, it has been observed that there are almost no uses for disabled people and that appropriate designs for physical movements are not made (Table 1). When the vegetative landscape design applied in the garden was examined, it was revealed that the vegetative design was made without considering the principles of simplicity, hierarchy and unity (Table 2).

Recommendations

Although the equipment elements in the garden of Selcuk University Faculty of Medicine hospital are generally sufficient, it has been determined that there are no lighting elements at the entrances of D and E blocks and around the children's playground and seating areas. Lighting systems that will increase the usage time of the area in the evening and ensure the safety of the users should be placed in the area. The existing lighting system in the area is insufficient (Benliay and Soydan, 2021). Additionally, a more effective landscape design can be made in the area by increasing the number of water elements and artistic objects. Trees that provide shade should be used in outdoor seating areas. Broken and neglected floors were found in the garden. These floors need to be maintained and repaired regularly. Thorny and poisonous plants should never be used in floral designs in children's playgrounds.

The garden should be used for disabled people, ramps should be built in accordance with standards, and tactile surfaces should be used as flooring. Plant designs in the parking lot are insufficient. Trees that provide shade should be included in the parking lot.

Since there are many faculties, food and beverage areas and dormitories around the hospital garden, the plant design of the garden should be screened with plants to prevent noise, thus reducing the noise. Allergic conditions should also be considered when planting. It was determined that allergenic plants such as *Populus alba* (White Poplar) were used in the hospital garden. Such plants should never be used in the field. To minimize allergies, female plants should be used and maintenance work such as pruning should be done regularly. Plants with strong scents should also be avoided.

The structural and vegetative landscape design in the garden of Selcuk University Faculty of Medicine hospital should be reconsidered, taking these suggestions into consideration.

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