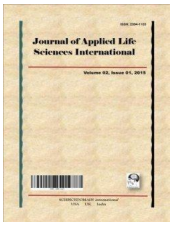

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Landscape Preference Evaluation for New Hospital Model in Turkey: Case Study of Isparta City Hospital's Garden

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Authors' contributions

This work was carried out in collaboration between both authors. Author CKS designed the study, performed the site analysis, wrote the research protject and wrote the first draft of the manuscript. Author SYO managed the analyses of the study, performed the site analysis and the literature searches. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: The aim of the study was to evaluate landscape preferences in a newly built hospital's garden (Isparta City Hospital) and comprehensive observations and suggestions of that subject.
Study Design: Relevant literature information's and documentation were utilized for the evaluation of this hospital design approaches and applicable recommendations given in view of landscape architecture discipline.
Place and Duration of Study: This study was conducted November 2017 through May 2018 in Isparta city, Turkey.
Methodology: The detailed information's were undertaken from site visits. However, besides site observations, aerial photographs, face to face interviews with project staff were conducted and evaluations were made under the landscape architecture design criterias. Moreover, relevant literature information's for the hospital design to meet the need for preliminary functions and

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applicable design recommendations utilized. An evaluation sheet prepared and conducted for assessment of the hospital garden and open spaces.

Results: The Isparta City Hospital is contained many complex buildings that have a significant impact on the patients, staff and environment of the surrounding community. It has realised that familiar and culturally relevant materials have been preferred wherever consistent and other functional needs. However, the hospital complex has a design to promote staff efficiency by minimising the distance of necessary travel between frequently used spaces with the aim of lowering the costs of delivering healthcare and improving staff satisfaction. It is clear that newly planted, trees, shrubs will be grown and more colourful and greenery garden environment visible in near future for Isparta City Hospital's gardens.

Conclusion: The hospital was built almost the centre of the Isparta city and designed to accommodate all the hospitals in this area. Due to the newly built complexes, there have not multicoloured texture observed in the outer part of the complex. It is important that the garden has been easily accessible to patients and the paving surface has wide enough to accommodate wheel-chairs and gurneys. In terms of plant materials, it has been seen that the green areas were adequate for the functional and aesthetic way. Since the hospital's land has covered with pine trees earlier, the existing structure continues to be maintained in the sense of design. As the stone pine (*Pinus pinea*) and black pine (*Pinus nigra*) species are concentrated in the vicinity of the hospital while there has not many places for broad-leaved trees and thirst-resistant ground coverers that should be preferred.

Keywords: Isparta City Hospital; garden; open space; landscape design; plant design.

1. INTRODUCTION

As a result of population growth and technological developments, a growing awareness has developed in recent years in the healthcare community to create functionally efficient environments that also have stress-reducing characteristics. In this sense, the medical science caused hospital administrators and architects to concentrate on creating healthcare buildings that would reduce discomforts and serve as functional settings for new medical technology [1].

Generally, hospitals are very complex building types and those are comprised of highly complicated operational systems with various services and functional parts such as; diagnostic and treatment units, emergency rooms, surgery services, or bed-related units. However, each of these requires specialised knowledge and expertise. In this regards, the design and construction of hospitals are very costly and required expertise for well-planned buildings [2]. Hence, the hospital design process especially gardens could be incorporated with hospital staff, patients, visitors, support staff, and suppliers [3].

Numerous studies have already conducted for determining effects of gardens on patient's healthcare. These studies clearly show that simply looking by patients at hospital surroundings where dominated by greenery, flowers, or landscape objects as compared to lacking nature (buildings) has significantly more effective in promoting recovery or restoration from many disorders [3-8]. Hence, it has established well that viewing nature setting with plants or other nature in even very short time (i.e. few minutes) beneficial for patients in healthcare environments and could promote some restoration [8,9]. Many studies on the healing effects of nature scenes on patients and staff in a hospital environment have already conducted by Ulrich. He has consistently reported that hospital garden's restoration effects have been manifested within a combination of emotional and physiological changes of patients resulting elevate positive feelings (calm) and restore in many body activities [8,10-13]. The similar results have also reported by other researchers [3,5,7,14].

It was propoed that users of a children's hospital garden disliked and avoided areas having a high percentage of concrete ground surface and/or starkly built features. It had recommended that the garden should have more greenery and less concrete for children's hospital [15].

Although many studies have already described general guidelines regarding design directions for creating successful healthcare gardens [2,5], there have limited results reported for design approaches and specific environmental characteristics affect. However, based on

landscape practices, the hospital gardens could include many plants and less hardscape, in order to become more effective in promoting health restoration. In general, well-designed greenery or colourful gardens are preferred for patients and medical staff of hospitals.

However, there has not any research found in the literature for new type hospital design practices for new Turkish healthcare system called 'City Hospitals'. In this regards, the study was conducted to evaluate some important issues and comprehensive observation was to evaluate in that newly built hospital's garden under the view of landscape architecture discipline.

2. MATERİALS AND METHODS

The main focus of this research was a case study on Isparta City Hospital's garden design specifications under landscape architecture discipline, in the Isparta city, Turkey. However, this hospital is carrying a new type of construction model and called 'City Hospitals' that served not only the city centre or its districts but also near and different cities as well. This hospital is located the centre of the city with a coverage area of 222.571 m² and has been classified as a big size hospital type with considerably large open space and garden areas [16].

Isparta city is located in the lakes area of the Mediterranean region, surrounded by Afyonkarahisar in the north, Burdur in the west, Antalya in the south and Konya cities in the east. The land area of the Isparta is 8.993 square kilometres and population of the city centre is approximately 225.000 (as of 2010). It is classified as a middle sized city and elevation from sea level is 1035 m [17].

The main economic activities of Isparta city are forest industry and agricultural products. Former Prime Minister and also President of Turkish Republic Süleyman Demirel were born near here; so many buildings, constructions and University are named within his name.

This study was conducted November 2017 through May 2018, and its goal was to investigate some benefits of new type hospital design practices in Isparta city, Turkey by evaluating a number of case studies. For this purpose, in order to reveal and analysed the patterns of use, traffic flow and user activities, was observed throughout the day for a total of eight hours a day. However, the aim of this study is not to propose theories of how or why hospital gardens are therapeutic, but to discover which specific elements and design specifications could be a benefit for patients, staff and other visitors to hospital gardens. Although some valuable fundamental information provided on hospital gardens, there have not comprehensive results was to study on this new type of hospital projects. Hence, the visual and physical information's were undertaken from site visits. Moreover, site observations, aerial photographs, face to face interviews with architectures and engineers were conducted and detailed analyses were made under the landscape architecture design principles and criteria's. The visual analysis of the study area includes;

- Mapping of the physical design features,
- Observations on circulation and orientation of traffic,
- General view properties into and out of the garden,
- Determination aesthetic and spatial elements.

However, some relevant literature information's and documentation were also been utilised to meet the need for preliminary functions in terms of basic design principles of construction and buildings (i.e. hospitals) [16,18-21]. A detailed evaluation sheet for assessment was also utilised for evaluation of hospital garden and open spaces.

3. RESULTS AND DİSCUSSİON

Isparta City Hospital has consisted of a complex four main buildings set in Sanayi neighbourhood of Isparta. It is named for Isparta City Hospital, which one of the newly model rather than conventional hospital system, built in Isparta, Turkey, in 2017. It was a request of local governmental officers, and with plans drawn up by private construction company under authorisation of Turkish Ministry of Health. Fig. 1 shows the general illustrative plan.

It was built on an abandoned industrial land (formerly a carpet factory) located in close to the city centre and there is a bus stop in the entrance to the area. The main entrance is composed of two main blocks (A and B) while the C block is designed for chemotherapy and hemodialysis units and D block is designed for Chief Physician'

administrative offices and Gynecology-Child units.

Some technical information on Isparta City Hospital such as; construction areas, bed capacities, policlinic numbers, parking capacities, etc., are given in Table 1. It could be suggested that the hospital classified as big scale within own 222.571 m² land area with a total of 755 patient bed and 2017 car parking capacity.

However, it has already well predicted that the relaxing and therapeutic benefits of a hospital and its near environments could be enhanced with using a colorful variety of plant materials, engaging the eye to explore textures and colours while in the garden [5,7,10].

Due to the new constructed hospital building, the garden was not very green while the overall buildings have a blue with attractive views and could also be enjoyed by people walking around blocks. The main entrance is very close to public bus station and it's underground parking lot while the emergency entry is opposite side of the main building that planned to easy accessibility for ambulances. Fig. 2 shows general views of the hospital and its near environments with some interconnected units.

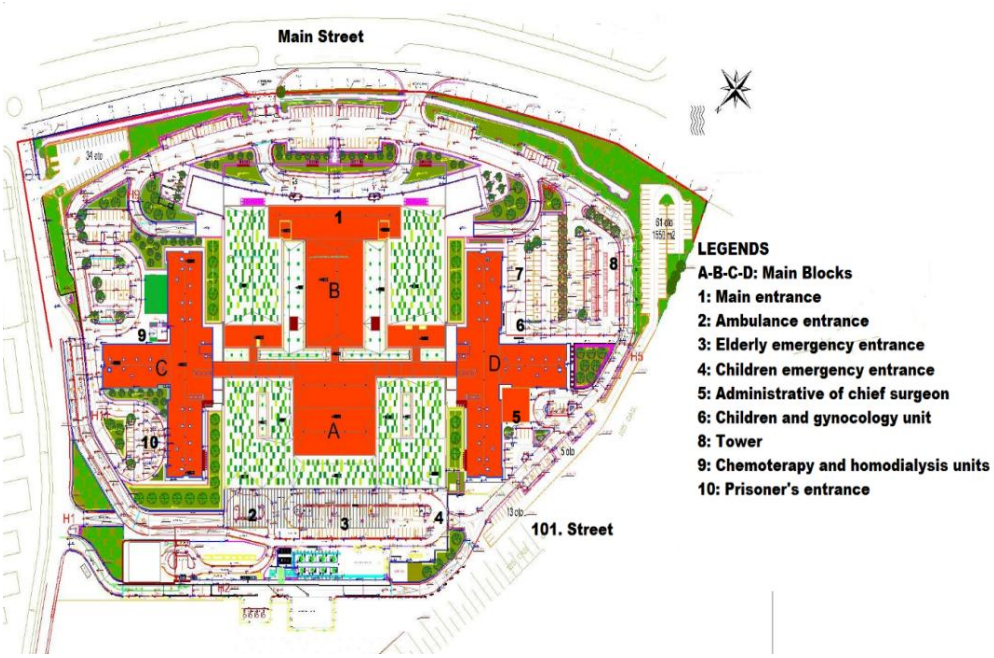

Fig. 1. The isparta city hospital's illustrative plan

Table 1. Some technical information's on isparta city hospital [22]

	Quantity	Unit
Total construction area	222517	m²
Diagnosis, treatment and room area	163409	m²
Indoor parking area	59162	m²
General hospital bed capacity	453	Piece
Maternity and children hospital bed capacity	302	Piece
Total bed capacity	755	Piece
Total outpatient clinics	167	Piece
Total operating rooms	20	Piece
Operating rooms	14	Piece
Daily operating rooms	3	Piece
Birth delivery operating rooms	2	Piece
Total indoor and outdoor parking capacity	2017	Piece

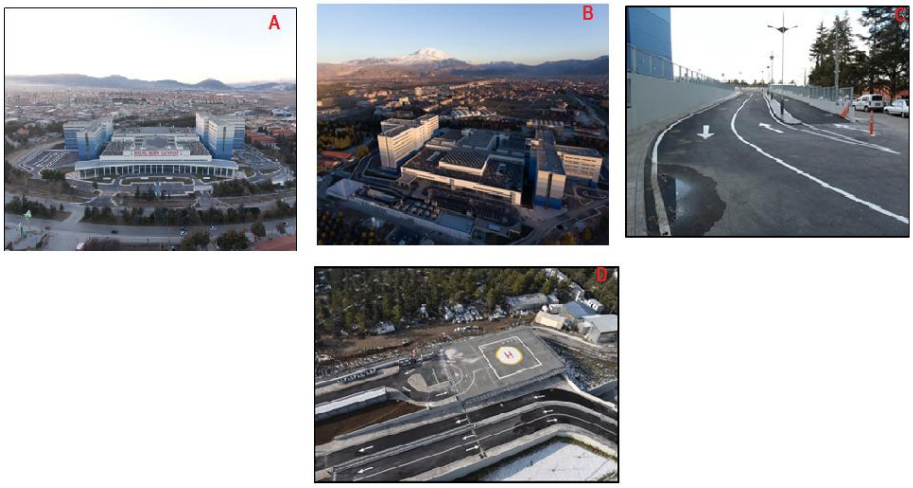

Fig. 2. General views of the hospital and its near environments
(A: Main entry path to buildings, B: Emergency entrance, C: Ramp, D: Helicopter runway)

The transportation and logistics systems are directly influenced by the building configurations. However, the hospital configuration is also influenced by site restraints and opportunities, climate, surrounding facilities, budget, and available technology. It is also very important to some arrangements for disabled persons. Fig. 3 shows some transportation and parking arrangements for disabled persons. It has already observed that there was not any cramped traffic for inside hospital circulation and some well-organised ramps, parking lots and pavements for disability patients or staff. The surface cover elements, pavements, bump and parking lots look like enough for size and quantity.

Fig. 4 shows the specially designed open areas close to a hospital entrance. However, these areas that close to a hospital entrance could provide a pleasing image on entering hospital environment (Fig. 4A). In this regard, these places could be easily visible and accessible. But some hard pavements were observed between the main blocks. This area, which is located on the floor where the technical unit and the dining hall are located, could be used as a breathing and resting area for the hospital employees

Fig. 3. The entrance arrangements for disabilities (A: Ramp to the entrance for the main building, B: Emergency entrance for ambulances, C: Specified parking area, D: Download location, E: Inclined pavements)

thanks to the step stones and the green area that are created and used as a different type of roof garden designs (Fig 4A-C). The green areas beside the bicycle paths are the facilities that could be used for resting and playgrounds (Fig. 4D). The open parking capacity looks enough for the hospital (Fig.4E). It was clearly observed that these special design and well planned open spaces could make positive effects that might otherwise have been paved for parking. It could also be used by ambulatory patients who want to see a little action near the main entrance. But it is important to note that without sensitive planting, this might be not sufficient to nearby parking and entry road.

Fig. 5 shows the garden design and plant arrangements throughout the hospital area. As mentioned above, due to new construction, a limited range of greenery colours are visible. The location of the hospital had a natural plant cover composed of black pine trees that were tried to be preserved and the project was designed with them (Fig. 5H). Due to the fact that the species are located around the hospital, it has been tried to ensure that the landscaping could be observed in all seasons by using more leafy trees. However, some movable pots with *sedum species*, on the terrace, allow the use of the terrace by humans and usable areas were created (Fig. 5A). There are inner courtyards in the interstices that connect the main buildings (Fig. 5B-E). Moreover, these areas, which are mostly sunshades and half-shaded areas among the blocks, are capable of providing night and day utilisation for hospital staff and visitors. It has also visible different green roof application symmetrically at the front of the main entrance. In here, ready grass rolls were used instead of floor coverers or a different planting option (Fig. 5J and K). Some green corners were well designed (Fig. 5F, G, I), those who want to be completely alone and surrounded by nature to enjoy this space more fully for users. In the between blocks, leafy trees and edges were preferred. The aromatic plant of *Lavandula angustifolia* (Lavender) has been found in those places (Fig. 5B-E).

The hospital gardens have the potential to improve medical outcomes and health satisfaction that are notably increasing. The many studies suggest that calm or ameliorate stress effectively improve if gardens contain verdant foliage, flowers, water, trees, greenery, flowers, nature sounds (birds, breezes, water), and visible wildlife (e.g. birds) [4,8]. The detailed observations have been done on Isparta City Hospital's Garden and the lists of utilised plants are listed in Table 2.

Fig. 4. Some resting areas in hospital open spaces (A: Resting area just front of main entrance, B: Some resting units in hospital garden, C: Open spaces near resting area, D: Bicycle way front of main entrance, E: Open parking area)

Fig. 5. Garden design and plant arrangements inside hospital garden area (A: movable pots; B, C, D, E: Courtyards in the interstices that connect the main buildings, F, G, H, I: Green corners, Black pine stand, J, K: Main entrance)

Table 2. The plants used in the garden of isparta city hospital

Common name	Botanical name	Common name	Botanical name
Trees			
Black pine	*Pinus nigra*	Sugar maple	*Acer saccharinum*
Stone pine	*Pinus pinea*	Maidenhair tree	*Gingko biloba*
Lebanon cedar	*Cedrus libani*	Cherry plum	*Prunus cerasifera*
Ash leaf maple	*Acer negundo variegatum*	Tulip tree	*Liriodendron tulipifera*
Catalpa	*Catalpa bignonioides*	Little leaf linden	*Tilia cordata*
Judas tree	*Cercis siliquastrum*	staghorn sumac	*Rhus typhina*
Japanese privet	*Ligustrum japonicum*	Rose Meiland	*Rosa meilland*
Snowball	*Viburnum lucidum*	Franchet's cotoneaster	*Cotoneaster franchetti*
Oleander	*Nerium oleander*	Sage	*Salvia officinalis*
Box Honeysuckle	*Lonicera nitida*	Russian olive	*Elaeagnus x ebbingei*
Bee blossom	*Gaura lindheimeri*	Dusty miller	*Senecio cineraria*
Glossy Abelian	*Abelia grandiflora*	Mock orange	*Pittosporum tobira*
Lavender	*Lavandula angustifolia*		
Ground cover plants			
White Stonecrop	*Sedum album*	October stonecrop	*Sedum sieboldii*
Reflexed Stonecrop	*Sedum reflexum*		
Plants in pots (Ground cover plants)			
Gold moss Stonecrop	*Sedum acre*	Ice plant	*Sedum spectabile*
Spanish *Stonecrop*	*Sedum hispanicum*	Two-row Stonecrop	*Sedum spurium*
Pale Stonecrop	*Sedum pallidum*		

Table 3. Overall evaluation of Isparta city hospital

Factors	Availability	Qualification	Functionality	Aesthetic
Provision of continuity of borders and siege elements	*	+	+	+
Children's playground	N/A	N/A	N/A	N/A
Orientation	*	+	+	–
Contribution to urban green space development	*	+	+	+
Providing functionality	*	–	+	–
Lighting	*	+	+	+
Irrigation	*	+	+	–
Conservation of environmental character	*	+	+	+
Continuity between locations	*	–	+	+
Perceptibility	*	+	+	+
Equipment Elements	*	–	–	–
Comfort	*	–	–	–
Physical accessibility	*	+	+	+
Entrance and related units	*	+	+	–
Rehabilitation garden	N/A	N/A	N/A	N/A
Car parking lots	*	–	+	+
Emergency route	*	+	–	+
Identification	*	+	+	+
Warning and direction signs	*	–	–	–
Sports facilities	N/A	N/A	N/A	N/A
Use for disabilities	*	+	–	–
Create a symbol	*	+	+	+
Providing an inside-outside relationship	*	–	+	–
Providing continuity of urban touch	*	–	+	+
Pool and water element	N/A	N/A	N/A	N/A
Seating units	*	–	–	–
Plant material	*	+	+	+
Ornamental plants	*	+	+	+
Floor	*	+	–	–
Visual axis and perspective creation	*	–	–	–
Jaunt way	*	–	–	–
Protocol-prestige way	N/A	N/A	N/A	N/A
Visual accessibility	*	–	–	–
Effective landscape	*	+	+	+
Designing in different planes	*	–	–	–
Capture the human scale	*	+	+	–
Usability of objects	*	–	+	+

(: yes; +: appropriate; -: not appropriate)*

Hospitals should have certain common attributes and well-organised hospitals could provide calming and pleasant nature views, reducing stress and improve social support [8]. All hospital staff could be used gardens as an effective means for achieving a restorative pleasant escape from work stress and aversive conditions in the hospital. However, the presence of nature such as; indoor and outdoor gardens, plants, window views of nature, positively affects both patient and staff satisfaction and the overall quality of care could be improved [5,15].

There are some methods that have been frequently used for quantitatively evaluation design specifications of specific places including hospital gardens in landscape architecture discipline. In this regard, an overall evaluation

sheet for Isparta City Hospital was prepared (Table 3) with using some former literature findings on a similar subject [18,23].

4. CONCLUSIONS & RECOMMENDATIONS

Hospitals are 7/24 busy buildings. However, landscape designs made in these specific areas must be functional and useable every hour of the day. Moreover, the garden and near environments should be organised for a sense of security, serenity, and safety with defined seating areas and easily readable pathways for physically ill people.

In this study, the garden of Isparta City Hospital was examined in accordance with the landscape architecture criteria's. The following recommendations have emerged from the case studies and from additional brief critical evaluations of hospital exterior areas. The recommendations/suggestions are broadly summarised in two main groups. These are briefly given in below.

A. Locational, Site Planning, and Way-Finding Recommendations

- The hospital complex is built almost centre of the city and designed to accommodate all the hospitals in this area. Although the roads and junctions around the hospital were expanded during the project phase, there will potentially be a serious traffic problem because the main entrance is very close to the bus stop and the underground car parkway, the ambulance entry and service route are given. Therefore, these roads should be carefully reconsidered. If necessary, it should be rearranged.
- The hospital has standard ramps and parking spaces for accessibility of the disabled persons. However, no park arrangement has been observed and there might be a problem for all parking facilities for staff, visitors and patients during crowded hours. In this respect, parking directional rearrangements should be made.
- Due to the newly built complexes, there is no multicoloured texture observed in the outer part of the hospital. Because there are high-stress environments for healthcare facilities, staff and patients, a colour contrast should be applied to the interior to facilitate the feeling of *"getting away"*.
- It is important that the garden is easily accessible to patients and the paving surface is wide enough to accommodate wheel chairs and gurneys. It was found that entry lawn or landscaped setback from the main treet was not appropriate.
- A standard helipad was built at the southern corner of the hospital complex, which was closed to human access. However, since there is a pavement passing through the runway, it needs to take necessary safety precautions for people at helicopter landing-departure times.
- There are some hard floors among the hospital blocks. However, these large areas should be surrounding with greenery plants and may create various shapes.
- There is a cycling road which runs along the symmetry of the main entrance but does not surround the hospital completely. However, it should be better to surround the hospital cycling road for enjoying bicycling.
- In the hospital's gardens or open spaces, sports fields should be included, especially to meet the recreational needs of hospital personnel. However, this practice is not available for Isparta City Hospital.
- When children are willing to spend time outside, children's playgrounds should be established in the hospital's exteriors so that child control can be easily ensured. However, children's playgrounds are not available. But, the large green areas beside the bicycle paths are the places that may be used for relaxation and for children's playgrounds.

B. Planting, Aesthetic, and Maintenance Recommendations

- In terms of plant materials, it is seen that the green areas are adequate for the functional and aesthetic way. Since the hospital's land was covered with pine trees earlier, the existing structure continues to be maintained in the sense of design. As the stone pine (*Pinus pinea*) and black pine (*Pinus nigra*) species are concentrated in the vicinity of the hospital while there was not much place for broad-leaved trees, and thirst-resistant ground coverers that should be preferred in that areas.
- It was revealed that lack of knowledge about the existence of a garden space was

one of the important factors in effective utilization. Since there have likely to be multiple users (staff, inpatients, outpatients, visitors), with a various range in ages, including children, it should include varied outdoor type spaces including front porch, roof garden, courtyard, etc. and design of these structures should be carefully made.

- The open spaces around the emergency entrance were arranged with slope-retaining plants against the possibility of landslides. However, different green roof application has seen symmetrically at the front of the main entrance and ready grass rolls were used instead of floor coverers. The use of aromatic plants including lavender (*Lavandula angustifolia*) has been suggested to be well choices.
- The open spaces around the main hospital blocks are often used by hospital staff, patients and visitors. However, intense planting in these areas probably reduces the effect of wind and noise. But some of those spaces were quite small and the other rest areas were insufficient for activities such as sitting, eating and drinking.
- At the end of the hospital's main entrance blocks, the recreational areas, which are located symmetrically, were designed according to the needs of patients, visitors and hospital personnel. These are consisting of benches and garbage cans that the sun can be most benefited from. For this reason, they are located in the right places.
- Since the broad-leaved plants used in the field have not yet large enough, therefore no shade is provided at this time. However, among blocks which are mostly sunshine, semi-shadow areas are capable of providing a resting area for hospital staff, visitors and patients all day.
- The garden and the blue building interactions seem to have been designed for people to relaxing at look around and preventing distractibility of staff and enjoy at eating, or talk with colleagues while in the garden. Moreover, the open spaces and gardens are enough away from the buildings and easily visible from room windows that the privacy of neither space is compromised.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Huisman ER, Morales E, van Hoof J, Kort HSM. Healing environment: A review of the impact of physical environmental factors on users, Build. & Env. 2012;58:70-80.
2. McKee M, Healy J. The role of the hospital in a changing environment. Bulletin of the World Health Organization. 2000;78:803-810.
3. Sahin CK, Gul A, Orucu AK, Eraslan S, Akten S. Investigation of design principles and users demand for hospital gardens: Case study of Egirdir-Turkey. British J. Pharm. Res. 2016;11(5):1-9.
4. Marcus CC, Barnes M. Gardens in health care facilities: Uses, therapeutic benefits, and design recommendations. The Center for Health Design Inc, Wayne Ruga, AIA, IIDA. 1995;76.
5. Marcus CC, Barnes M. Healing gardens: Therapeutic benefits and design recommendations, John Wiley and Sons, Inc. New York; 1999.
6. Petros AK, Georgi JN. Landscape preference evaluation for hospital environmental design. J. Env. Protec. 2011;2:639.
7. Stigsdotter A. Landscape architecture and health. Evidence-based health-promoting design and planning. Doctoral thesis. Swedish University of Agricultural Sciences, Alnarp, Sweden; 2005.
8. Ulrich RS. Effects of gardens on health outcomes: Theory and research. In: Cooper-Marcus C, Barnes, (Eds). Healing gardens: Therapeutic benefits and design recommendations. John Wiley & Sons. New York. 1999;27-85.
9. Karakaya B, Kiper T. Investigation of hospital outer space design in Edirne City,

(Turkish, Abstract in English). J.Tekirdag Agri. Fac. 2011;8(2):49-64.
10. Ulrich RS. Natural versus urban scenes: Some psychological effects. Env. & Behav. 1981;13:553–556.
11. Ulrich RS. Stress recovery during exposure to natural and urban environments. J. of Environ. Psych. 1991;11:210-230.
12. Ulrich RS. Effects of healthcare environmental design on medical outcomes, the therapeutic benefits of design. Dilani A, (Ed), Design & Health. 2001;49–59.
13. Ulrich RS. Health benefits of gardens in hospitals. In Paper for conference. Plants for People International Exhibition Floriade. 2002;17(5):2010.
14. Jonveauxa TR, Battc M, Fescharekd R, Benetosa A, et al. Healing gardens and cognitive behavioral units in the management of Alzheimer's disease patients: The Nancy experience. J. Alzh. Dis. 2013;34: 325–338.
15. Whitehouse S, Varni JW, Seid M, Marcus CC, et al. Evaluating a children's hospital garden environment. Utilization and consumer satisfaction. J. Environ. Psyc. 2001;21:301-314.
16. Özkurt SY. Hastane bahçelerinde peyzaj tasarımı: Isparta şehir hastanesi örneği, Msc. thesis,(Turkish, Abstract in English) SDU, Graduate School of Natural and Applied Sciences, Dept. of Landscape Architecture, Isparta. 2018;78.
17. Anonymous. T.C. Isparta Valiliği, Reach Date; 2017.
Available:http://www.isparta.gov.tr/
18. Şişman EE, Korkut A, Etli B. Tekirdağ valiliği tören ve park alanı peyzaj tasarım süreci, (Turkish, Abstract in English) Tekirdağ Ziraat Fakültesi Dergisi. 2008; 5(2):119-129.
19. Başal M, Özdemir A. Sürdürebilir peyzaj tasarım yaklaşımları (in Turkish), AÜ Ziraat Fakültesi Yayını, Yayın No: 1563, Ankara; 2008.
20. Uzun G. Peyzaj konstrüksiyonu (in Turkish), Çukurova Üniversitesi Ziraat Fakültesi yayın no: 256, Adana; 1992.
21. Uslu A, Kiper T, Baris ME. Public health urban landscaping relationship and user's perceptions. Biotech. & Biotech. Equip. 2009;23(3):1399-1408.
22. Anonymous 2. TC. Sağlık bakanlığı yatırımları genel müdürlüğü. Reach Date; 2017.
Available:http://www.saglikyatirimlari.gov.tr/TR,38106/isparta-sehir-hastanesi.html
23. Sakıcı Ç, Celik S, Kapucu Ö. Evaluation of landscape designs of hospital gardens in Kastamonu, (Turkish, abstract in English). SDU Faculty of Forestry J. 2013;14:64-73.

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