

The landscape of Hospitals Areas Continuity of Treatment

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Abstract | The new approaches to solve the problems in treatment sector, have led to the introduction of other complementary sciences, especially landscape architecture. Today, in the great majority of developed countries, hospital areas are considered as part of the treatment process and rather than the past, they are not recognized as a remaining and negative space among other buildings. By inspiring a therapeutic rule to the areas, set of the buildings and hospital areas as a complementary space, serves the purpose of providing therapeutic goals. By examining the problems of some existing hospitals and their sites some questions are asked. For example, what are the aspects of the landscape design of curative spaces? What are the approaches for the designing of hospital areas in developed countries? Researches show that being involved in nature and engaging with it improves the health of patients greatly. It also provides a suitable space for employees to relax and interact which can reduce medical errors. In this study, the functional characteristics of the healing and medical areas are studied and Imam Khomeini hospital has investigated as case study and also Sydney and Lois eskenazi hospital in the United States as external cases. lastly this conclusion is drawn from the article that consideration of the hospital facilities and their design as an important area in the treatment process should be placed on the agenda of the authorities by applying healing aspects of the therapeutic areas to maximize the functional utility.

Keywords | Healing Gardens, Curative Landscape, Social Interactions, Designing the Landscape of Hospital.

Introduction | Today, the issues and complexities in the health and treatment sector have led to the introduction of various specializations in this section. And the sciences, such as social psychology, architecture and environmental design, landscape architecture, economics and medicine, tourism, and even ethics, have been helping to strengthen the healthcare system. By examining the problems of existing hospitals and their sites some questions will be raised, including how can hospital areas improve the treatment process? How can healing scenes be created in the landscape design of hospitals? Nature has always been recognized as a desirable resource for mankind. Healing gardens have a very long history. With the passage of time and increasing the hard levels of cities and mechanization of space, the need for nature is felt more than ever. In the meantime, hospitals have been neglected by authorities as one of the most important urban areas associated with human health. It seems that combining nature and landscape design knowledge in hospital areas, the quality of the spatial landscape of the hospital has increased and the level of satisfaction of patients and staff is increased. In this context, the leading health centers have begun appropriate practices to address some of their issues. But in our country, the problems of hospital areas become more acute and if do not provide the right solution; they can become part of the main challenges of the Ministry of Health, Medicine and Medical Education in the future.

Problem Statement

Every day, large hospital centers host a large number of countrymen who go to these hospitals for their treatment and also for their relatives and they face many problems.

Since the arrival of patient and its relatives to the therapeutic centers, problems began and in addition to injuries and monetary costs, impose irreparable mental damage to them. The confusion about finding and referring to different parts of the hospital and the uncertainty of the patient's companions and their passing problems disturb the order of the hospital's premises (Pic. 1). These issues cause mental tensions in patient and its companions. In addition to increase expenses, it makes a disturbance in the hospitals performance and also surrounding streets also cause a lot of psychological damage to them and increase the period of patients' improvement. In addition, other problems in the hospital areas including lack of green space and rest spaces, inappropriate furniture and disorientation in walking, as well as inconsistent elements and the conversion of the area to car parking, all are rooted in the type of the approach to the hospital's premises as an inadequate space in design and management of hospitals. A quick glance at hospitals and health centers shows that the majority of centers do not use it in a suitable way, in spite of having wide space. Although the main reason for it is the lack of a proper attitude to the hospital areas, but tricky interventions made by non-specialists and the neglect of the importance of these spaces create more problems, which increases the material and spiritual costs.

Background to the Treatment Landscape

The human tends toward nature inherently and human finds peace along with it. This attention from the past has attracted the attention of architects and builders in the design of spaces. There have been healing gardens in ancient Egypt to escape from the adverse environmental



Pic 1: Disturbance of the status of patients' companions. Photo: Arash Zahedan, 2016.

conditions. The quality of the design and selection of plants in the monastery and medieval gardens was elaborate and relieved the pain of the patients (Nikbakht, 2004: 79). Subsequently, in the 1900s, the landscape in hospitals was largely overlooked due to the advancement in medical engineering and technology, and the lack of consideration of the positive effects of natural environments on mood creation and coping with diseases (Ulrich, 2002). The trees in the sites sacrificed for cars and parking lots, and there was a very low understanding and perception of the ancient knowledge of nature and its therapeutic effect.

After 1950 and the end of World War II, the return of physically and mentally retarded soldiers to the rehabilitation centers and hospitals, the more attention was paid to the gardens. Such spaces were more likely to be planned to improve the movement of patients who had physical and mobility disabilities, as well as to create a good mood for them. In 1984, Roger Ulrich's studies showed that the window toward the nature had a positive effect on the health of patients. In this study, patients who recovered from gallbladder surgery, having a bed with a tree view, compared with patients who had only a brick wall perspective, had fewer complications after surgery, consumed fewer doses of analgesics, and the time to return to the home was faster for them, so that the hospital stay ranged from 8.7 to 7.96 days (Cooper Marcus, 2012).

Thus, since the mid-1990s, United States hospitals began to add a garden to the hospital space, and in 1994, for the first time, the systematic post-occupational assessment (POE) of hospital areas began in The United States (Cooper Marcus & Bornes, 1995). In this research, spaces within the gardens include a space for relaxation, eating, talking, walking, treating, waiting, meeting, playing and important appointments. Participants in this study responded to the question about how you felt after having spent time in nature, who responded in a way that they have had more relaxation, stronger mindset, ability to thinking, dealing with more problems and stronger positive emotions, and only 5% of the participants did not feel the change. (Ibid) As discussed earlier, interaction with nature leads to a sense of regeneration and relieves nervous tension. When the nature attracts the attention of individuals, the executive system that controls the guided is resting, and negative thoughts give way to positive thoughts.

Existing of natural and artifacts factors (flowing water and bird songs), and inhaling the odor of plants and flowers, taste and tactile stimulants, affect five senses, and concentrating on it, can be effective to reduce the stress.

Experience has proven that if people, especially patients, spend about three to five minutes precisely in nature for a long time, this interaction with nature reduces their stress greatly and has a significant impact on reducing their anger and fear (NAZAR Research Centre Consulting Engineers, 2016: 32).

Healing gardens can be divided into three categories in terms of location:

- 1) Hospital
- 2) General
- 3) Private (Nikbakht, 2004: 79).

In this article we refer to hospital healing gardens in general as a therapeutic landscape, meaning that healing areas are provided at the same time as the conditions for the patients to improve, are more suitable for physicians and hospital staff and reduce the stresses of the patient, fellows and employees and the treatment process and increase quality. Landscape design dimensions of hospital areas

The general principles that should be considered in the design of healing gardens are:

1. Stimulation of sensory sensation: With the help of five senses, human communication with the environment and the landscape provides an excellent opportunity for experience. The axes of a therapeutic landscape stimulate the senses of audience and ultimately it balances the five senses. The garden should stimulate user's emotions and stimulate one or all of the user's senses.

Eyesight: The first sensation that is stimulated is the sense of sight. Decades of research have shown that color affects thoughts, performance, health and even human relationships. There is no best color for healing, and the choice of color is completely dependent on the person (Nikbakht, 2004: 79). It is more important to stimulate this feeling in the medical environment, because in these spaces, many users are only connected to nature by being hospitalized through this sense of nature.

Olfaction: Some fragrances create a special feeling in humans. The idea of aromatherapy also comes from this issue. The smell of plants can also contribute to create a sense of a calm in humans, which is dependent on the individuals and their needs.

Taste: This is most often achieved through the planting of fruit or vegetable, which is most commonly used for the specific gardens.

Tactile: This topic is studied very little in gardens. Some things like the skin of some trees, such as gooseberries or leafy plants, can help this issue.

Hearing: Water is an excellent element for creating sound in the garden. Sound can give a new dimension to the garden and create a positive state.

Studies have shown that viewing natural landscapes (visual stimulant) and exposure to natural elements (tactile, smell, and audible stimulants) can reduce psychological stressors and increase biological well-being, and also it improves internal anxiety. (Soltanzadeh & Indigo, 2012: 65).

2. Readability: The treatment landscape should be easily understandable. The space around should be clearly defined and its input and output will be known. The user should be able to move in the designed space easily. Also,

measures are needed for the users with motion problems (Nikbakht, 2004: 81).

3. Providing comfort and relief to users: The treatment landscape should be a pleasant place to escape from the outside world and make it relax.

4. Flexibility and diversity of spaces: The diversity of spaces gives the audience the opportunity to have different experiences. Collective or individual spaces of scenery enhance choice (Volker, 2011: 9). The plurality of spaces creates a variety of views for seeing, hearing, and smelling and touching all natural elements that increase a kind of positive emotion and reduce stresses. Variety of furniture and their arrangement makes a space flexible and in addition to provide a necessary space based on its activities and function and privacy, it creates good relations among people in an intimate atmosphere. It should also be remembered that accessible and permeable places are only considered valuable when they can provide a variety of experiences and choices. In fact, the purpose of the variety is to increase the amount of choice (Motalebi & Vajdzanadeh, 2016: 35)

5. Elimination of environmental stressors: such as noise, dazzling radiation, lack of privacy and polluted air (Ibid: 27).

6. Providing social and cultural opportunities: The social dimension is very effective in healing, because healing is a social activity. The concept of community therapy is based on a good social relationship that is shaped by people and plays an important role in healing environments (Ibid). Art therapy has a great influence on the treatment and improvement of patients. Music is one of the simplest and most effective ways to reduce stress in the hospital, especially for patients undergoing surgery. Collective spaces are not merely a place for the presence of patients and their companions, but the staff and the medical team can attend and take moments away from the frustration of the

therapeutic environment to engage with their colleagues.

It controls this small community and creates social relationships, coupled with a relaxed environment, stress for patients and staff, and keeps it an acceptable level (Ibid: 30).

7. Control over the environment: when the patients enter hospital they feel that they have no control over their affairs. The medical staffs are who decides the patient what to wear, what to eat and what time the doctor can see its patient. A tension caused by loss of control of the affairs in the patient has a negative effect on his immune system. One of the main motivations of landscape design in the therapeutic environment is the return of the sense of controlling affairs to the patients. (Pikaji, Nikbakht & Kafi, 2016: 311). Somehow presence in nature makes sense of liberation. Due to the fact that the garden reduces its stress by creating a sense of control over the environment in the patient, it is necessary to be available and the patient will be able to use it, in a way that it wishes to benefit from.

8. Gardening therapy: A series of therapeutic activities through which patients participate in natural environments such as garden, patio or any other space, to speed up their recovery. Because this activity is perceptible, meaningful and enjoyable, it has the obvious therapeutic effects. This approach requires space that can manifest itself within the framework of healing gardens. A theory based on leisure-time theory supports the view that through current gardening activities a set of experiences take place, it is important to improve memory (Saeidi et al., 2015: 629). Advantages of using such spaces in the area of hospitals and rehabilitation centers can be summarized as follows:

A. Patients are able to continue their rehabilitation process at home and in other areas.

B) Such a course of treatment is adaptable to the abilities of different people.



Pic 2: The main building of the hospital, titled Common Ground Source: www.Landezine.com



Pic 3: Therapeutic horticulture at the Eskenazi Hospital Source: www.Landezine.com



Pic 4: Creating Openness and Visibility to the Outline of the Source: www.Landezine.com

(C) Patients are interested to do that. Also, the existence of spaces where patients are working for themselves, it makes a sense of belonging, as a result, patients are more comfortable in that space, and mental and emotional stress is reduced and the treatment process is accelerated. According to the mentioned contents, Imam Khomeini Hospital is studied as an internal case and Sydney Hospital and Louise Scenzia are studied as external examples and architectural design aspects.

Sydney and Lois Eskenazi Hospital

The 150,000-square-foot hospital has 6 buildings and a parking lot in the west of Indiana. This project includes the design of various buildings and the area between the buildings as a common ground (Pic. 2). The main focus and priority is the design of health promotion in all aspects (www.landezine.com).

Designing of this hospital is based on two factors: healing and therapeutic landscape approach. The design of the hospital area follows two general plans. The first plan focuses on the design of gardens and natural elements and

gardening, and the second plan includes social events and incidents to improve patients' well-being. The first plan is a 35,000-square-foot green roof with a therapeutic gardening approach, which includes a space for patients who are responsible for planting and whose products are consumed in the hospital and restaurant (Pics. 3 & 4). This space brings a sense of usefulness and efficiency, and increases life expectancy because of the beneficial use of the products it produces. Hospital design is based on community, relaxation and recovery of patients, companions and employees. According to the designer at the hospital, education and social goals are combined, for example, a health education program for employees and patients is organized on a regular basis, in order to continue the social interaction of patients and other community members. Not separating patients from other people can improve their mental health. There are no walls inside the hospital, and the space is completely clear. Therefore, the sense of being isolated from society and having certain conditions in them is reduced and the ability to cope with the disease increases. The central area between the buildings is designed to hold such cultural events



Pic 5: Readability and hierarchy of the source:
www.Landezine.com

such as morning exercise, artistic performances, and daily marketplaces (Ibid). In the central courtyard of the hospital, with a few simple ideas, readability and spatial diversity and flexibility have been created in environment. For example, a metal scaffolding network located in the center of a common courtyard can be a multi-functional space that includes variety of individual and social activities.

The hospital area includes 6 healing gardens with planting of plants and trees. The complex is surrounded by two large pools which indicate the therapeutic effect of water. The sound of moving water creates a refreshing resonance among the rocks and removes harmful elements, such as disturbing sounds, with the help of the five-sensory plants, and gives the patient a sense of calm.

Moreover, in this hospital, special attention has been paid to designing interior spaces, transparent spaces with visibility. The hierarchy of movement in the area has been well respected. The use of midrange and semi-open spaces is very effective for better communication between the interior spaces and the exterior landscape and their combination and increases the readability of the paths (Pic. 5).

Considering the case study and other examples studied in previous studies, it seems that in the upcoming hospitals, the following methods have been used in the field design for therapeutic and therapeutic approaches:

- Creating effective communication with nature and natural elements for patients and hospital staff.
- Creating social interactions with different social strata (turning the area into a park)
- Injecting fun activities in the field design such as performing cultural, artistic and sports programs
- Maximal connection and integration of hospital spaces with indoor spaces
- Define individual fun activities for the patient such as gardening and walking in the open space.

- To enter the area in the patient's physical and mental therapy cycle
- Optimal use of five senses in patients
- To enable the patient to communicate with the family in a variety of locations, except for the hospital bed
- Landscape readability and easy and quick locating (Leading hospitals, Research Institute engineers, Nasr, 2016).

Tehran Imam Khomeini Hospital

Tehran's Imam Khomeini Hospital known as a public health center in the country welcomes many patients coming from low-economic cities. The initial 25-acre space of the hospital has become fragmented with disoriented attitudes over the years. This collection was initially designed with the idea of a hospital in a garden about 80 years ago and has been very progressive in making it. But managing the collection with disordered measures at any point in order to solve everyday problems without having a large program has made the complex into a turbulent, confusing and uncluttered space, and confusion and anxiety place itself in a state of tranquility, order, and silence. The mental health of the environment is gone. Insignificance and lack of proper role in the absence of a coherent design have caused many problems for the complex, including: lack of transparency in the space and confusion of visitors, the problems of companions in long-term admissions, security and social problems, waste of land with construction of small and inefficient buildings, lack of suitable and green space designed.

Interviews with doctors and hospital managers also indicate that these problems have been drawn into the internal and external areas of treatment. It seems that the main reason for such problems is not the correct approach to the entire Imam Khomeini hospital complex (enclosures and buildings), considering the site as a subterranean space apart from the treatment environment, because in such an approach, the



Pic 6: The transformation of the hospital area into a car park. Photo: Arash Zahedan, 2016.

range of treatment, treatment on the bed hospitalization is limited. The lack of a comprehensive attitude toward the Imam Hospital complex and the inclusion of the site as one of the effective spaces in the treatment cycle has turned it into a negative and undesirable element, which, in addition to spatial disturbances, has also greatly increased maintenance costs. By analyzing the needs of the hospital and providing a comprehensive plan, such a huge space can be introduced in the treatment cycle, in order to achieve the main goal of a set. Almost, In the Imam Khomeini Hospital area none of the principles of the treatment landscapes have been observed and there are no major plans to address this hospital. The hospital enclosure results from irregular, disorder, and without long-term building strategies. Traumatic factors are found in the hospital area.

Inappropriate visual appearance, disturbing sounds, and polluted air are factors that, contrary to the principles of therapeutic scenery, cause negative human stimulation. A space that can be considered as a healthy path for patients and stretched with trees and water has now become a car park (Pic. 6).

The entrance and exit of the hospital and the buildings are detectable due to overcrowding of the population and machines, not only desirable, but also with maximum anxiety and noise and visual acuity.

Patients and staff know the hospital area as the only route for compulsory passage between different sectors and there

is no invitation for people.

Considering the size of the hospital and its importance in the city of Tehran, taking into account the aspects of landscape design and the needs of clients and staff can apply some of the principles in the hospital area and reduce the patient and staffing problems and improve hospital performance.

Results

The Eskenazi hospital is one of the leading hospitals in the field of attention to the landscape of the hospitals and introduces it to the treatment process. According to hospital's major plans, almost all of the things that need to be considered in the area of the hospital landscape design are included in hospital programs. Unlike in Imam Khomeini Hospital of Tehran, despite its centrality and enormity, unfortunately the enclosure has been seen as the remaining space of buildings and just a communication space that has caused some problems. The following table shows the comparison between the Eskenazi and Imam Khomeini hospital and the attention paid to the aspects of the landscapes. By comparing these two hospitals, Imam Khomeini Hospital has a lot of shortcomings rather the scenizia Hospital, which is one of the most successful examples in the world. It requires that the authorities, with the precise planning, take steps to correct these shortcomings and improve the quality of the therapeutic space to the international standard.

Conclusion | Not paying attention to the large hospitals and preventing them from entering the large-scale planning, which is the provision of health and treatment to clients, and the granting of a very minor role to them, such as parking, unobscured

green space, and sometimes storage facilities and hospital facilities, have made it not only possible to do this very well. It is desirable to meet the goals of the hospital, but the presence of disturbances, disorder and undesirable spatial quality has

Table 1. Comparison of Landscape Design Dimensions of Hospital Units in Two Hospitals of Scenzia and Imam Khomeini. Source: Authors.

Landscape design dimensions of hospital beds	Scenes' hospital	Imam Khomeini hospital
Stimulate tactile sensations	√	
Readability	√	
Providing comfort and relief to users	√	
Flexibility and diversity of spaces	√	
Elimination of environmental stressors	√	
Providing social and cultural opportunities	√	
Control over the environment	√	
Healing gardening	√	

disrupted the functioning of the hospital and neighboring urban environments. With a new approach to turn the hospital area into an active and effective element in the treatment and mental health of the hospital staff and clients, we can use this capacity. To maximize productivity in order to improve the quality of hospitals and solve some of their problems and needs. In this regard, in the first step, setting goals for the design of hospitals can be the follower of the above approach.

Goals such as:

- 1) Granting an active and influential role to the hospital facilities in helping the patient's treatment process
- 2) Optimal use of campus capacity in providing health to psychiatrists, nurses and hospital staff

In the next step and in the stage of study and design, in accordance with the location and specialization of the hospital, ideas and plans are presented in line with the goals set for improvement of the hospitals. Such plans are:

- 1) Creating a healing landscape and gardening therapy to help and speed up the treatment of patients
- 2) Establishment of semi- controlled areas for patient placement

during the certain hours of the day

- 3) Strengthening the relationship between patients, physicians and hospital staff with natural elements and the therapeutic benefits
- 4) Enhancing the readability of the environment in guiding clients and promoting environmental security
- 5) Improving internal administrative and hospital services and services by creating effective physical relationships
- 6) Removing the damaging factors and utilizing the five senses and creating a sense of relaxation

After designing and implementing and during the exploitation stage of the plan, care should not be taken to overturn the main objectives of the landscaping plan. The activities of the project are implemented completely. Because these plans are as complementary program to ensure the survival of the main ideas of the project.

It is hoped that with the special attention to the hospital areas and their effective design, the process of improvement and hospital costs for patients will be reduced and the new approaches open up to the design of treatment areas.

Reference List

- Cooper Marcus, C. & Barnes, M. (1995). *Gardens in Health Care Facilities: Uses, Therapeutic Benefits, and Design Considerations*. Martinez, CA: The Center of Health Design.
- Cooper Marcus, C. (2010). *Gardens and health*, (IADH) International Academy for Design and Health.
- NAZAR Research Center Consulting Engineers. (2015). *Hospital site studies, Consultant*.
- Nikbakht, A. (2004). Medical in the field of modernization: healing gardens. Quarterly [Pezeshki dar Manzar sazi-e Novin]. *Journal of Bagh-e Nazar*, 1(2): 82-79.
- Nili, R., nili, R. & Soltanzadeh, H. (2012). How to reflect the characteristics of healing landscapes in the Iranian Garden Landscape. *Journal of Garden Comment*, 9(23): 14-8.
- Qom, Q. & Vajdzadeh, L. (2016). Understanding the Effective Factors in the Creation of Healing Environments [Shenakht-e Avamel-e Moaser dar Afarinesh Mohit hay-e Shafa Bakhsh]. *Journal of Sufeh*, 26(72): 48-25.
- Saeedi, A. Darabi, H. & Goodarzi, Mohsen. (2015). Designing a nursing home area with emphasis on healing landscape indicators (Case study: Borujerd Blessed Virgin Mary Hospital) [tarahi-e Mohavat-e Asayesh-e Salmandan]. *The Journal of Theology*, 41(3): 642-627.
- *The Common Ground*. (2014). available from: <http://www.landezine.com/index.php/2014/08/the-commonground-by-land-collective/> (accessed 25 March 2017).
- Ulrich, R. S. (2002). Health Benefits of Gardens in Hospitals. In C. Shoemaker (Ed.). *Communicating with the healthcare community about plant benefits*. Proceedings of the Sixth International People Plant Symposium. Chicago.
- Völker, S. & Kistemann, T. (2011). The impact of blue space on human health and well-being – Salutogenetic health effects of inland surface waters: A review. *International Journal of Hygiene and Environmental Health*, 214: 449-460.
- Zakaji, N. Nikbakht, A. & Vakafi, M. (2016). Principles of designing health areas with emphasis on the components of healing gardens, gardening treatments and Iranian garden [Osoul-e Tarahi-e Mohavate hay-e Darmani]. *Journal of Environmental Science and Technology*, 18(3): 317-303.