

Realization of Healing Hospital Environment Criteria Using a Patient-Centered Approach; Case Study: Investigating the Satisfaction of Patients Hospitalized at the Imam Khomeini Hospital of Tehran with the Quality of Hospital Spaces*

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ABSTRACT

The main goal of designers and builders of treatment environments is to create a healing space. In the last century, the concept of healing has led to considerable changes in the design of treatment environments and left positive impacts on the treatment process. In the past, treatment and treatment personnel were the main targets of the design of the treatment environments; however, today, patients and their families are focused attention. Attention to the patient instead of the treatment process has given rise to an approach in the design of hospitals called the “patient-centered” approach. The “Patient-centered” approach in architecture was aimed to help remove problems and barriers facing the patients and their recovery by taking into account their psychological needs even though treatment spaces fail to meet the users’ therapeutic needs. The present research investigates the quality of the design of these centers aiming to improve the quality of space, improve patients’ satisfaction and foster their recovery process. It also investigates various solutions to help hospitals achieve a healing, patient-centered environment. This research falls under descriptive-analytical categories and gathers data via library studies, field surveys and questionnaires administered to 96 patients at the Imam Khomeini Hospital of Tehran; then offers appropriate design guidelines by analyzing those data via SPSS22 and ASPECT software. The research also seeks to answer the question, “How can space quality be increased to leave positive effects on patient's satisfaction and recovery?” This article investigates the patient-centered approach, healing environment characteristics and the way they are applied to hospitals, as well as the satisfaction of the patients at the Imam Khomeini Hospital of Tehran with the spaces, finally providing guidelines to improve the quality of the hospital spaces.

Keywords: Treatment Centers, Patient-centered, Healing Environment, Satisfaction.

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1. INTRODUCTION

The issue of illness and pain has plagued the human being since old times, and thus man has sought solutions to alleviate it. One of the solutions he has come up with to get this removed is to create an environment to take care of the patients. After that, humans gradually tried to offer better space design and sought to increase space quality, a space that could meet the patients' satisfaction and foster their recovery process. The world today is a world of fast changes, with the therapy sector, like other active sectors in the country, seeking to increase its capacity to adopt these momentary changes, as this has been on the agenda in many nations (Commission 2013, 34). The changes that in recent years led to the necessity of inspection and renewed design of the hospitals were the changes made to the illness patterns, changes in the users' level of expectations, therapeutic technology advancements, and changes in hospitals use from simple therapeutic centers into centers of health development in the society with impacts on other sectors (Gluckman and Hanson 2004, 1733). Today, we witness approaches shifting towards humanism in hospital facilities, with the architect seeking to relieve patients of depression and discomfort instead of simply looking into the recovery process. For this, old hospitals have changed their architecture to create a patient-conducive environment.

This article seeks to increase the qualities of therapeutic centers to affect the patient's recovery process. The patient-centered approach, instead of the treatment process and providing more services to them and creating a healing context, is among the cases that increase the quality of therapeutic spaces. Focus on the patient instead of the therapeutic process has been raised as a "patient-centered" approach. "Patient-centered approach is a comprehensive approach to treat the patients who are followed as follows:

- According to the International Alliance of Patients' Organization (IAPO), patient-centered treatment has been established to meet the needs and tastes of the patients. For this, treatment is appropriate and economical. This declaration envisages five principles for the patient-centered approach, including patient engagement in the treatment policy, selection and strengthening of self-confidence, respect and support and accessibility.

- The Institute of Medicine (IOM) defines the patient-centered approach as follows: care which establishes a four-way interaction with the physician, treatment personnel, the patient and his/her family (based on discretion), which ensures that the needs, demands, and priorities of the patients are met. Patient-centered care is a goal beyond health advocacy which is generally designed for a safer therapeutic system and greater engagement of the patients.

2. RESEARCH LITERATURE

Because of the research goals, the present study selects and documents appropriate keywords using thematic headings. For the designers of the therapeutic centers and hospitals, using appropriate design methods increases sense of security and satisfaction among patients, hence fostering their physical and psychological situation. Healing architecture aims to improve the environment's effects on the patient (Malkin 2002, 594).

Studies by Dr. Ulrich (1984) demonstrated that nature positively impacts the patients who have undergone surgeries, fosters their recovery, and reduces their post-surgery complications (Ulrich 1984, 420). Also, his studies in 1993 suggested that environmental factors such as light and noise increased stress in people and had physiological impacts on bodies, thereby causing muscular stress and heightened heartbeats and blood pressure (Ulrich, Lunden, and Eltinge 1993, 51).

Dalke et al. (2006) investigated color and light in the design of hospitals and their effects on the patients (Dalke et al. 2004).

Also, in an article entitled "Expediting the patients' recovery process by appropriate design of hospitalization rooms' windows," Mahdizadeh investigated such factors as light and color to offer suitable guidelines for the desirable usage of daylights in those rooms under moderate and humid climates (Mahdizadeh and Ahadi 2012, 153-164).

Meanwhile, Shahabi et al. studied the effects of the physical environment of the therapeutic centers on the physical and mental health of the patients; they also took into account aesthetic principles in designing therapeutic spaces as a factor affecting the spirits and health of people (Shahabi, Darskhan, and Nili 2012, 431-437). Evans (1999) investigated the stressful environmental factors that affected the treatment outcomes, suggesting that appropriate design is a major tool to reduce stress which also affects the senses of the patients and employees.

3. DEVELOPMENT OF TREATMENT CENTERS

Changes to the provision of therapeutic and health services date back to World War II. From World War II onwards, many nations took a developing course to offer health and therapeutic services, especially in hospital care, as people's new living standards required changing healthcare across the international community (Dargahi and Ma'roufi 2010). In 1963, to present, various health issues, the United States of America established the International Welfare Organization with 44 member states, which then helped establish the World Health Organization

(Nazarpour and Said 2016). Factors such as technology developments and political upheavals promise a future for everyone, bringing more safety and greater outcomes, empowered users, therapeutic technology and data, and effective performance. Factors that affect the future of therapeutic services are as follow:

- Patients management and supply of human force
- Changing special care
- Remote care and wireless technology
- Patient-centered care (Mardomi et al. 2013, 164-75).

3.1. Planetree¹ Model

A planetree model is an approach for treating patients in the healing hospital environment, including the following patient care cases. The planetree model led to changes that evolved as hospital hotels.

- The patient and his/her family have a vital role in the therapeutic group
- The patient is not an isolated unit; rather, s/he is a member of the family of the society and the culture
- The patient is entitled to have free communication in an intimate environment
- The patient is a free-will person to choose a living style and health in the hospital environment
- A supporting and intimate environment is a major element of creating a high-quality therapeutic environment.

The goal of designing the architecture of such

environments is to get the hospital hotel to create desirable conditions to support the patients and their families who suffer from distressing states, along with fear and anxiety. Each measure aimed at reducing this distress will entail a positive outcome in the therapeutic processes and increase the quality of these spaces; thus, design and architecture play determining role in the therapy and recovery of the patients at the treatment centers.

3.2. Healing Environment

The concept of a healing environment dates back to ancient Greece. At those times, when someone was ill, s/he used to go to the temples to receive healing from the gods. In 1860, Florence Nightingale developed fresh air ventilation as the primary nursing law and stressed the significance of nature, heat, appropriate lighting, silence, and clean water. To Jane Malkin: “the quality of the environment’s air, thermal comfort, noise control, light, visual comfort, privacy, view of the nature for the people with grave patience, visual stimuli for the people who undergo recovery, use of the social support, access to nature, positive distractions, removal of stressful factors in the environment including noise, low-quality air and free-will and the right to choose (control) were what characterizes a healing environment (Mardomi et al. 2013, 45).

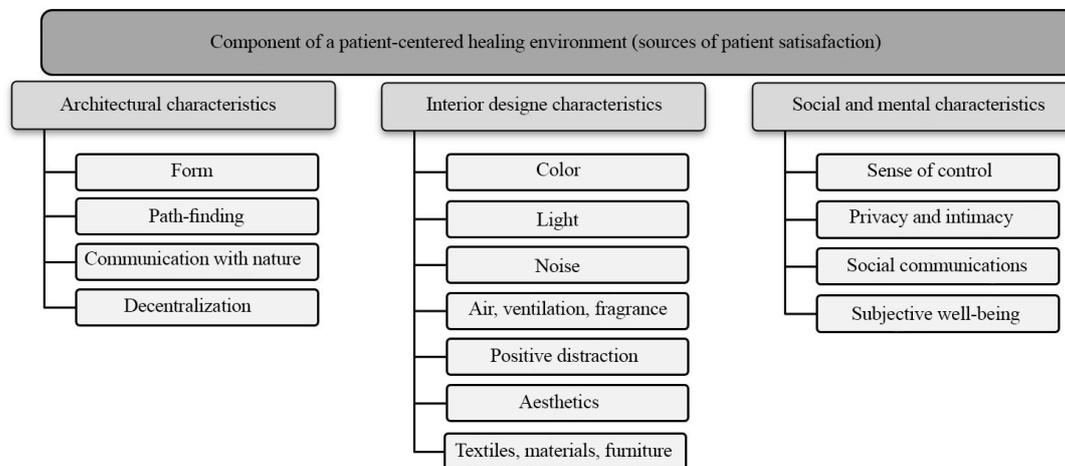


Fig. 1. Components of a Patient-centered Healing Environment

3.2.1. Social and Psychological Characteristics

- Sense of control: Sense of control is one of the most important factors affecting environmental stress and individual happiness. Numerous researches have indicated that a lack of such sense in the environment could bring about negative outcomes such as depression and concerns and undermine the immunity system (Marberry 1995:143).
- Privacy and preserving the personal intimacy:

The privacy of each individual refers to a sense every individual has against his/her independence and space. For instance, knocking at the door when entering the patient’s room indicates observing the patient’s privacy and intimacy (Heidari et al. 2011, 645).

- Social communications: It refers to a kind of design that considers the peoples’ intimacy, encourages them to engage in social interactions, and has effectiveness on the patient’s recovery (Ittelson et al. 1970).

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- Subjective comfort: "subjective well-being" refers to peoples' judgments about their situations. Enjoying sufficient knowledge about the illness, social support, patient's close relation with the physician, and spiritual aspects are all countermeasures associated with subjective well-being (Siegrist 2003).

3.2.2. Interior Design Characteristics

- Light: Natural light reduces depression, seasonal disorder, and bipolar anxiety among patients (Benedett et al. 2001) to improve their sleeping and the period of the treatment process (Joseph 2006). It also reduces emotions (Lacgrace 2002, 16; Mardomi et al. 2013, 24). On the other hand, failure to pay attention to desirable lighting criteria could reduce occupational efficacy, increase medical errors, early fatigue, vision impairment and color matching, glare and damage to the eyes (Ministry of Health 2013, 270).

- Color: Colors are key in improving environmental quality, orientation, gaining information and finding the path. The aesthetic aspect of color helps provide desirable and attractive conditions for the patients, visitors and personnel (Dalke et al. 2004, 3). The use of diverse colors removes monotony and boredom in the working place and prevents the creation of a sense of boredom and numbness in users, thereby preventing the undermining of the nervous systems and distractions (Ministry of Health 2013, 274).

- Noise: Noise pollution at treatment centers culminates in such negative effects as anxiety, sleeplessness, intense need for pain relief and discomfort, high blood pressure and discomfort for the patients. The noise that produces discomfort harms the patient. Excessive noise is the most violent form of lack of attention to the patient and the personnel (Nightingale 1969, 47).

Therapeutic music: Music is composed to help relieve the patient and reduce his/her depression Music can have a numb effect (Malkin 1992, 19). Music affects the autonomous body's nervous system to have immediate physiological effects (Kemper and Danhauser 2005).

- Air, ventilation and fragrance: Air ventilation to produce more oxygen, prevent stagnant air, which may cause an infectious environment, and discharge air with polluted and undesirable smells are critical elements in treatment spaces (Ministry of Health 2013, 460). Fragrance may relieve and affect the patient's recovery process and reduce stress. Undesirable fragrances may increase heartbeat and respiration (Malkin 1992, 19).

- Positive distractions: Positive distractions refer to anything that may distract the individual's attention and cause some positive feelings and vibrancy in him/her. Most positive distractions are associated with nature, including tableaux, statues, interesting paintings on the floor and aquariums (Mardomi et al. 2013, 60). Appropriately selecting artistic works in treatment spaces can reduce patients' stress (Kaiser 2007, 8). This will also help increase nervous concentration and

expedite recovery (Ulrich 1993, 7).

- Aesthetics: Aesthetics is one of the strongest qualitative elements of a healing environment and includes such advantages as patients' or their families' satisfaction and stress reduction. Attention to interior design architecture of treatment centers by taking into account aesthetics and creating a healing space will improve the quality of treatment spaces (Mardomi et al. 2013, 41).

- Textiles, materials and furniture: The proper use of materials from the view of personnel (aesthetics, fewer information problems, silence and easier concentration), patients (taking rests, sleeping well and aesthetics) and visitors (aesthetics and an orderly environment) can have more effects on the quality of the treatment spaces (Moeller 2005).

3.2.3. Architectural Characteristics

- Form: The first thing that patients perceive from the hospital environment is the geometry of the entrance and the form of the hospital. If the hospital has an attractive form, it is the first step towards an acceptable space design that patients desire. The geometry of space affects its readability. Using regular and familiar forms will create a more readable and comforting space (Baskaya, Wilson, and Ozcan 2004).

- Path/wayfinding: Failure to pay attention to finding the path is stressful and costly for the hospital, patients and their companions. Most visitors will suffer from undermined sensual, physical and cognitive sources and find it difficult to find the path they should take in a complicated, highly stressful, and annoying situation (Mollerup 2009).

- Communication with nature: Design and use of green spaces in hospitals include such advantages as increased patient bodily activity, reduced pain, reduced stress among the personnel and patients, reduced depression, and high quality of life for the permanent patients. The design and use of green spaces with healing characteristics under the heading of healing gardens at therapeutic centers is a critical subject (Ulrich 1984, 420).

- Decentralization: Today, there is a high tendency to use one-bed hospitalization rooms. One-bed rooms have advantages such as reduction of medical errors, reduction of hospital infections, improved sleeping, reduction of physical damages, observance of privacy, increase in patients' satisfaction, improved communication between treatment personnel and patients and improved safety of patients (Mardomi et al. 2013, 8).

4. RESEARCH METHODOLOGY

This descriptive-analytical study uses library studies and field surveys to gather data from patients hospitalized at the Imam Khomeini Hospital of Tehran; thus, data were analyzed to provide appropriate solutions to the problems.

4.1. Statistical Population

The statistical population of this study consists of patients at the Imam Khomeini hospital, who totaled 499 people.

4.2. Sample Volume

The Cochran formula was used to determine the sample volume.

4.3. Research Tools

The tool used in this study is an ASPECT-based questionnaire, as SPSS22 software² is used to extract diagrams and descriptive data.

4.4. Research Variables

Independent variable (1): Eight parts of ASPECT
Independent variable (2): Patient's satisfaction
Dependent variable: Design of the treatment center
Control and interfering variables: Age, gender, patient status, etc.

4.5. Research Limitations

Since the tool to gather data in this research was a questionnaire, this scale has problems, including subjects' shortage of time, boredom and consequently

carelessness in answering some questions. Also, due to the inability of the elders and other illiterate people in filing on the scale, most questionnaires were asked in the form of an interview.

5. FINDINGS

Consistent with the nature of the research and its results, data analysis was performed via logical reasoning and inductive method. Descriptive statistics were used to analyze the data. In this study, 96 male and female hospitalized patients aged 15-80 years were surveyed face-to-face about "satisfaction with the hospital." The answers to the questions were entered in the ASPECT software. The results were weighted on a 6-point Likert scale ranging from 0-6, with 0 = unanswered, 1 = totally disagree, 2 = disagree, 3 = somewhat disagree, 4 = somewhat agree, 5 = agree, 6 = totally agree. The eight parts of the ASPECT software were privacy, company, dignity, views, nature and outdoors, comfort and control, place legibility, interior appearance, facilities and staff. The questionnaire was again categorized based on the healing environment characteristic, and more results were elicited. The results were entered into the SPSS22 software, and the following figures were determined.

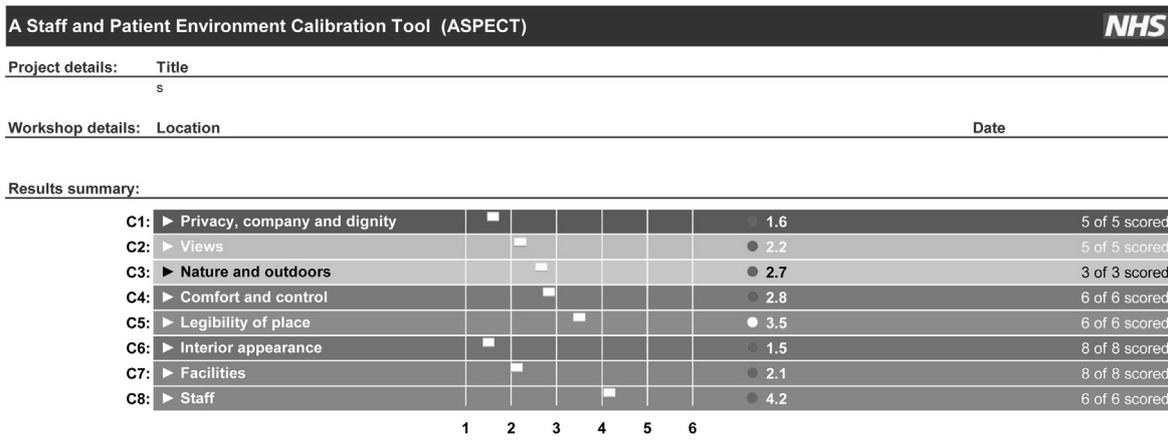


Fig. 2. Mean Satisfaction of Patients Hospitalized at The Imam Khomeini Hospital by ASPECT Eight Parts

Table 1. Mean Satisfaction of Patients Hospitalized at The Imam Khomeini Hospital by ASPECT Eight Parts

ASPECT (Patient and Invironment Calibration Tool)	
Eight Fold Factors	Score out of 6 on the Licert Scale
Privacy and Engagement	2.00
Views	2.60
Nature and Outdoor	3.00
Control and Comfort	2.70
Legibility of Space	4.00
Interior Apearance	1.8
Facilities	2.4
Staffs	3.7

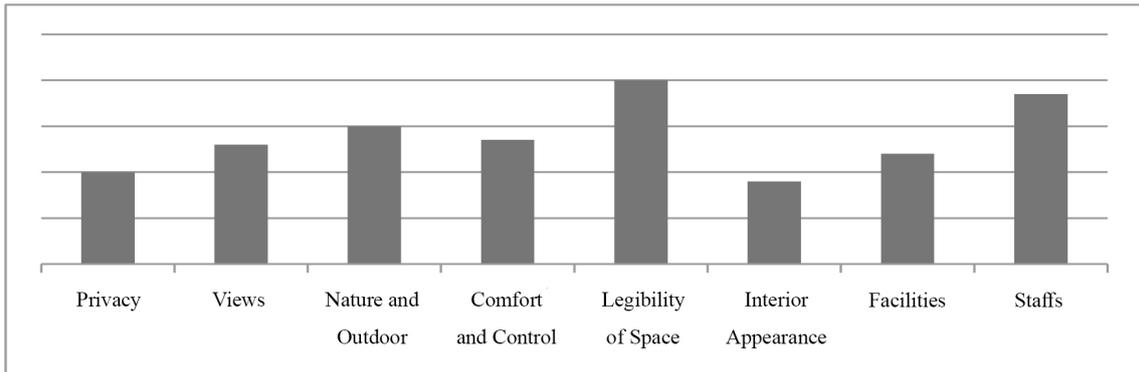


Fig. 3. Mean Satisfaction of Patients Hospitalized at The Imam Khomeini Hospital by ASPECT Eight Parts



Fig. 4. Hospitalization Room with 10 Beds



Fig. 5. Corridor of the Hospitalization Department



Fig. 6. Hospital Entrance



Fig. 7. Hospital Entrance

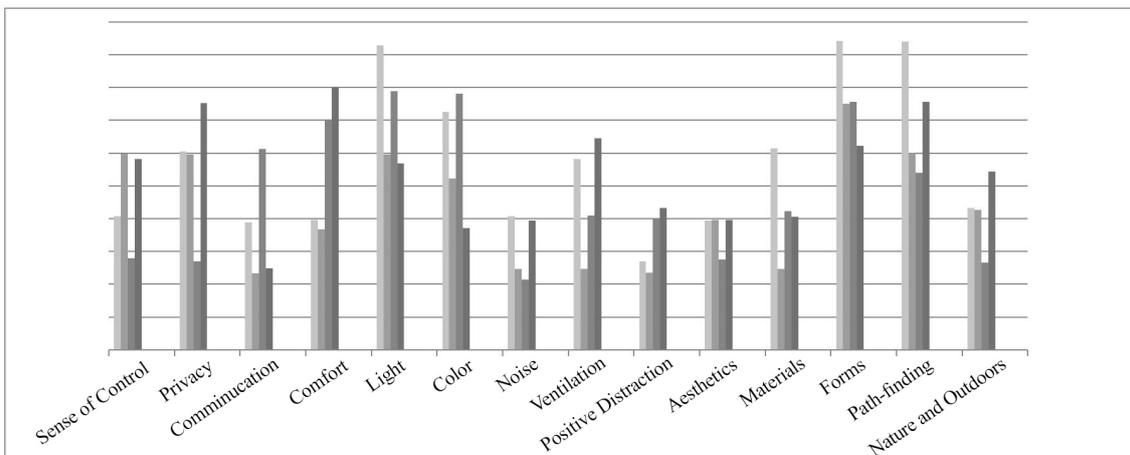


Fig. 8. Mean Satisfaction of Patients Hospitalized at Imam Khomeini Hospital by Healing Environment Factors

Table 2. Mean Satisfaction of Hospitalized Patients by the Healing Environment Factors

Classification	Healing Environment Factors	Item/ Mean	Mean Scores Given out of 6 by the Items of the Questionnaire Based on the Healing Environment Factors				Average Classification of Healing Environment Factors from 6	Mean Classification of Factors from 6		
			Sound/ Noise Control	Light Control	Temperature Control	Ventilation Control				
Mental and Social Characteristics	Sense of Control	Item	Sound/ Noise Control	Light Control	Temperature Control	Ventilation Control	2.33	2.44		
		Mean	2.04	2.99	1.40	2.91				
	Intimacy and Preservation of Privacy	Item	Privacy	Private Conversations	Loneliness	Personal Items	2.77			
		Mean	3.02	2.98	1.35	3.76				
	Social Communications	Item	Collective Space	Place for the Patients' Companion	Religious Deeds	Daylight Room	1.85			
		Mean	1.94	1.17	3.06	1.24				
	Subjective Well-being	Item	Household Sense	Comfort	Access to Physician and Nurse	Respect by Physical and Nurse	2.83			
		Mean	1.98	1.84	3.51	4.00				
	Interior Design Characteristic	Light	Item	Window	Natural Light	Diversity of Light Sources	Artificial Light		3.60	2.30
			Mean	4.64	2.98	3.94	2.84			
		Color	Item	Comfort	Attraction	Legibility	Aesthetics		3.00	
			Mean	3.63	2.61	3.91	1.86			
Noise		Item	Sound Control	Music	Noise	Pitching	1.57			
		Mean	2.04	1.23	1.07	1.97				
Ventilation and Fresh Air		Item	Ventilation Control	Fragrance	Appropriate Ventilation	Window	2.37			
		Mean	2.91	1.23	2.05	3.32				
Positive Distraction		Item	Artistic Works	Entertainment	Attractive Scenery	View of Landscape	1.67			
		Mean	1.35	1.18	2.00	2.16				
Aesthetics		Item	Diversity	Order	Attraction	Cleanliness	1.82			
		Mean	1.97	1.98	1.38	1.98				
Textiles, Materials and Furniture	Item	Joinery	Furniture	Suitable Flooring	Suitable Curtain	2.11				
	Mean	3.07	1.23	2.11	2.03					
Architectural Characteristics	Forms	Item	Index Input	Index Output	Invitation Form	Appropriate Spatial Distinction	2.77	2.69		
		Mean	4.71	3.75	3.78	3.11				

Classification	Healing Environment Factors	Item/ Mean	Mean Scores Given out of 6 by the Items of the Questionnaire Based on the Healing Environment Factors				Average Classification of Healing Environment Factors from 6	Mean Classification of Factors from 6
			Pathfinding	Hierarchy	Coloring	Index Acceptance		
Architectural Characteristics	Path-Finding	Item	Pathfinding	Hierarchy	Coloring	Index Acceptance	3.83	2.69
		Mean	4.70	3.01	2.70	3.78		
	Communication with Nature	Item	View of landscape	View of green Space	Comforting Landscape	Access to Green Space	2.08	
		Mean	2.16	2.13	1.33	2.72		
	Decentralization	Item	One-bedroom	Private Space	Multi-use Room	Distinct Facilities	2.10	
		Mean	3.07	1.26	2.80	1.28		

As given by the tables and diagrams above, patients' satisfaction under the category of mental and social characteristics, interior architectural characteristics and architectural characteristics were 2.44, 2.30 and 2.69 out of 6, respectively; since these figures are less than half of the score 6, it indicates the patients' dissatisfaction with the quality of the hospital spaces in all domains. To take a precise look at every factor, we will find out that the mean patients' satisfaction with the factors were as follows: physician and nurse respect (4.00), windows (4.46), index input (4.71), orientation (4.70) which were higher than 4 out of score 6; and privacy (3.02), personal items (3.76), access to physician and nurse (3.51), diversity of light sources (3.94), comfort (3.02), legibility (3.91), window (3.32), joinery (3.07), index output (3.75), appropriate spatial distinction (3.11), hierarchy (3.01), index acceptance (3.78), one-bedroom (3.07), pathfinding (3.83), light (3.60) and color (3) were higher than the medium limit suggesting relative satisfaction. Although these values do not suggest desirable satisfaction, they indicate that the hospital design in these areas was successful. Also, the mean patients' satisfaction with the following factors was as follows: sound control (2.04), light control (2.99), ventilation control (2.91), private conversation (2.98), sense of being at home (1.98), comfort (1.84), collective space (1.94), natural light (2.98), artificial light (2.84), appropriate ventilation (2.05), attractive landscape (2.00), view of the landscape (2.16), diversity (1.97), order (1.98), cleanliness (1.98), multi-purpose room (2.80). This indicates that satisfaction with these factors was low, and the design process was weak. In the end, the mean patient's satisfaction with such factors as temperature control, loneliness, daylight room, music, noise, fragrance, artistic works, entertainment, attractiveness, comforting landscape, private space, and distinct facilities were 1.40, 1.35, 1.24, 1.23, 1.07, 1.23, 1.35, 1.18, 1.38, 1.33, 1.26, and 1.28, indicating the values are below 2 and the satisfaction has been low, also.

6. SUGGESTIONS AND GUIDELINES

As stated, an image below can be provided for the hospitalization room. The unconcentrated nurse position (A) is so designed that s/he can monitor the patient in an emergency. Between the nurse's and patient's rooms lies the (B) position where the drugs, necessary items, blankets, etc., are held. The washstand sink (C) is placed inside the room and is seen by the patient and all those who enter the room. The bathroom and the toilet (D) are situated in the direction of the wall in front of the bed. Thus, the patient can have a complete view from over his/her bed. The family position (E) is close to the window and far from the entry. The patient's position (F) is also taken into account. The nurse's position (G) is inside the patient's room on his right.

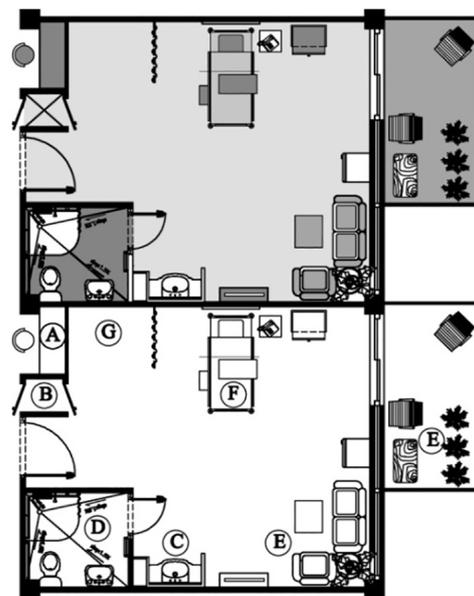


Fig. 9. A sample Form of a Patient Room Based on a Patient-centered Concept

Thus, consistent with the present study, the appropriate solutions to achieve the goal can be summarized as follow (Table 3).

Table 3. Suggestions and Design Solutions

Factor	Suggestions and Design Solutions
Sense of Control	<ul style="list-style-type: none"> - Facilities for lighting, heating, and cooling control of the room, use of personal items, especially for children - Possibility of research to obtain medical data about the patient at the hospital
Privacy and Intimacy	<ul style="list-style-type: none"> - Closed private and one-bedrooms - Setting up prayer's rooms
Social Communications	<ul style="list-style-type: none"> - Taking into account an appropriate and comfortable place for the family in the patient's private room, increasing social support - Creation of a space like a day room, space for the presence of the family, and places for the families to take rest
Subjective Well-being	<ul style="list-style-type: none"> - Measures to create a hotel-like appearance, not one that resembles a campus - Consider round-the-clock space lights in places where the patients are continuously present, which may help them sleep well.
Light	<ul style="list-style-type: none"> - Attention to the building's orientation, light, window size, light entry, window transparency factor, light glare, light dispersion in the room and dimensions of the room. These issues could vary under different climates for special patients. - Use indirect and mild light for the hospital spaces and avoid sudden changes of light in those spaces
Color	<ul style="list-style-type: none"> - Selection of the dominant color of the wards from among the clear and soothing colors - Selection of colors that may not disturb the medical team and not disturb the patients' comfort.
Sound	<ul style="list-style-type: none"> - Use of fan coil to reduce sound pollution; fan coils should be installed built-in and within the ceiling - Floor and ceiling covers with sound insulation factors can help reduce the extra noise
Air/Fragrance	<ul style="list-style-type: none"> - Planting fragrant plants to change the patients' perception of the space, as these smells could change the treatment center from an undesirable space into a desirable one. - Use of HEPA purification systems in the patient's room and in wards where the most vulnerable patients are hospitalized
Positive Distractions	<ul style="list-style-type: none"> - Providing positive distractions like art and music which the patient can control - Use of positive distractions like a fireplace, a gaming desk or even a large window to see outside
Aesthetics	<ul style="list-style-type: none"> - Interior spaces should be clean and neat - Use appropriate design principles and coordination among different components of light and color to get the patient to face a coherently visual story.
Textiles, Materials and Furniture	<ul style="list-style-type: none"> - Use of interior design elements such as furniture, color and texture for the patient to make use of them - Use of flooring, walls and curtains and furniture in restaurants and hotels
Form	<ul style="list-style-type: none"> - Use of one-bedrooms instead of multi-beds and increase of room dimensions - Use of same-handed and uniform rooms.
Suitable Location for Users	<ul style="list-style-type: none"> - The various wards of a hospital that are closely related should be placed next to each other to have the least commuting. - Arranging wet and humid spaces like toilets, bathrooms, etc. in a specific area; prevent the spread of noise, controls infections and helps install mechanical installations.
Path-finding	<ul style="list-style-type: none"> - Providing appropriate guidance tableaus for all treatment places - All the signs and tableaus should completely determine the area of the staff, patients and the visitors
Communication with Nature	<ul style="list-style-type: none"> - Creation of conditions for safe access to green space. Patients should be able to walk through the open space of the hospital. - Patients should enjoy seeing relaxing natural scenery.

7. CONCLUSION

Findings suggested that guidelines can be provided for the design of hospitals and creating a more desirable environment by considering patients' needs. The engagement of the patient in the treatment process has changed the design of the therapeutic space. In the past, mere focus on the patient instead of the treatment process and creation of a healing environment incurred many costs; however, today, designers are looking for solutions to increase the quality of the treatment environment and hence reduce stress, increase patients' satisfaction and improve the treatment results. Today, healing environments are undeniable, and all patients wish to have such environments. Healing environments are those places

that help reduce environmental stressors. Since meeting patients' satisfaction reduces their stress, it is thus concluded that the healing environment can meet the satisfaction of the users and the patients. Healing environments are characterized by sources that meet the patients' satisfaction. For this, today, the relationship between the physical environments and the therapeutic outcomes is constantly being examined, and it is a priority for the successful projects of the patient, his/her family and society as a whole. Knowledge of the proper principles of design of hospitals and observance of design standards, as well as attention to the patient's spirit and hence meeting the patients' satisfaction, will help improve the recovery process.

ENDNOTE

1. Planetary is a patient-centered private healthcare organization founded in 1987 by Angelina Thirmott.
2. ASPECT software (patient and staff environment calibration tool) is based on a database of 600 researches on the effects of treatment environments on patient and staff satisfaction and patient treatment outcomes as well as staff efficiency.

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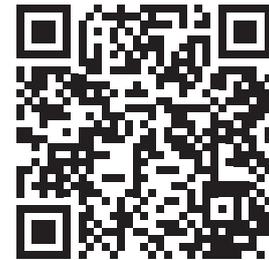
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