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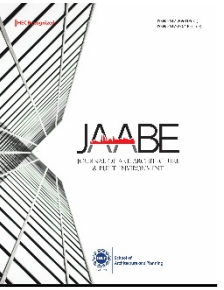

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# Analyzing Healing Environment in Post-Operative Units across Selected Hospitals in KP, Pakistan

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## Abstract

Healing environment mainly comprises access to nature, choices and control, positive distractions, absence of environmental stressors, and social support. This research explored the healing environment in the post-operative units in five tertiary level hospitals of KP province, Pakistan. The topic of the current research has not been explored so far in the KP province as Pakistan is a developing country and more research work in the relevant is required. The research was conducted through sample collection from patients through a questionnaire and self-observation of the researcher. A checklist was also used to identify the five basic components of the healing environment. It was established that, on average, only 17% of the patients in post-operative units had access to nature, 21% had choices and control, and 20% were treated with positive distractions. Furthermore, 72% observed the presence of environmental stressors which hindered their healing, while 67% confirmed the availability of social support. Hence, it is evident that healing environment was not a major criterion in the designing of these facilities. The respondents also opted to make these elements available to help the healing process. It was concluded that by increasing the healing environment-based components in post-operative units, better outcomes in terms of healing process may be /achieved.

***Keywords*:** evidence based design (EBD), five components, healing environment, post-operative unit design

## Introduction

Patients occupy a significant place in the overall healthcare system. Indeed, they occupy the central place in a patient-centered design. A patient-centered design and its continuous evolution and evaluations are the key factors which contribute to their better health (Suess & Mody, 2018). Ensuring user satisfaction lies at the heart of the overall healthcare

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system. A good health care system remains in a continuous state of improvement through end user engagement including patients, attendants, visitors, medical teams, and their allied staff (Codinhoto et al., 2009).

World Health Organization (WHO) proposed four dimensions that need to be assessed in this regard including patient satisfaction, regulatory inspection, third party assessment, and statistical indicators. Patient satisfaction is an important measure which needs special attention. It is an important tool to predict whether the patients would follow the treatment plan suggested by their physician and whether they would approach their physician for follow up visits or not. Also, their feedback may be used for the improvement of healthcare delivery as well as the behavior and expertise of the whole hospital staff (Marcus, 2007). In countries facing resource constraints such as Pakistan, many other factors related to management and government may also lead to patient dissatisfaction. It has been documented that 93% of the patients in the hospitals of Swat, Pakistan were unsatisfied because of poor general cleanliness, disrespectful attitude of the staff, and unavailability of free medication (Khan et al., 2016).

An evidence-based layout is crucial to the success of a healing environment. It is grounded in research and its results affect not only broad clinical outcomes but also the efficiency and profitability of office operations, the effectiveness of maintenance, and the utilization of staff. It considers building to be a physical space, but also includes the senses of sight, sound, touch, and scent (Rubert et al., 2007). The research that supports this idea comes from the disciplines of neurosciences, developmental sciences, psychoneuro-immunology, and environmental psychology. The prevalent theme of the current study is to decrease stress level for patients and their families. This is an essential objective of a healing environment since more mistakes are made under stressful conditions and patients may face impaired immune function because of adapting to a situation that isn't psychologically reassuring (Abbas & Ghazali, 2010).

Therefore, the purpose of the current study is to compare post-operative units in five major tertiary level hospitals in Khyber Pukhtunkhwa (KP) in order to evaluate the satisfaction level of healing environment based on patient's response and self-observation. Moreover, the data pertaining to the five basic components of a healing environment,

that is, access to nature, control and choices, positive distractions, social support, and absence of environmental stressors was also analyzed.

## Literature Review

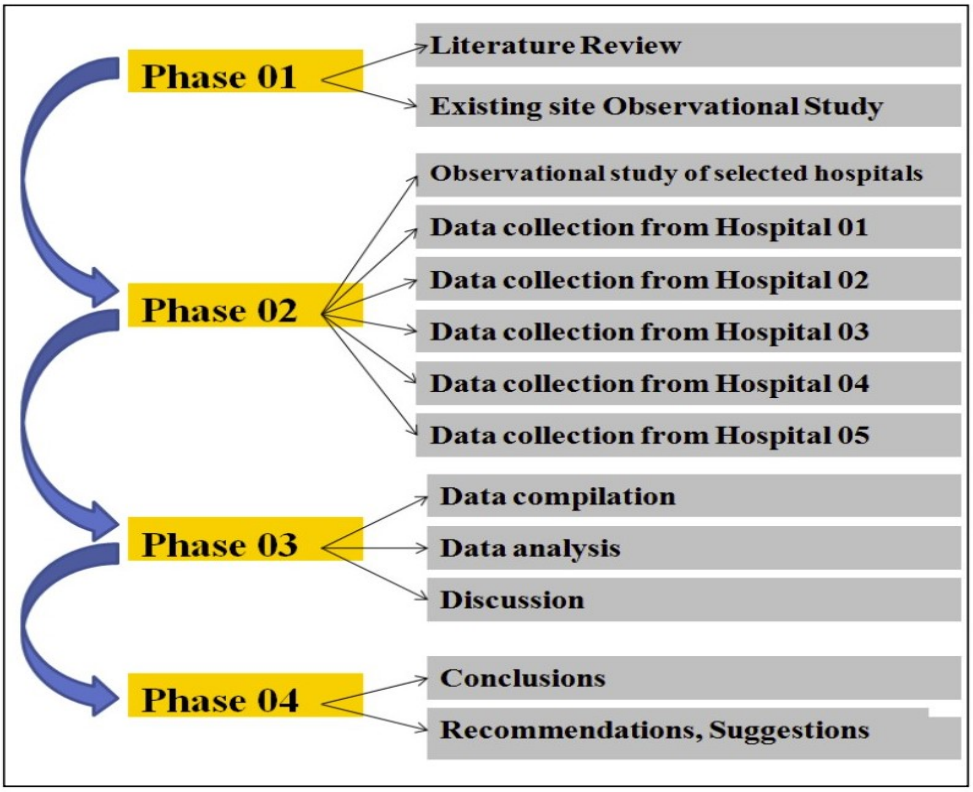
Health is defined as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity. Healthcare facilities (HCFs) are places for the treatment of patients with health conditions, provided by healthcare professionals (Huisman et al., 2012). The concept of a healing environment can be traced back to 400 BC with Hippocrates and in the recent past to Florence Nightingale in the 19th century. Sick Building Syndrome (SBS) and the indoor environment of buildings, as described by Burge, has the symptoms of dry skin and those related to mucous membranes, as in the eyes, nose, and throat, together with what are often called general symptoms of headache and lethargy. Since the 1990s, any design solution for the design of HCFs, based on the best available research, has been defined as "evidence-based design" (EBD). Evidence-based design is considered the theoretical concept for called healing environments (Aripin, 2006). Healing environment not only proves helpful in the healing process but also saves money and increases staff efficiency by making the environment less stressful. EBD in healthcare started with the pioneering research by Professor Ulrich, who compared the positive effect of the views from the window on the recovery of patients from surgery. His research demonstrated that patients enjoying the nature view had shorter postoperative hospital stays, received fewer negative evaluative comments from nurses, took fewer or moderately strong medication, and scored slightly lower for minor postsurgical complications (Zadeh et al., 2016). Since the pioneering study by Ulrich, the impact of the hospital's physical environment and health outcomes of the patients has received extensive academic attention. Consequently, the resulting spaces and components having health outcomes are considered healing environments (Huisman et al., 2012).

Specific healing design elements include:

1. Physical or visual access to nature, such as access to views outside the window, interior or exterior gardens, aquariums, and art with a nature theme.
2. Reducing environmental stressors, such as noise, glare from lights, and poor air quality.

3. Control over the physical conditions of the environment, that is, options and choices.
4. Positive distractions through different mediums.
5. Social support.

**Figure 1**
*Research Flow Chart*




## Rationale of the Current Research

Healing lies at the center of the medical treatment process to ensure that the patients recover from their pain and misery quickly. Healing environment is a major contributor to the overall system and process and it is critical to determine the quality services of healthcare facilities along with the wellbeing of the patients. The lack of a healing environment hinders the healing process and delays the recovery process after and during the medical treatment of the patients. It is a critical factor and

requires extensive application in the healthcare facilities to ensure that the patients and end users are satisfied with the level of healing environment in healthcare settings. The current research analyzed the healing environment of five major hospitals of KP and devised the future line of action to improve the identified issues and gaps.

## Statement of the Problem

Many developed countries have been introduced with the emerging concept of healing environment, although it still needs more attention in the context of Pakistan and many other underdeveloped countries. Focus on the environmental factors for the delivery of quality services and user satisfaction in hospitals is mostly ignored, which directly impacts the overall healing process in healthcare settings. Hence, the current research examines the healing environment in medical treatment facilities to provide a baseline for future developments.

## Research Objectives

The major objectives of this research are as follows:

1. To evaluate the level of healing environment in the selected tertiary level healthcare hospitals of KP.
2. To propose and recommend future strategies needed to improve the healing environment in the selected hospitals of KP.

## Research Questions

The major research questions of this research are as follows:

1. How far the selected tertiary level hospitals are capable of satisfying their patients pertaining to their healing environment?
2. What future strategies could prove helpful to overcome the issues identified in the selected tertiary level hospitals of KP pertaining to their healing environment?

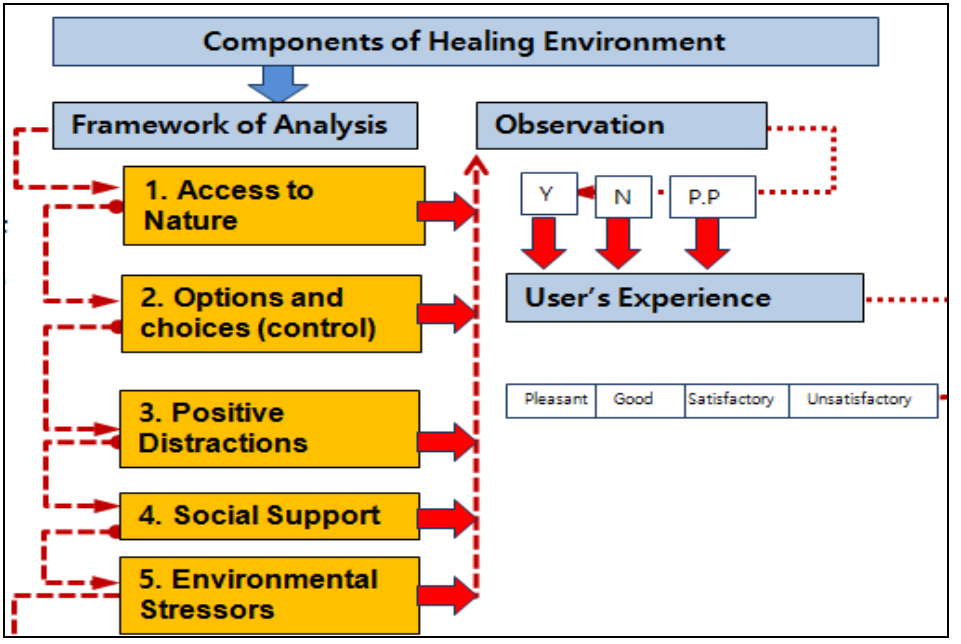
## Research Methodology

The following figure summarizes the work methodology adopted for the current research. In the first step of analysis, five basic elements of healing environment were /identified through self-observation. The presence of each element was marked with the digit 2, its absence was marked with 0, while any element of the healing environment which was partially present

was marked as 1. The total score of any unit having all the five elements was 10. Any grand total below 10 meant that some elements or parts of them were missing in that specific unit.

**Figure 2**

*Research Framework*




## Data Collection and Analysis

### Self-observational Study

Based on the above methodology, Table 1 below gives the summary of the current observational study of the post-operative units in five hospitals of KP. It was concluded that only social support (as a major variable) was present in all the hospital settings with a marking of 9 out of 10. Apart from these findings, all major aspects of the healing environment showed a poor ranking with the minimum value of 3 out of 10 for environmental stressors and positive distractions. It was concluded that the healing environment parameters have not been observed or explored with reference to the design of the selected spaces. Only functional needs have been fulfilled without any major focus or intent for the development of healing environment in post-operative units.

**Figure 3**

*Post-operative Ward, Saidu Shareef Teaching Hospital*

**Table 1**

*Observational Summary of the Healing Environment – Existing Scenario*

| S. # | Hospitals | Variables of Healing Environment | | | | |
|---|---|---|---|---|---|---|
| | | Access to Nature | Control and Choices | Positive Distractions | Social Support | Environmental Stressors |
| 1 | Ayub Teaching Hospital Abbotabad | 1 | 1 | 1 | 2 | 0 |
| 2 | Khyber Teaching Hospital Peshawar | 1 | 1 | 1 | 1 | 0 |
| 3 | Government Lady Reading Teaching Hospital Peshawar | 1 | 1 | 1 | 2 | 1 |
| 4 | Hayatabad Medical Complex Peshawar | 1 | 1 | 0 | 2 | 1 |
| 5 | Saidu Group of Teaching Hospitals, Saidu Shareef | 1 | 1 | 0 | 2 | 1 |
| 6 | Grand Total | 5 | 5 | 3 | 9 | 3 |

*Note.* 2 = Present, 1 = Partially Present, 0 = Absent

**Figure 4**

*Post-operative Gynecology Ward in Lady Reading Hospital, Peshawar*

## Data Collection from Respondents

Based on the current observational study, a questionnaire was used to collect and compile data, as shown below in Table 2. /Data regarding the healing environment in post-operative units was collected from a sample of 25 respondents for each hospital. For the ease of discussion and management, each hospital was considered as one case for reference, as shown below in Table 2.

As can be seen in Table 4.6, the data about the healing environment in the selected post-operative units showed that most of the aspects of a healthy healing environment were absent in all major hospitals. Apart from the aspect of social support, which was 67% on average in all hospitals, the other elements were rated lower, even below 50%. Moreover, the environmental stressors present in almost all major areas were also explored and found to be 72%. It was observed that, on average, 62% of respondents were unable to have access to nature, which is one of the key elements of a healthy healing environment. Due to the lack of permission over the use of utilities, except in semi-private units where no other patient was present, 56% of respondents lacked control over utilities. Hence, they were bound to follow the set forth temperature and lighting levels. Among the respondents, 58% lacked the presence of positive distractions which could help them to divert their focus and attention from the trauma and pain they were going through.

**Table 2**
*Percentage Data for Healing Environment – Existing Scenario*

| Elements | Status | Case 01 | Case 02 | Case 03 | Case 04 | Case 05 | Average |
|---|---|---|---|---|---|---|---|
| Access to Nature | Present | 15 | 20 | 15 | 20 | 10 | 16 |
| | Partially Present | 20 | 20 | 25 | 15 | 25 | 21 |
| | Absent | 65 | 60 | 60 | 65 | 65 | 63 |
| Control and Choices | Present | 25 | 20 | 15 | 20 | 25 | 21 |
| | Partially Present | 30 | 20 | 30 | 15 | 20 | 23 |
| | Absent | 45 | 60 | 55 | 65 | 55 | 56 |
| Positive Distractions | Present | 25 | 15 | 20 | 25 | 15 | 20 |
| | Partially Present | 20 | 20 | 30 | 15 | 25 | 22 |
| | Absent | 55 | 65 | 50 | 60 | 60 | 58 |
| Social Support | Present | 60 | 70 | 65 | 70 | 70 | 67 |
| | Partially Present | 15 | 10 | 30 | 15 | 15 | 17 |
| | Absent | 25 | 20 | 5 | 15 | 15 | 16 |
| Environmental Stressors | Present | 65 | 75 | 65 | 75 | 80 | 72 |
| | Partially Present | 20 | 15 | 30 | 20 | 10 | 19 |
| | Absent | 15 | 10 | 5 | 5 | 10 | 9 |

Evidently, these post-operative units do not comply with the standards of a healthy healing environment as part and parcel of the whole facility. The sole dimension of social support acted as a major savior. One of the major reasons is the social system and ethical aspects observed in these areas, along with the cultural and religious impact of the local people and their belief system.

**Table 3**
*Data for Healing Environment – Desired*

| Elements | Status | Case 01 | Case 02 | Case 03 | Case 04 | Case 05 | Average |
|---|---|---|---|---|---|---|---|
| Access to Nature | Present | 85 | 75 | 75 | 90 | 95 | 84 |
| | Partially Present | 15 | 25 | 20 | 10 | 5 | 15 |
| | Absent | 0 | 0 | 5 | 0 | 0 | 1 |
| Control and Choices | Present | 90 | 75 | 75 | 85 | 90 | 83 |
| | Partially Present | 10 | 25 | 20 | 15 | 10 | 16 |
| | Absent | 0 | 0 | 5 | 0 | 0 | 1 |
| Positive Distractions | Present | 50 | 50 | 65 | 95 | 65 | 65 |
| | Partially Present | 50 | 50 | 35 | 5 | 35 | 35 |
| | Absent | 0 | 0 | 0 | 0 | 0 | 0 |
| Social Support | Present | 50 | 50 | 70 | 85 | 90 | 69 |
| | Partially Present | 50 | 50 | 30 | 15 | 10 | 31 |
| | Absent | 0 | 0 | 0 | 0 | 0 | 0 |

| Elements | Status | Case 01 | Case 02 | Case 03 | Case 04 | Case 05 | Average |
|---|---|---|---|---|---|---|---|
| Environmental Stressors | Present | 75 | 80 | 90 | 95 | 95 | 87 |
| | Partially Present | 25 | 20 | 10 | 5 | 5 | 13 |
| | Absent | 0 | 0 | 0 | 0 | 0 | 0 |

Based on the analysis of the existing data gathered from the respondents, it was also decided to seek their preferences regarding the elements of the healing environment. Resultantly, they would become a part of future recommendations about healthcare facilities and post-operative units. The collected data is shared in Table 3.

As shown in Table 3, all the major elements of a healthy healing environment were perceived on a positive note by the respondents. On average, 86% desired access to the nature, 84% preferred control of choices in their settings, 65% liked to have positive distractions as source of engagement after post-operative processes. While social support was already high in the settings and was also preferred by the respondents and avoiding environmental stressors like noise, etc. was desired by 87%. Hence, the value and prioritization was expressive on a positive conclusion from the respondents as shown below in figure 3. There were few respondents who were unable to grab the briefed concept of healing environments and hence given feedback was not desirable for these elements. These values have also been kept intact in order to keep the true representation of the populations intact through the sample.

## Comparative Analysis

A comparison of existing, desired, and observational studies is shown in Table 4. The current observational study's findings correlate with the existing circumstances of the spaces. As a result, the existing observational study of the healing environment yielded consistent results based on data from respondents. It was determined that respondents favored the components of access to nature, positive distractions, control over decisions, social support, and avoiding environmental stresses. Hence, it was established that they were absent in the post-operative facilities of the five selected hospitals in Pakistan's KP province. The only significant variable in these environments was social support. Its appearance was not the result of design influence but rather of local cultural and religious norms. It was eventually shown that even respondents favored the presence of these features present in such

environments. Furthermore, most respondents felt these characteristics should be incorporated as design elements.

**Table 4**

*Comparative Analysis of Desired, Existing, and Observational Data for Healing Environment*

| Elements | Status | Existing | Desired | Observational |
|---|---|---|---|---|
| Access to Nature | Present | 16 | 84 | 0 |
| | Partially Present | 21 | 15 | 1 |
| | Absent | 63 | 1 | 4 |
| Control and Choices | Present | 21 | 83 | 0 |
| | Partially Present | 23 | 16 | 3 |
| | Absent | 56 | 1 | 2 |
| Positive Distractions | Present | 20 | 65 | 0 |
| | Partially Present | 22 | 35 | 0 |
| | Absent | 58 | 0 | 3 |
| Social Support | Present | 67 | 69 | 5 |
| | Partially Present | 17 | 31 | 4 |
| | Absent | 16 | 0 | 0 |
| Environmental Stressors | Present | 72 | 87 | 2 |
| | Partially Present | 19 | 13 | 1 |
| | Absent | 9 | 0 | 0 |

## Conclusion

It was found that the results of the observational study carried out earlier (before data collection) matched with the feedback from the respondents. It was noticed that because of the greater cooperative environment provided by the medical team, the social dimension was satisfactory. On the other hand, the remaining aspects were absent. Hence, it was concluded that healing environments are significantly important for the patients in post-operative settings and their design features must be considered while devising a plan for hospitals and other relevant spaces.

It was observed that among the five major aspects of healing environment, that is, access to nature, positive distraction, social support, control over choices, and environmental stressors, only social support was present in all the explored settings. While, the remaining elements were either absent or only partially present in some instances. According to the findings of the current study, the respondents (who were mainly patients

and some were also staff members) were not satisfied with the healing environment provided in the examined spaces. These respondents also desired that healing elements should be incorporated into these settings in order to bring forth positive results. The second objective was achieved through proposing strategies and design interventions, that is, through design integration of open and green spaces. The development of choices by providing a space based controlled environment with options for patients to have their preferred temperature, positive distractions through prayers and healing activities, avoiding noise, and any odor or smell in the premises was also addressed.

The above conclusion is summarized as follows in five points:

1. Patients and staff prefer to have a healing environment.
2. Existing facilities were not planned based on healing principles.
3. Only one variable of social support was prevalent. It was not because of design based intent but because of the cultural and social setup.
4. The elements of a healing environment were mainly neglected. Only functional areas were addressed and explored while designing these spaces.
5. Most of the respondents successfully perceived the parameters of a healing environment and considered them as valuable additions to the existing settings to help improve the healing process.

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