

A Study on the Effect of the Components of Physical Environment on Patient Satisfaction in Drug Rehabilitation Centers

Fahimeh Easy^{1*} and Gholamhossein Naseri²

¹Islamic Azad University, Damghan Branch, School of Engineering Academy, Iran; easy_fahimeh@yahoo.com

²Islamic Azad University, Damghan Branch, Iran;

naseri_8224@yahoo.com

Abstract

Background/Objectives: Addiction is known as a physical, mental, social and spiritual illness among nations which causes the loss of thoughts, nerves and power of individuals. **Methods/Statistical Analysis:** The present study analyzes the components of physical spaces in drug rehabilitation centers using a theoretical and analytical approach, descriptive-analytical method, and library and documents studies. The aim of this study is the study of the type of interaction and relationship of the patients in drug rehabilitation centers and the physical space defined by a range of aesthetic signs in its surroundings. **Results:** The physical environment affects the patient satisfaction and enhances the quality of her/his life during hospitalization. According to the conducted studies and research based on statistics and sampling of the real population of patients, it can be concluded that the natural and built environments have physical and mental effects on human and these effective factors are sometimes shared between the natural and built environments. For several years, the various therapeutic environments have shown their effects on mental health, behavior, mental and physical balance to create happiness, depression, restlessness or calm in humans. **Application/Improvements:** The result of this research can improve the physical environment of patients using aesthetic structures such as the better productivity of environment and space.

Keywords: Drug Rehabilitation Center, Physical Environment, Satisfaction

1. Introduction

Over the past few years, the design of therapeutic centers in most communities has been dependent on the basic needs of patients and their security and has passed a normal trend. And the involving role and relationship and also the psychological reactions of patients to use this space have been ignored.

However, due to the competitive therapeutic centers in attracting patients the need to meet the demands of patients and their families including the easy access to facilities, safety and beauty were considered over time, thus this trend still continues and is not so desired and favorable.

The previous studies have shown that the environment includes the physical elements such as messages, meanings

and secrets that the people decode and understand its causes based on the roles, expectations and motivations and also make judgment about it. This general feeling which is an important factor in the harmony of the individual and environment causes the better exploitation of the environment, the satisfaction of users and finally their sense of belonging with the environment and the continued presence in it. This feeling is a factor that converts a space to a place with specific behavioral characteristics and the sense of convenience from an environment. The physical environment is one of the environmental factors affecting the spirit and survival of the patient and this effect is not arithmetic but is as a perceived factor in the context of everyday activities.

According to the mentioned issues, one of the main aims is to study the space of patients with addiction, the

* Author for correspondence

creation of the sense of desirability, satisfaction and their convenience in a space. This fact creates emotion to the space which is an important factor in the coordination of the individual and the environment and makes the better exploitation of the environment, their satisfaction and continued presence in the environment. Thus, recognizing the factors and components of physical environment and applying it in a sensitive and creative design can be achieved. This study is necessary in order to identify the more efficient and dynamic spaces and provide the strategies for continuing the presence and operation of the patient from an environment.

The recognition of aesthetic factors and providing the recreational facilities of the environment and also the creation of a spatial form tailored to different spatial functions can be useful in the rate of interest and sympathy of patients to space and their persistence.

2. Method

The present study analyzes the components of physical spaces in drug rehabilitation centers using a theoretical and analytical approach, descriptive-analytical method, and library and documents studies.

3. Review Literature

This study is a review which aims to introduce a therapeutic environment and its impact on human behavior for the first time in Iran in the field of physical environment and the satisfaction of addicted patients. It should be noted that little research has been done in Iran in relation to the physical environment and the satisfaction of patients such as: the patients in hospitals and health and medical research environments. Also, the patients in drug rehabilitation centers and their environmental components have not been addressed.

There is some evidence that the physical environment of patients affect the understanding of the patient and his/her family from providing the services that has been assessed by the tendency to return to the community and recommendation the therapeutic centers to others.

The studies show that the components of physical environment directly affect human behavior, For example, coloring the walls, clothes and fabric in therapeutic centers affect the response of patients to treatment¹.

The studies on therapeutic centers include two physical

and mental concepts. The study of Kaplan and others in 1995 and Hartik and others in 1995 specifically examined the surroundings of the environment. Although most of conducted studies are empirical and questionnaire and have not been done with randomized controlled trials on the relationship between cause and effect but it generally shows that the components such as the access to the window and view, artistic paintings and sculptures, cleanliness of place, big size of room, a sense of control on factors such as ventilation and keeping a sense of privacy are important elements in the sense of improvement and the quality of life.

The researchers of Gestalt school pay attention to the environment (with its whole meaning) more than the other schools².

One of the founders of this school separates the environment into two types of geographical and behavioral. In his opinion, the geographical environment means an environment that is objective and behavioral environment is experienced by an individual.

Lewin⁴ who is another researcher of Gestalt school believes that behavior is the function of the interaction between factors that come from the environment and individual. He uses the concept of biological space to explain the phenomenon resulting from the interaction between the environmental and individual factors. One of the most important principles of this view is that behavior is the function of the environments' features.

3.1 Definition and Recognition of Addiction

Addiction in Dehkhoda Dictionary means: Addiction {A} (being used to, adapting something)

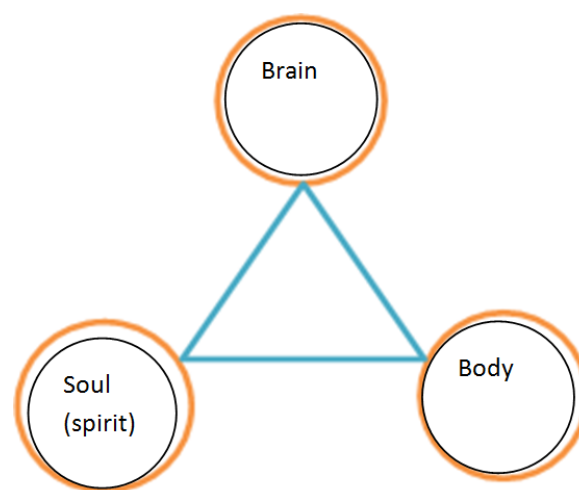


Figure 1. Triangle of the effect of drugs in a drug addict (Source: author).

Addiction was defined as being used to and dedicated to a bad habit; in other words, giving up the drug which is considered physically or socially harmful, is called addiction. Addiction in the proper sense of word: a person needs the material in nature and his environment to meet his/her physiological needs. These materials are consumed to meet the needs and instincts of hunger and thirst and also for the metabolism in tissues to produce energy.

Although drug therapy is the first choice to treat addiction, but the use of drug therapy alone, has not result except the loss of material and spiritual effort and cost of the addict and his/her family. Unfortunately, focusing on drug therapy causes the return of the illness of 80% of people less than 6 months. This dependence is difficult to be separated because the body, mind and brain are all involved and mental issues require a period of treatment in a suitable space³. Triangle of the effect of drugs in a drug addict shows in Figure 1.

3.2 Drug Rehabilitation Centers

Treatment (Drug rehabilitation) is not expressed only as the elimination of clinical (physical) problem, but leads to the solution of patients' illness and the elimination of his/her anxiety to achieve the healthy mind and body and support him/her during the treatment.

3.3 Physical Environment

The term "physical environment" in this study illustrates the built and natural environment. The built environment is handmade and is divided into the facilities and physical relationship of spaces and natural environment refers to the intact environment such as built forest and landscape such as parks⁴.

3.4 Built Environments and Behavioral Sciences

Patients with addiction require a physical environment for the duration of drug rehabilitation and this environment covers all his/her activities. Those who believe in Possibilism consider the environment as the provider of human behavior and know little more than that. This approach considers the environment as a set of behavioral opportunities according to which an action may have occurred or not⁵.

In this view, the environment affects human behavior⁶.

In other words, in the view of environmental Possibilism the proficiencies of physical environment provide the possibilities and limitations which enable the patient to select his offered proficiencies. These selections often occur based on cultural preferences, the patient's value system (such as sports, arts, employment) and their beliefs and attitudes⁷. Physical environments made for patients with addiction as a base for behavioral sciences can play a role in the rehabilitation and recovery of the patient.

Behavioral base or place is a sustainable combination of activity and place which includes the following components⁵.

- Recurrent or repeatable activity or the current behavioral model.
- Special design of environment or physical environment.
- A consistent relationship between the two or homolog.
- Specific time period.

In other words, a behavioral context is formed of a fixed pattern (or repeatable), an environment (the made pattern) and a time period. This environment should have the necessary conditions for the occurrence of behaviors⁵.

Environmental information can be obtained through cognitive processes which are motivated by mental schemas and guided by human needs. Schemes guide not only the cognitive processes, but also the emotional reaction (emotion) and actions (spatial behavior) and in contrast, these processes and reactions affect the mental schemas as the perceived behavior (Figure 2).

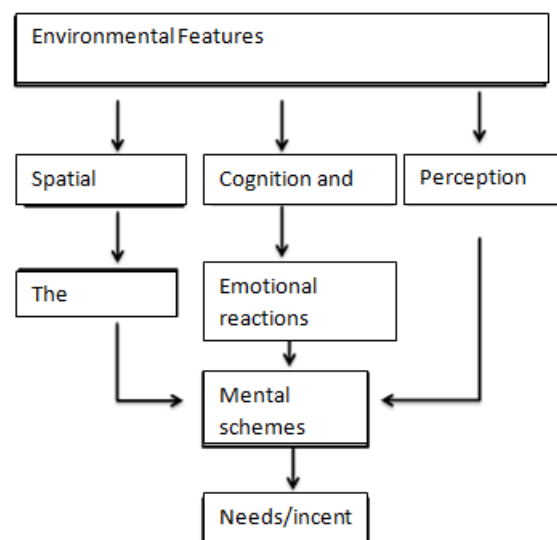


Figure 2. The fundamental processes of human behavior: source⁸.

Gibson figure shows that perception, emotion and spatial behavior are all affected by the environment and motivate the emotional reactions and also guide the mental schemes to a direction in addition to understanding the environmental factors. A patient in a therapeutic built environment can obtain different results and sometimes cause positive or negative incentives.

4. The Physical Components of Patient Satisfaction in Drug Rehabilitation Centers

Patients in drug rehabilitation centers respond to a series of physical components and accept them as a treatment incentive and persistence in the drug rehabilitation environment. These factors are related to the environment and elements within the environment.

4.1 Color and Light

The structure of the built environment includes the most important components which are color and light and detailed research has been done in both cases. In general, color and brightness can affect patients and their response to the environment. It also helps the improvement of patients and the total experience of patients, staffs, and visitors. Appropriate color and brightness are powerful tools for finding the path (Figure 3).

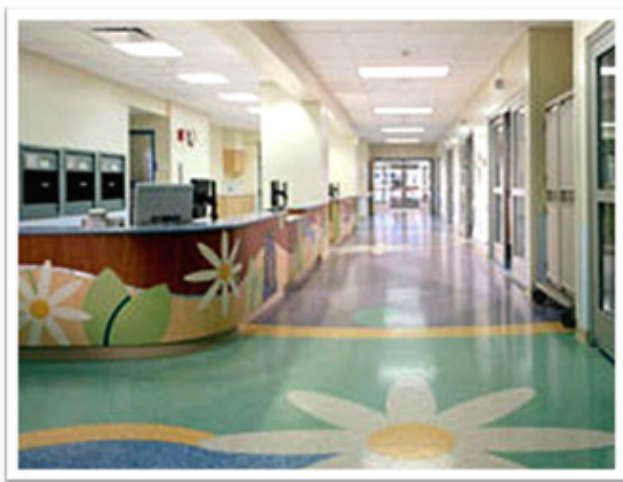


Figure 3. Therapeutic center environment.

The artworks on the walls are suitable to regulate the nervous system and carry out the tasks. The effect of cold and warm colors and brightness are broad issues. For example, the high contrast causes headaches and

eye strain. Increased consciousness or confusion and distraction, feeling the time lapse, creating a cultural relationship, oppressive or joyful are the results of an internal design.

Color can also promote a sense of well-being and independence. Visual environment including the quality of daylight and electric light is an element affecting the spirit and productivity of staffs in therapeutic centers. During the conducted studies, it was found that the improved visual environment has increased the patients to 10%. In fact, these developments were attributed to certain factors including the proper use of color; the display of particular spiritual effect and access to sunlight and attractive scenery.

4.2 The use of Light

Light is essential for the internal clock of humans. Human has been equipped with certain rhythms such as body temperature during his evolutionary process that help him for communication and inform him of the time outside. The lack of contact with the outside may lead to fatigue, insomnia and seasonal depression⁹ (Figure 4).



Figure 4. Groot rehabilitation centre (Derived from the thesis: Solon Xenopoulos, 2011).

This magnificent glass 'treatment' where the sun is always there brings the residents closer to nature⁶. The purpose of this method is to guide the continuity between the exterior and interior design through glass and innovative height. But the important thing is that the residents do not have the sense of confinement and being away from the world outside. The clear view of the

restaurant shows the warm feelings of meals on days with hall windows to manipulate the surrounding forest and welcoming the environment.

4.3 The use of Color

Colors are used as the healer of diseases, the creator of positive changes in mind and body, showing the character of human to regulate the career goals and enhance the communication skills¹.

Color therapy in the field of alternative or complementary medicine is known as vibrational medicine that is used as a catalyst in the drug rehabilitation of patients. The primary colors in the rainbow have proved their healing properties. Colors can be used to create energy balance in different areas of the body with no vibration and physical movement and the people with mental and emotional problems¹.

The psychological effects of colors have been considered highly by specialists so far; so that it was proved that the inappropriate replacement of colors in specific places and their inappropriate use in the environment cause severe trauma to the people. In modern psychology, colors are the indicative of the character of people, because they have a particular effect on their mind and body¹⁰. It also believes that a vector of color psychology and color therapy can be used to improve the mood of people and create healthy and safe homes and favorable business environments.

The issue of selected colors has a wide range in different cultures and its conclusion is so widespread that it is impossible to deal with all aspects, but this principle has been proved that the different nationalities show different trends to different colors. Designers attempt to find their favorite colors. They even try to use specific symbols and forms in their works which suggest a specific meaning in a particular culture.

Appropriate color and light is for therapeutic centers and it causes the therapeutic centers to help the patients with pleasant atmosphere and environment.

4.4 Philosophers' Theory about Color

"Byrne" claimed that red may heal wounds. Blue light is useful to lower blood pressure, headaches and peace for the people without sleep. Tests have shown that the stimulating effect of high-speed colors especially red and yellow (all its kinds) is high.

"Gerald" reported that the stimulation of blue light on the parasympathetic nervous system is much less than the red and white light.

"Horst Meyer Jacobs" found that the most stimulating color is red and then green and yellow. He also found that blue is the least stimulating color.

Although the Ink blot test "Rorschach" was very serene, but his method has been used for many years to measure the internal state of angry people and those with schizophrenia that showed they suffer from colors.

4.5 Spatial form and Structure

According to the previous studies, some of the addicts will be likely interested in addiction after detoxification and when they enter the society, therefore the presence of an appropriate spatial structure is one of their main concerns as a social environment in the form of a series and an important principle.

Thus, according to what was said, the patient needs a spatial structure for full recovery to encourage them to achieve self-esteem and independent social character.

Environmental conditions that surround the addict inevitably affect his/her activities. The addict and his/her environment are always involved with an exchange of messages, operations and interactions. Considering the spatial structure (inside and outside the centers) can affect the mental performance of patients.

Many different fields such as sociologists, therapists and architects are affected by the way in which the patients have shown a reaction to the place and design of spaces to communicate with the human soul and their lives. The process of perception has always been associated with human understanding of the environment. In fact, the environmental perception is caused by the interaction of sensory perception and understanding which were experienced in the human mind and structures' soul¹¹.

Environmental quality is mainly obtained through structural design, and in addition to the perceived meanings of the environment, a sense of community and communication with place has a great importance in developing the satisfaction.

According to Counter Model, the physical factors improve the concepts and activities due to the quality of design and meet the biological, physiological, psychological and social needs of human to make a series of perceptions and a sense of place which lead to their satisfaction.

4.6 The Furniture of Private Environment and Interior Design

The ability to communicate with family members and friends during the period of drug rehabilitation and keeping the privacy are the main indicators of satisfaction. In the previous studies, the waiting room furniture that were designed in small and changeable groups help to increase the communication. It has been shown that single-bed rooms and their decorations affect the number of visits, time spent with friends and family members to accompany the patient and help him¹².

The study of Melin which aimed to evaluate the effects of changes in the arrangement of furniture showed that the changes have significantly increased the communication between people¹³.

The study of Melin which aimed to evaluate the effects of changes in the arrangement of furniture showed that the changes have significantly increased the communication between people. The secret talks between the personal and patient his/her family and protecting the rights of patients in studies with statistical sampling conducted in Iran and other countries were observed more in private rooms and this fact made the patient more satisfied after discharge from the medical center.

4.7 Natural Environment and Green Space

One of the components of satisfaction with drug rehabilitation centers is their natural environment. Studying the effects of nature on human soul with scientific methods has started too late. In the past 30 years, many theories about how to increase the welfare and the quality of life of people with their presence in nature have been offered by natural and social scientists¹⁴.

Herbalism has been considered since the late 1800s and many of the health centers have used it as a means to improve the lives of patients. Plants in the interior space also reduce stress and help the promotion of recovery. Apart from the fact that having plants in pots in every room makes the hospital environment away from the dry place, using Atrium in the central parts of hospitals helps the entrance of natural daylight and can also create an appropriate waiting area.

The studies in the areas of health, health management and psychology show that the environment of drug rehabilitation centers often makes the patients disappointed and this stress can lead to cognitive dysfunction, depression, irritability, and high blood

pressure. As a result, the reactions such as isolation increase the dependence on pre-treatment (addiction). These behavioral protests occur in the centers where the design is focused on treatment and the space is not made as intimate and home-like. The comprehensive approach in design in addition to the process of treatment and capability services is paying attention to the patient's mental and spiritual status and at the same time with the presence at the drug rehabilitation center and the continued treatment, the patient is encouraged to interact with the elements such as green space, landscape and climate. Since we are part of the nature we should keep the contact to it in order to become complete humans¹⁵.

Schultz emphasizes the role of natural elements in achieving a sense of place that leads to satisfaction and considers giving the objectivity to meanings as the duty of the architect and in this regard the natural place will have the role of model for the manmade environment. He considers the understanding of nature as synonymous with mental development and growth with the study of the physical properties of natural components on the one hand and the semantic understanding of the interactions between the components of order and disciplines, messages and meanings¹⁶.

People who are working professionally in health care centers widely use the methods like working in gardens and communicating between them and the plants to treat the patients¹⁸.

In general, the psychological effects of green space on drug rehabilitation centers can be explained as follows:

4.7.1 Creating Mental Peace



Figure 5. Peaceful space (Source: author).

In addition to the psychological effects of peace that are obtained as a result of exposure to nature and green spaces, the term “phytoncide production” can be

scientifically mentioned. Some trees such as walnut, pine, and etc. can release “phytoncide” in the air which has a satisfactory effect on human. So that it can make a balance between the two hemispheres and give a natural state and sedation to human¹⁷ (Figure 5).

4.7.2 Positive Impacts on the Physical Health of People

People in industrialized societies do too little exercise; some physical activities cannot be done during the daily works. As a result, these people should be further encouraged to do the physical activities and exercise. Attractive environments including green space can encourage people to engage in such activities. The previous studies show that the green environments as a place for recreational activities are preferred to the built environments¹⁸. For example, Roger Ulrich in conducted a study on the physiological effects of trees and green space on the recovery period of patients in a hospital and came to the conclusion that the green space can shorten the period of hospitalization¹⁹.

Solving the challenges and constraints of individuals through the exchange of ideas, friendly consultations and ... at the formal and informal parks and green spaces (Figure 6).



Figure 6. Public spaces (Source: author).

The impact on human behavior and mental and behavioral dynamics.

The presence of people in good physical and mental conditions through the continuous presence in green spaces, such as exercise, sport and ... in these spaces.

By summarizing the above issues about the ability of nature meaning to therapeutic centers and also its ability to activate all senses and affirmative action of patients, the nature's special status in patient satisfaction can be achieved.

5. Materials

Materials are the language and decoration of buildings and physical environment. In fact, the visual language is the emotion and expression of construction materials. Thus, paying attention to the company and semantic relationship of them is one of the important issues.

The use of natural materials in buildings establishes a harmonious relationship between the visual power of human and his feelings. In assessing a building not only the building itself but also the surrounding environment is important. Terence r.lee empirically proved that the method of perception was very personal and differed from person to another. An international forum in one of his research in 1974 concluded that in general the environment with the radius of 400 meters or a five minute walk affects the perceptions²⁰.

As mentioned, the materials are the visual aspect of the building and have direct psychological effects on people. Thus, the addict person needs to see relaxing and peaceful elements in his/her environment due to the nervous problems and disorders and the appropriate and natural materials (such as the use of wood, stone, brick) in the building as decorative elements can affect the mental health of people and enhance their satisfaction.

6. Discussion and Conclusion

The physical environment affects the patient satisfaction and enhances the quality of her/his life during hospitalization. According to the conducted studies and research based on statistics and sampling of the real population of patients, it can be concluded that the natural and built environments have physical and mental effects on human and these effective factors are sometimes shared between the natural and built environments. For several years, the various therapeutic environments have shown their effects on mental health, behavior, mental and physical balance to create happiness, depression, restlessness or calm in humans.

The explanation of a comprehensive model for patient satisfaction requires a more detailed paper. However, the following suggestions can be derived from the summary of the research results.

- It is important to note that the architecture is not a cure from the beginning, but can be useful significantly as a part of the treatment through the establishment of spaces such as Foster spaces and representa-

tion of activities to achieve the gradual rehabilitation through a therapeutic environment.

- Therapeutic centers should have a full exploitation of the nature and provide an environment that create attraction and sensory stimulation in patients and encourage them to work and live in the environment by a variety of variables within the environment.
- Colors affect human life and have an effective and active presence and can balance the body's energy and can also treat many physical and mental problems.
- The design of behavioral bases should fit the patient's mental or psychological state and have a value and effect on behavioral pattern and also include the continued recurrent activities using the current model mentioned in the above studies.
- The creation of defining inviting and easily readable paths and directions to become more relaxed.

7. References

1. Anonymous. Color my world: Design therapy for balance and healing; 2013 Jun 18. Available from: <http://awakening-charlotte.com>
2. Kurt K. Principles of Gestalt psychology. London: Routledge and Kegan Paul; 1935.
3. Sadegiye Ahari S, Azami A, Barak M, Amani, Firuz S. Reviewing Journal of School of Public Health and Institute of Public Health Research. 2012; 10(3):64.
4. Rapoport A. Tehran: The meaning of the built environment: An approach in non-verbal communication. In: Habib F, editor; 2005.
5. Lang J. The creation of architectural theory: The role of behavioral sciences in the design environment. In: Eynifar A, editor. Tehran: Tehran University Publications; 2004.
6. Zadeh BA, Afshar D. Design and patterns behavioral suggestions for improvement of urban parks. Quarterly Ecology. 2002; 29(31).
7. Matlabi Gh. Environmental psychology: New knowledge in the service of architecture and urban design. Fine Arts Scientific Journal. Tehran: Tehran University Publications; 2001.
8. Gibson JJ. An ecological approach to visual perception. Boston: Houghton Mifflin; 1979.
9. Franta G, Anstead K. Daylighting offers Greater Opportunities. Architectural Lighting Magazine. 2003; 49.
10. Chiazzari S. Corporate colors and healing home design. 1994; Available from: <http://holisticdesign.co.uk>
11. Neisser U. Cognitive psychology. Englewood cliffs. NJ: Prentice-Hall; 1976.
12. Choi YS, Bosch SJ. Environmental affordances: Designing for family presence and involvement in patient care. Health Environments Research and Design Journal. 2013; 6(4):64.
13. Melin L, Gotestam KG. The effects of rearranging ward routines on communication and eating behaviors of psychogeriatric patients. Journal of Applied Behavior Analysis. 1981; 14(1):47-51.
14. Altman David V. Shahid Beheshti University, Ali Nama-zyan. Tehran: Martyr Beheshti University; 2003.
15. Bell S. Landscape pattern, Perception and Process. In: Aminzadeh B, editor. Tehran: University of Tehran; 2003.
16. Schultz Ch. The concept of residence: Toward the allegorical architecture. In: Ahmadi MA, editor. Tehran: Publications; 2010.
17. Gila A. An analysis of the economic role of trees in urban spaces, green message; 2002. p. 13-4.
18. Made Sjerp devise. The impact of green space in the living environment and health of recreational activities. Translation of Group Messaging. Green; 2003. p. 11.
19. Majnunian H. Discussions about parks, green spaces promenades. Parks Organization Publications; 1995.
20. Trans-disciplinary model in a health care setting. Washington, DC: American Institute of Architects; 2005.