

PREFERENCES OF PATIENTS AND MEDICAL DOCTORS  
ON THE CHARACTERISTICS OF INTERIOR WALLS: THE CASE OF  
ONCOLOGY HOSPITAL OF HACETTEPE UNIVERSITY

A THESIS  
SUBMITTED TO THE DEPARTMENT OF  
INTERIOR ARCHITECTURE AND ENVIRONMENTAL DESIGN  
AND THE INSTITUTE OF FINE ARTS  
OF BILKENT UNIVERSITY  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DEGREE OF  
MASTER OF FINE ARTS

By  
Sezgin Tannöver  
May, 1998

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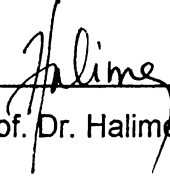
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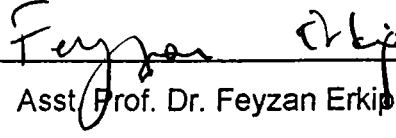
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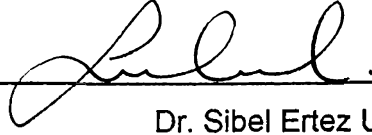
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Asst. Prof. Dr. Feyzan Erkip

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Dr. Sibel Ertez Ural

Approved by the Institute of Fine Arts



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Prof. Dr. Bülent Özgüç, Director of the Institute of Fine Arts

## ABSTRACT

### PREFERENCES OF PATIENTS AND MEDICAL DOCTORS ON THE CHARACTERISTICS OF INTERIOR WALLS: THE CASE OF ONCOLOGY HOSPITAL OF HACETTEPE UNIVERSITY

Sezin Tanrıöver

M.F.A. in  
Interior Architecture and Environmental Design  
Supervisor: Asst. Prof. Dr. Halime Demirkan  
May, 1998

In this study, the effects of the most striking architectural component in a space; the interior walls in medical settings, especially in Oncology Hospitals and the preferences of cancer patients and medical doctors on the characteristics of walls were discovered and discussed. By determining the preferences of cancer patients and medical doctors, some design considerations are stated which can support the psychological conditions and the recovery of cancer patients and increase the work performance of medical doctors. Cancer, cancer patients' psychology, and the special needs of cancer patients are discussed. Furthermore, the relationship between the psychological conditions and immunity of the human body, psychoneuroimmunology were explored to support the idea and need of creating a medical settings that will support patients psychology and recovery and work performance of medical doctors.

Key Words: Interior Walls, Cancer Patients, Interior Wall Characteristics

## ÖZET

### HASTALARIN VE DOKTORLARIN, HASTANELERİN İÇ DUVAR ÖZELLİKLERİYLE İLGİLİ TERCİHLERİ: HACETTEPE ÜNİVERSİTESİ ONKOLOJİ HASTANESİ ÖRNEĞİ

Sezin Tanrıöver

İç Mimarlık ve Çevre Tasarımı Bölümü  
Yüksek Lisans  
Tez Yöneticisi: Yr. Doç. Dr. Halime Demirkan  
Mayıs, 1998

Bu çalışma, tüm mimari elemanlar arasında, bir mekanın en büyük kısmını oluşturan, iç duvarların, sağlık yapılarında, özellikle de Onkoloji Hastanelerinde ihtiyaç duyulan ve kanser hastaları ve doktorlar tarafından tercih edilen aynı zamanda hastaların psikolojik durumlarına ve iyileşmelerine, doktorların da çalışmalarına destek olacak, iki ve üç boyutlu özelliklerini ortaya çıkarmak amacıyla düzenlenmiştir. Bununla birlikte, tasarımı etkileyebileceği düşünülen, kanser hastalığı, kanser hastalarının içinde buldukları psikolojik durum ve alansal gereksinimleri de araştırılmıştır. Ayrıca kişinin psikolojik durumunun bağışıklık sistemi ile yakın ilişkisi ve bunun tasarıma yansımaları da, hastaların iyileşmelerine destek olacak ve psikolojik durumlarını iyi yönde etkileyecek ve doktorların çalışmalarını destekleyecek mekanlar tasarlama fikrini destekleyişi açısından önemli görülmüş ve araştırılmıştır.

Anahtar Sözcükler: İç Duvarlar, Kanser Hastaları, Duvar Özellikleri.

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## 1. INTRODUCTION

### 1.1 The Problem

In the 18<sup>th</sup> and 19<sup>th</sup> centuries, hospitals used to be the places of death and poverty with maze like anonymous corridors where unfamiliar sounds and smells increased the sense of alienation from the medical staff and healing as well (Valins,1993).

After the industrial revolution, hospitals started to change their impersonal and uncaring images. With the help of new construction techniques and materials, important improvements were observed. But the most important achievements were made in 20<sup>th</sup> century, with the increasing completion in health facilities (Sloane,1994).

Especially towards the end of the 20<sup>th</sup> century, hospitality and patient-centered care, that is the Plantree Unit, moved one step forward (Malkin,1991). Besides emphasizing the functional efficiency, marketing, cost and codes, design and physical environment that supports the psychological needs of the patients, visitors and the staff gained absolute importance (Ulrich,1990).

In recent years, scientific evidences showed that the poor designs work against the wellness of the patients. So, the promotion of wellness by creating physical

surroundings that are psychologically supportive, became one of the major goals of the designers (Ulrich, 1990).

Among all patients, there is one group which are affected most by their psychological conditions and their psychological conditions have direct influence on their recovery and wellness. Cancer patients' recovery is totally related to the early diagnosis of the illness and the patients' psychological conditions. So, to show the absolute need of thinking about how to create such therapeutic health care environments which support the psychological needs of cancer patients and to start with a minor step, is the main reason in the preparation of this study.

## **1.2 The Aim of the Study**

To create psychologically supportive and therapeutic environment for this special patient group, the brief information about the illness and the special and the spatial needs of the cancer patients should be completed.

Considering the cancer patients psychology who faces the stress and the fear of death, the major aim should be coping with stress. Researches in behavioral sciences and health related fields suggest that health care environments can deal with stress if they are designed to give:

- a sense of control of physical and social surroundings,
- social support
- positive distractions in physical surroundings (Ulrich, 1990).

The aim of this study is to explore the possibility to achieve these three goals with one and the most dominant architectural elements, walls in Oncology Hospitals and

to get closer to the cancer patients' comments, needs and feelings about the physical environment in medical settings.

### **1.3 The Structure of the Thesis**

Including the introduction and the conclusion chapters, this thesis consists of five chapters.

The Chapter 2 examines the effects of the built environment on human beings and their psychological conditions. This chapter also discusses the design of the health care environments and the patient psychology and also gives brief information about cancer; definition of the illness and the social and psychological aspects of it. The most important of all is that, this chapter enlightens the special and the spatial needs of this patient group, where these specific needs determine the characteristics of the health care environment where the cancer patients will be treated. Healing and stages of healing, stress and illness, and the relation between the human psychology and the immune system are also discussed in this chapter.

The Chapter 3 explores and defines walls and its characteristics as the architectural component that is being discussed. Forms, colors, surface textures, surface patterns, and surface materials of walls are explained. In this chapter, the psychological effects of characteristics of walls on human beings are discussed as well.

In the Chapter 4, the case study is explained in detail. The design stage, analysis stage and the results are described. The results are shown in tables and the statistical analysis is completed. The personal characteristics, distribution of

priorities and the preferences on wall characteristics of both experimental group and control group are stated.

Finally in the Conclusion Chapter, the brief summary of the subject and the case study is given. The reasons for preparing such study, the reasons for choosing cancer patients and medical doctors as sample groups and the reason for choosing walls as the architectural component to be discussed were explained. Lastly the results was finalized shortly to enable healthcare designers to benefit while they are designing such spaces.

Next chapter is prepared to get closer to the human and built environment relationship, cancer patients psychology and spatial needs, and finally to review the criteria to develop healing environments for patients. Before looking at relationship between human and medical setting design, the effects of the built environment itself should be reviewed.

## **2. BUILT ENVIRONMENT, MEDICAL SETTINGS AND CANCER PATIENTS**

### **2.1. Built Environment and Medical Settings**

#### **2.1.1. The Effects of Built Environment on Human Beings**

Every human being builds. We build and design our lives. There are many reasons for us to build. Each object and aspect of the built environment is constructed to fulfill human needs, thoughts and actions, to protect us from the overall environment, to meditate and change this environment for our comfort and well-being (Bartuska and Young, 1994).

The built environment fills every part of our everyday lives and although we design our built environment, it strongly influences our lifestyles. The central role of the built environment is determining human social behavioral patterns and values (Lang, 1992).

#### **2.1.2. The Health Giving Intent of the Built Environment**

Built environment has very important effects on human being, on place, on human consciousness, and on the world. It can have a lot of negative effects such as, alienation, desensitization, physical, psychological and social health problems, desecration, ecological damage if it is not worked consciously.

It provides positive effects as strong as the negative ones if enough attention is paid and worked consciously. The built environments have the responsibility to minimize pollution, ecological damage and negative biological effects and have the responsibility to be sensitive, harmonious and to carry the spirit which will satisfy the inner senses and the psychology of the human being, as well as the visual aesthetics and outer senses (Day, 1990).

### **2.1.3. Medical Environment Design, Patient Psychology and Hospital Stress Factors**

The results of researches proves that the design of the physical environment has a great impact on both patients and caregivers. As well as the function and ease of circulation, psychological messages hidden in the physical environment are very important for the well-being of the patient and for the performance of the caregivers (Malkin, 1991).

Several studies as stated by Beales (1978), showed the need and advantages of involving these two major user groups in the design and planning stages of a facility. Including both patients and caregivers to the design stage is important both from the psychological and functional points of view. Besides, responding to some important design questions for functionality and special needs, participation of these two user groups in the design stage will make them feel themselves a part of the design, a part of the building. Belonging to the facility and familiarity is a great advantage for the caregivers` and patients` psychology (Beales, 1978)



According to Holahan and Saeger, and Sommer (Williams, 1991), patient behaviors can directly be affected by design. First of all, patterns of interactions with others can be changed and arranged with the design features. Designing dayrooms or other gathering places for patients increases the social interaction. In addition, feelings of privacy, security, satisfaction and orientation can be affected as well.

The design of the environment can cause stress if the environment is not designed to support the environment-individual relation. In other words, the designed environment should satisfy the psychological, physical and social needs and the goals of the individual (Malkin, 1991). There are various factors that cause stress in medical settings due to different sources.

For the healthcare settings, it is much harder to satisfy the needs when compared to the other spaces because as Volicer and Isenberg claim the hospitalization itself is a source of psychological stress above all, for all patients, and families, regardless of the nature of the illness (Malkin,1991). The sources of stress for a patient are: isolation from family and friends, lack of familiarity to the environment, medical jargon, problems with medications, fear of procedures, loss of control, lack of information, lack of privacy, worries about job and finance, but most important of all, hospitalization and being ill makes the patient think of death and mortality.(Malkin,1991) (see Table 2.1)

**Table 2.1. Hospital Stress Factors**

**Table 2-1. Hospital Stress Factors**

Factor	Stress Scale Events	Assigned Rank	Mean Rank Score
1. Unfamiliarity of surroundings	Having strangers sleep in the same room with you	01	13.9
	Having to sleep in a strange bed	03	15.9
	Having strange machines around	05	16.8
	Being awakened in the night by the nurse	06	16.9
	Being aware of unusual smells around you	11	19.4
	Being in a room that is too cold or too hot	16	21.7
	Having to eat cold or tasteless food	21	23.2
	Being cared for by an unfamiliar doctor	23	23.4
2. Loss of independence	Having to eat at different times than you usually do	02	15.4
	Having to wear a hospital gown	04	16.0
	Having to be assisted with bathing	07	17.0
	Not being able to get newspapers, radio or TV when you want them	08	17.7
	Having a roommate who has too many visitors	09	18.1
	Having to stay in bed or the same room all day	10	19.1
	Having to be assisted with a bedpan	13	21.5
	Not having your call light answered	35	27.3
	Being fed through tubes	39	29.2
	Thinking you may lose your sight	49	40.6
3. Separation from spouse	Worrying about your spouse being away from you	20	22.7
	Missing your spouse	38	28.4
4. Financial problems	Thinking about losing income because of your illness	27	25.9
	Not having enough insurance to pay for your hospitalization	36	27.4
5. Isolation from other people	Having a roommate who is seriously ill or cannot talk with you	12	21.2
	Having a roommate who is unfriendly	14	21.6
	Not having friends visit you	15	21.7
	Not being able to call family or friends on the phone	22	23.3
	Having the staff be in too much of a hurry	26	24.5
	Thinking you might lose your hearing	45	34.5
6. Lack of information	Thinking you might have pain because of surgery or test procedures	19	22.4
	Not knowing when to expect things will be done to you	25	24.2
	Having nurses or doctors talk too fast or use words you can't understand	29	26.4
	Not having your questions answered by the staff	37	27.6
	Not knowing the results or reasons for your treatments	41	31.9
	Not knowing for sure what illnesses you have	43	34.0
	Not being told what your diagnosis is	44	34.1
7. Threat of severe illness	Thinking your appearance might be changed after your hospitalization	17	22.1
	Being put in the hospital because of an accident	24	26.9
	Knowing you have to have an operation	32	26.9
	Having a sudden hospitalization you weren't planning to have	34	27.2
	Knowing you have a serious illness	46	34.6
	Thinking you might lose a kidney or some other organ	47	35.6
	Thinking you might have cancer	48	39.2
	8. Separation from family	Being in the hospital during holidays or special family occasions	18
Not having family visit you		31	26.5
Being hospitalized faraway from home		33	27.1
9. Problems with medications	Having medications cause you discomfort	28	26.0
	Feeling you are getting dependent on medications	30	26.4
	Not getting relief from pain medications	40	31.2
	Not getting pain medication when you need it	42	32.4

Source: Malkin, Jain. Hospital Interior Architecture. New York. Van Nostrand

Reinhold. 1991:16

#### 2.1.4. Stress and Illness

Stress is defined by Stoklos (Weiss and Lonquist, 1994) as 'a state of imbalance within a person, elicited by an actual or perceived disparity between environmental demands and person's capacity to cope with these demands.'

In 1936 An Austrian physician and scientist Hans Selye appeared with very striking discoveries about stress. In his research, he proved that hormones that are secreted as a result of stress, increases the development of nonendocrine degenerative disease such as brain hemorrhage, hardening of the arteries, coronary thrombosis, high blood pressure, kidney failure, arthritis, peptic ulcers, and cancer. With his study, he changed the definition of stress which was known as an external force, to mental and physical illness that was caused by environmental stressors. As well as his research, in his book *The Stress of Life*, he briefly explains the measurable and highly predictable and physiological changes take place in the body when it faces psychological and environmental stress (Malkin, 1991) (see Figure 2.2).

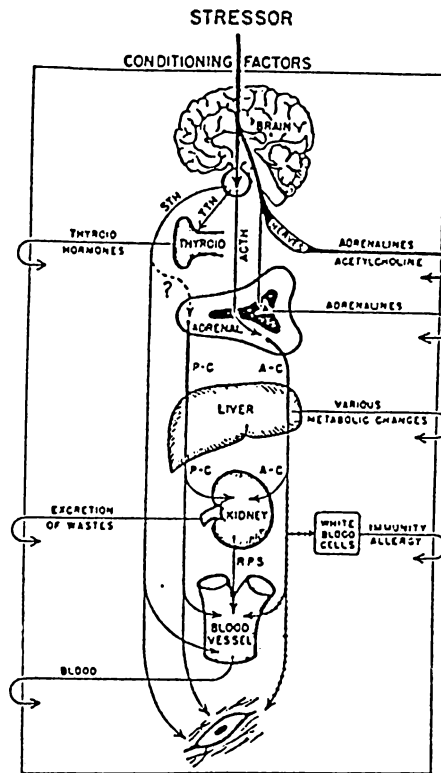


Figure 2.2. Synoptic view of whole stress mechanism.

Source: Malkin, Jain. Hospital Interior Architecture. New York. Van Nostrand Reinhold. 1991

### 2.1.5. The Relation Between Human Psychology and Immune System: Psychoneuroimmunology (PNI)

Psychoneuroimmunology , briefly is the correlation between stress and health (Gappell, 1992). It is a term which refers to the role of emotions in cancer, infections, allergic diseases, and autoimmune disease ( Malkin,1991). According to Solomon (1997), when people suffer from mental illnesses and mental problems this automatically means that they will also suffer immunologically.

Whatever the stressor and wherever it acts, it is responded by a generalized stress reaction by the entire body. This response comes from the two coordinating systems, the endocrine and nervous. When the alarm signal sent from the brain against the stressor, reaches to nerves and secretion of adrenaline starts. Excess adrenaline causes the decrease of the white blood cells, which are very necessary for the immunity system of the body. These effects of stress directly increase acceptance of the disease to the body (Malkin, 1991).

The changes in the body that adapt the organism to fight are:

- Blood pressure is increased and blood flows to the muscles and heart. Blood is diverted from the outer parts of the body and from the functions such as digestion,
- Sugars and fats are released to give the body energy,
- Immunity is temporarily depressed to allow the body to possible invasions (Freund and Mc Guire,1991).

According to Gappell (1992), psychoneuroimmunology is the art and science of creating environments that prevent illness, speed healing and promote well-being. Many healthcare facilities present monotonous, visually tiring, and emotionally stressful environments. The stress doubles for the people who are ill and already under stress. According Lobourit (Solomon, 1997) well designed environments rarely produce biological, physiological, and behavioral disturbances. That kind of disorders appears with the loss of control of the immediate surroundings. According to Frank Lloyd Wright (Solomon,1992), patients should never live with the idea that they are sick and health center should display health before patients' eyes. Hamlin adds to the idea (as documented in Solomon,1992), by stating that hospital should be seen and should look like a place that anyone would want to go on a vacation.

Human physical and emotional well-being are directly influenced by six major environmental factors: light, color, sound, aroma, texture and space (Gappell, 1992). This shows that psychoneuroimmunology also focuses on the five senses, that are hearing, sight, smell, touch and taste and their influences on human psychology and emotions. Psychoneuroimmunology defends the idea that the emotional factors which predispose people to illness can be coped with by the help of five senses. By using five senses people can view the world differently, use their energies in different and creative areas, and finally develop the feelings of self-worth and self-esteem (Malkin, 1991).

## **2.2.Cancer and Cancer Patients**

### **2.2.1. The Definition of Cancer**

The word cancer is usually perceived as a sentence of death for the people who are suffering from this disease and their relatives and for some of them, it really is. For another group it is a disease that may be permanently arrested, and kept at a level to extend the individual's life as long as possible (Malkin, 1991).

The bodies of living things are made up of cells which are throughout our lives, being continuously replaced by a process of cellular division. The new cells, the daughter cells which have the same characteristics with the original cell as well divide after a period of time, to continue the process of cellular division. In normal conditions our bodies do have a mechanism for controlling the rate of reduplication and formation of new cells. When this control mechanism breaks down, some cells

start to duplicate in an uncontrolled manner. These new cells called cancerous (Dobree,1988).

While a normal cell is dividing, it receives instruction from the genes which are made up of a protein called deoxyribonucleic acid (DNA) . DNA receives chemical instructions for the new configuration. It is in this step where the cause of cancer is hidden. At this level DNA may sometimes receive disorganized and incorrect instruction to the new daughter cells. It briefly means, DNA, instead of being instructed to begin the process, it receives a set of garbled or incomplete chemical instructions which initiates the process but in a haphazard and uncontrolled way. So, this process results with the production of irregularly dividing cancerous cells (Dobree,1988).

There are two main causes of this break down in the chemical control mechanism. The first one is the DNA, meaning the genetic information that it carries. These genetic information can be a cause for this break down by carrying the disorganized and incorrect information from generation to generation. The other cause is the external chemical effect which can lead to haphazard and uncontrolled cellular division (Dobree,1988).

### **2.2.2. Psychological Factors Causing Cancer**

Psychological factors that are causing cancer is another dimension of the subject. This is a question that is being asked and studied on for centuries. As Dobree (1988) stated, Greek philosopher and physician Galen suggested that the women in melancholy were more susceptible to breast cancer and Walshe, in his studies, reported that his patients who are depressive are more open to cancer. Recent

studies on cancer patients showed that psychological factors have a bearing on the development of cancer (Dobree,1988).

Among all of the diseases, emotions can mostly influence the cancer patients and the progress of cancer. The important fact in this theory is that, the failure of psychological defenses play a big role in the onset and the progress of this disease (Malkin, 1991). Because the natural killer cells (NK) which play an important role in the prevention and spread of cancer are psychologically sensitive. (Solomon,1997).

Psychological factors, as mentioned before, are known to have a direct influence on physiological functions of the body, which have a very delicate balance between each other. Cancerous cells spread in the body with the failure of the immune system which are affected by the physiological and psychological factors, nervous and endocrine system or these cells somehow become undetectable by the immune system (Dobree,1988).

Until the recent studies mind and body, meaning the physiological and psychological being of a person, are seen as distinct components. But now scientist are aware of the importance of mind-body integration which is called the Immunologic Competency. In coping with cancer, immunologic competency and physical and psychological stresses play a big role in the body's ability to resist disease which is called the host resistance (Malkin, 1991).

Physiological systems, nervous and endocrine systems of a person can be affected by the person's own psychological status. Stress and depression may cause changes both in the hormonal and immune systems and cause the cancer to develop.



### 2.2.3. Psychological and Social Aspects of Cancer

Each cancer sufferer finds him/herself in a position that he/she must cope with the emotional impact of learning that he/she have cancer in addition to the other normal psychological problems that all of us face in our everyday lives. Normally, considering that the person is a member of a family and also a social group, as well as the patient, it is very hard for the family and friends to cope and to accept the situation (Dobree,1988).

The patient and the family will go through some steps throughout the disease. According to Elisabeth Kubler Ross (Malkin, 1991), there are five stages of response as denial, anger (why me?), depression, acceptance, and bargaining. Other psychological effects of cancer are:

*Anticipatory grief:* Preparation for future loss of one's life, body part, or function.

*Depression:* A response to onset of the disease; a coping mechanism for dealing with anxiety.

*Uncertainty:* Not knowing for a period of years whether the disease has been arrested; uncertainty can be difficult for the patient and the family.

*Isolation:* The `Why me` phenomenon causes separation and isolation, friends start to feel the fear of saying something wrong. For terminally ill patients social isolation increases when the friends, family and physicians withdraw to protect themselves from anguish and feelings of failure.

## 2.3. Creating a Healing Environment for Cancer Patients

### 2.3.1. Definition of Healing

As documented by Malkin (Marberry and Zagon, 1995), the word `healing` derived from the Anglo-Saxon word *haelen* , and means to be or become whole. Wholeness and the harmony of mind-body-spirit, means a dynamic process of balance at all levels and all parts, from the cellular, biological level to the transpersonal and spiritual levels.

According to Linton (Marberry, 1995), healing is a term which has a definition that is very individual. It is important for each person to consider what healing means to him/her personally. As Linton declares :

- Healing is bigger, deeper and more far reaching than curing, but both are closely related.
- Healing usually involves more than just the physical vehicle, as it also touches upon the mental, emotional, and spiritual aspects of what it means to be a human being.
- Healing comes from sources within and outside of the patient, but primarily from within.
- Hospitals need to expand beyond the medical model of curing to newly developed models of healing that recognize and consciously work with the body-mind-spirit connections researchers are beginning to understand.
- Healing is not just something that happens magically or spontaneously. It is something that can be consciously pursued and influenced by the person who is being healed.

- We are all in the process of healing all of the time. The only distinction between caregiver and care receiver is one of acuity; both have the potential to heal from the experience.
- Human kind's eternal quest seem to be the search for itself, its God, peace of mind, and peace of heart. Healing seems to occur when people get back on the path in this particular quest .
- Healing seems to be a continuing process of connection, or perhaps reconnection, that people bring into their lives.

While creating healing environments, besides the medical technology and science, the natural healing potentials that reside within the human being as well should be used to balance them. The created environment should be powerful in invoking the inner healing resources of the patient in order to support the physician's outer healing resources (Linton in Marberry, 1995).

As both Malkin (Marberry and Zagon, 1995) and Linton (Marberry, 1995) agree to achieve wholeness and balance for patients, the relationship between mind, body and spirit must be considered.

### **2.3.2. Progressive Stages of Healing**

According to Malkin (1991), there are three stages of healing, that every patient goes through:

Stage 1: At the beginning of the disease, the sick organism narrows its focus, turns inward and seeks isolation to conserve energy.

Stage 2: The patients who are on the way to recovery tend to move and tend to socialize again.

Stage 3: At this stage patients have the impulse to explore the world outside the patient wing and begin to go around the hospital.

From the first stage of the disease to the third, the environment should be designed to enable the patient first to conserve energy, than gain energy and socialize and finally to support the healing process that is applied by the physicians.

### 2.3.3. Developing a Healing Environment

In order to develop a healing environment there are many factors that should be considered. Malkin (1991) emphasizes the important factors as:

**Table 2.3** Developing a Healing Environment

1. Noise control
  - Sound of footsteps in corridor
  - Slamming doors, clanking latches
  - Loudspeaker paging system
  - Staff conversations from nurse stations or staff lounge
  - Other patients' televisions and radios
  - Clanking of dishes on food carts
2. Air quality
  - Need for fresh air, solarium, or roof garden
  - Avoidance of noxious off-gassing from synthetic materials, including certain types of paint
  - Avoidance of odiferous cleaning agents
  - Adequate number of air changes
3. Thermal comfort
  - Ability to control room temperature, humidity, and air circulation to suit personal needs
4. Privacy
  - Ability to control view of the outdoors
  - Ability to control social interaction and view of patient in adjacent bed
  - Secure place for personal belongings
  - Place to display personal mementos (family photos, get-well cards, flowers)
5. Light
  - Nonglare lighting in patient room
  - Ability to control intensity of light
  - Good reading light
  - Window should be low enough for patient to see outdoors while lying in bed
  - Patient room lighting should be full spectrum
6. Communication
  - Ability to contact staff when needed
  - Comfortable places to visit with family
  - Television, radio, and telephone available as needed
7. Views of nature
  - Views of trees, flowers, mountains, or ocean from patient rooms and lounges
8. Indoor landscaping
9. Color
  - Careful use of color to create mood, lift spirit, and make rooms cheerful
  - Use in bed linens, bedspreads, gowns, personal hygiene kits, accessories, food trays
10. Texture
  - Introduce textural variety in wall surfaces, floors, ceilings, furniture, fabrics, and artwork
11. Accommodation for families
  - Provide place for family members to make them feel welcome, rather than intrusive
  - Provide visitor lounges and access to vending machines, telephones, and cafeteria

**Source:** Malkin, Jain. Hospital Interior Architecture. New York. Van

Nostrand Reinhold. 1991

#### **2.3.4. Special and Spatial Needs of Cancer Patients**

The special and spatial needs of cancer patients can be analyzed in two groups as, psycho-spatial and physical and functional needs of cancer patients. Although the needs were distributed into separate groups, they are very closely related. The psychological effects of functional needs on the patients' psychology can not be ignored.

##### **2.3.4.1. Spatial and Functional Needs of Cancer Patients**

###### **2.3.4.1.1. Waiting**

As waiting becomes part of the routine with the series of treatments, waiting rooms become places that people spend some time and meet same people each day. Friendship and social attraction is the positive part of the routine waiting. But for some of the patients who are depressed and especially uncomfortable about their appearance (baldness, pallor), privacy and being out of sight might be very important. For patients of this kind a part of the waiting room can be diverted with some low partitions and privacy groupings can be arranged. Again for the sake of privacy of gowned patients, a subwaiting area that has a direct connection to the treatment rooms, can be designed which is out of view of the patients waiting in the primary waiting room. The waiting room should also have accommodations for the companions (Malkin, 1991).

#### **2.3.4.1.2. Gowning**

Another routine and significant part of the treatment is gowning. Wearing a gown is a source of stress and anxiety for patients because it symbolizes commission of the patient to the treatment. It also become a problem and discomfort for the ones who are from a culture which has strong taboos about nudity and for the ones who are disfigured by surgery. The patient's cultural background and the level of education usually dictates the level of comfort and discomfort. The dressing room should have a door that can be locked, a secure place for the personal belongings, a bin for the soiled gown, a bench, a shelf for the clean gowns and a mirror. Carpeted floor is desirable (Malkin,1991).

#### **2.3.4.1.3. Routinization**

In order to normalize and decrease the stress of the situation and experience, people repeat behaviors. A patient's preference to sit in the same chair in the waiting room, or showing some similar behaviors such as hanging up coat, visiting bathroom, using drinking fountain, these all show that this coping mechanism reduces anxiety and stress (Malkin,1991).

## **2.3.4.2. Psycho-Spatial Needs of Cancer Patients**

### **2.3.4.2.1. Need for Social Interaction**

As for other groups of patients, friendship with staff and with other patients is very important. All patients feel grateful about the staff who treat bring them gifts and mementos. Friendship with other patients is very important for sharing and discussing about their feelings and illness. So the places, especially the waiting rooms should be designed to encourage social interaction, furniture arrangement should be made by considering the socialization need of patients (Malkin,1991).

### **2.3.4.2.2. Privacy**

While trying to encourage social interaction among patients, privacy should not be forgotten. The reception desk should be designed in such a way that a patient can not be easily overheard. Furniture arrangement should also allow patients and the companion to chat privately, while encouraging socialization (Malkin,1991).

### **2.3.4.2.3. Sense of Control**

Loss of control make people feel dependent. A sense of control and independence may be very helpful for comfort and to decrease the stress. Allowing patients to do as much as possible, increases the feeling of control. Making a distinction between the patient and the staff areas and allow patients to move freely in places such as from the dressing room to the sub waiting area and to treatment room. This distinction has another advantage as well such as decreasing the wayfinding problems (Malkin,1991).



#### **2.3.4.2.4. Territoriality**

This is a natural tendency to protect a space and claim it. This natural tendency appears as sitting in a certain section of the waiting room in every visit. It gives some degree of control to choose who to sit next to (Malkin,1991).

The reason for reviewing information about human, medical setting relationship, cancer patients and their spatial needs and healing environments, is to get prepared for the expectations and comments of patients and doctors from the environment and especially from the interior walls that are surrounding them in the hospital. But before the case study, walls and characteristics of walls are analyzed in the next chapter.

### 3. CHARACTERISTICS OF WALLS

#### 3.1. Wall

The walls have important functions such as carrying the ceiling; guide our movements; enclose our activities, our objects and tools; accommodate us and lead us from one place to another. The most important of all they enable us to inhabit, to dwell (Evenson 1987). To dwell, according to Heidegger (Evensen, 1987), means to be at peace, to be brought to peace, and to remain in peace. The word for 'peace', Friede, means the free, das frye, and fry means: preserved from harm and danger, preserved from something, safe-guarded.

The walls occupy the major portion of the visual field in every interior. The wall covers the largest proportion of the interior at eye level; therefore, it is the portion that visually attracts greatest attention and psychologically has the greatest significance. Wall treatments that are modulation, texture, pattern and their ability to display messages play the most important role in determining the character and the atmosphere of a place. So, just the opposite of floors, walls do have more importance on psychological and aesthetic needs than physical restrictions (Weinhold, 1988).

### 3.2. Forms of Walls

There are eight forms of walls. The first two are vertical and horizontal which deal with the width and height, the next three are flat, convex, and concave which deal with the wall's depth, and the final three are walls slanted toward us, away and upright which deal with the slant of the walls (Evenson, 1987).

*Horizontal Wall:* The horizontal wall expresses weight against the ground and gives a compressed and compact impression. Its horizontal impression makes us go along with it and does not give any clue to pause, turn or enter as in Figure 3.1-a

*Vertical Wall:* The vertical walls are more communicative than the horizontal ones. In contrast with the horizontal wall's effect of spreading movements, vertical walls collects them and directs the attention to the center of the space. Vertical walls always seem lighter because of the rising effect they have. This rising effect makes vertical walls the focus of attention (Figure 3.1-b).

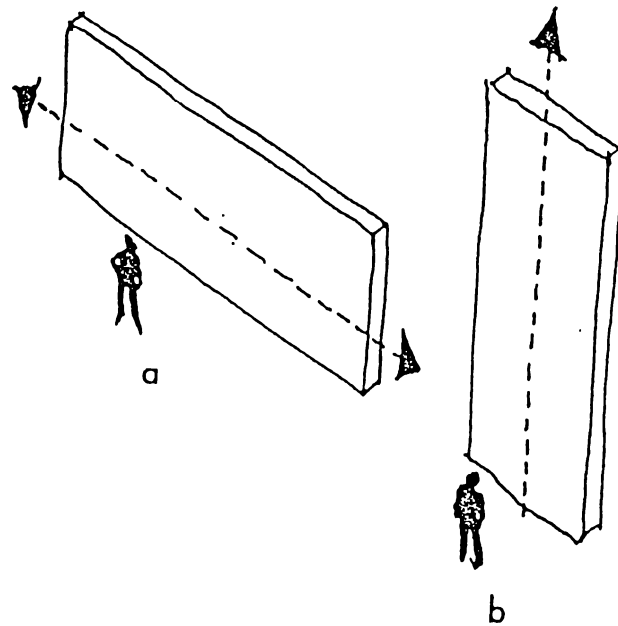


Figure 3.1. Width and Height of Walls

Source: Evenson, Thomas Thiis. 1987. *Archetypes In Architecture*. Norway.

Norwegian University Press.

*Flat Wall:* The flat wall is just a background. It is an impassive and stiff plane which does not give us any clue about inside outside relationship (Figure 3.2-c).

*Convex Wall:* The convex wall gives us the impression that the interior itself resist our approach, protecting itself from us. The enfolding movement keeps us at a distance. This form also guides us around the corner towards one side or the other. With the convex walls we feel like our movements are directed by the interior space itself which has dictated the form we are following. Convex walls are perceived as solid and concrete things but as a contrast, concave walls seem to be a background for things (Figure 3.2-d).

*Concave Wall:* The concave walls permits and wants us to move forward, towards inside. It represents the feeling of protection and friendliness. Space is directed

towards outside but it also protects against any movement towards inside (Figure 3.2-e). Using both convex and concave walls together results as an undulating wall in which the heavier and lighter parts balance each other and provide a continuous motion along the way. Undulating wall keeps a dynamic balance between inside and outside.

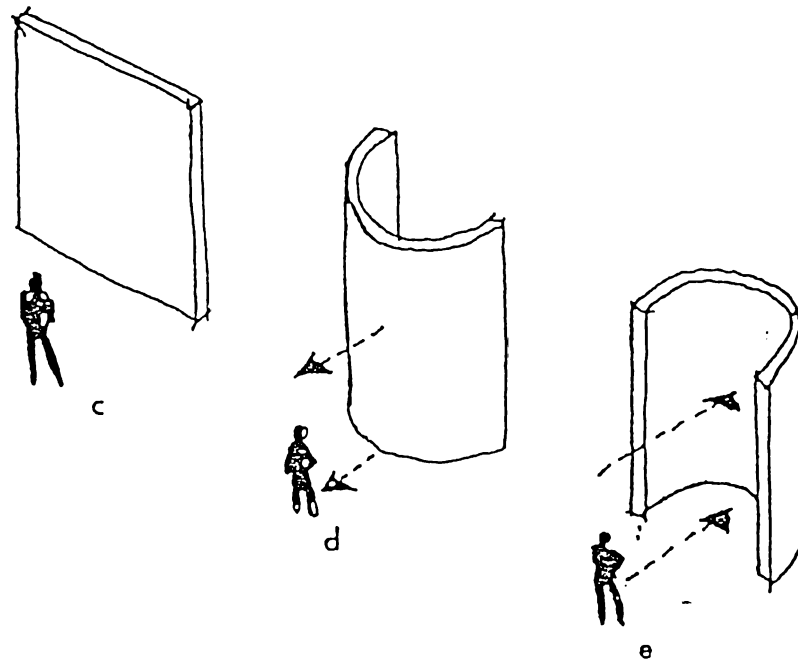
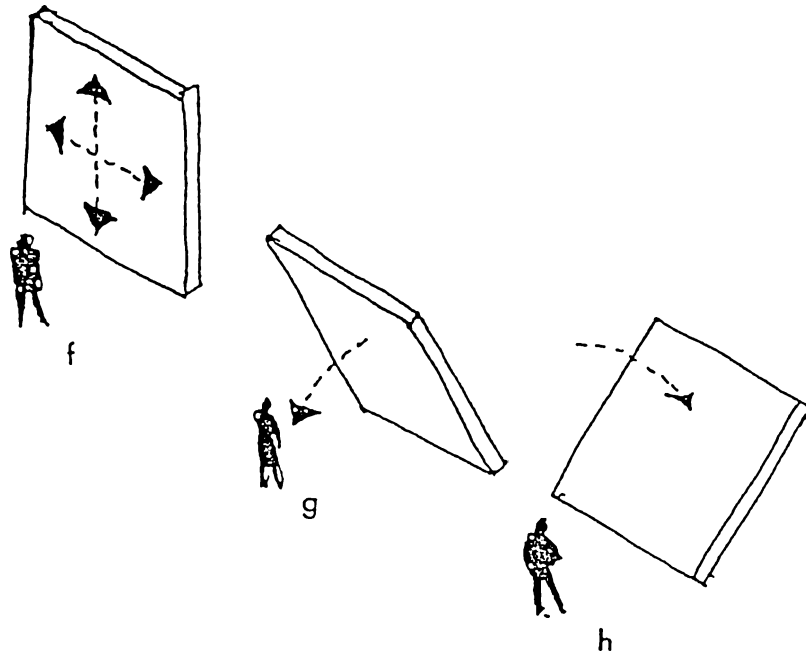


Figure 3.2. Depth of Walls

Source: Evenson, Thomas Thiis. 1987. *Archetypes In Architecture*. Norway.

Norwegian University Press.

*Slanting Wall*: A wall which seems that it is about to fall, will create a tense and insecure feeling. Wall that seems to tilt over us is threatening. Nobody prefers to stand on the tilted side because it does not seem safe. Just as the opposite of the wall tilted over us, the wall tilted away from us threatens whoever or whatever take place on the other side of the wall (Figures 3.3).



**Figure 3.3. Slant of Walls**

**Source: Evenson, Thomas Thiis. 1987. *Archetypes In Architecture*. Norway.**

Norwegian University Press.

### 3.3. Color of Walls

In healthcare settings, decision on the right color palette is now known as affecting the psychophysical responses such as a calming effect-lowering blood pressure and heart rate, reduction of eye fatigue and the promotion of healing (Birren, 1963).

According to Malkin (1995), the proper use of color in healthcare environments can play an important role in healing. Healing is both physical and mental process and researches in mind/body medicine proved that less stressed patients seem to recover soon.

Clinical environments have always been sterile, shiny, and seem cold. But nowadays healthcare environments start looking more welcoming and warm.

To achieve this new image in healthcare interiors, a full-color spectrum can be used in addition to other architectural tools.

As documented by Malkin (1995), The Lighthouse Research Institute in New York City advise the following:

- maximize intensity/reflectance contrast,
- contrast dark colors with the opposite extremes of the hue scale, with tints from mid-value scale colors, and avoid contrasting light colors from the extremes of the hue scale against mid value scale colors.
- avoid the use of any color against an achromatic color of similar value.
- avoid contrasting hues from adjacent parts of the hue scale.
- avoid contrasting colors of low chroma and similar value.

Torrice advises (Marrberry, 1995), to design treatment rooms as soft and color reflective and the tones should complement skin tones and they should be warm and nurturing flesh tones.

### **3.4. Surface Texture of Walls**

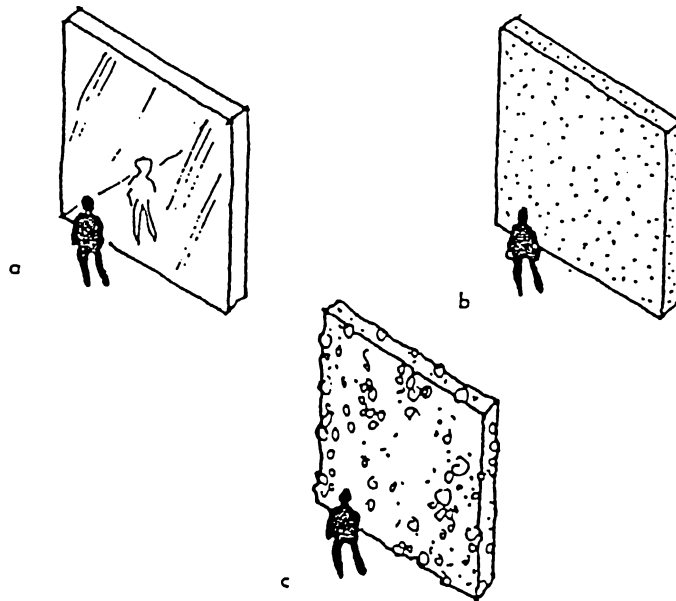
According to Weinhold (1988), textures can either be smooth or rough. In some cases, such as in hospitals, it must be smooth so that it can be kept clean. But more often some irregularities are desirable and visually pleasurable in places like hospitals. In such situations, the best thing to do is to use fine textures. Because it is possible to clean fine textures as long as the indentations are not too deep or too narrow.

Smooth walls seem to be hard and slippery as a surface. It seems unapproachable and an assailing. It gives an impenetrable and strong impression and acts as a protective layer. The smooth surfaces reflect and shine, and so dominate the space (Figure 3.4-a). Although smooth surfaces are needed for hygiene in health care facilities, irregular surfaces have more healing intent among patients (Evenson, 1987).

Just the opposite of the smooth wall surfaces, fine textures seem soft, warm and do not reject to the touch (Figure 3.4-b). Fine textures seem more to be coming from nature because in nature, nothing perfectly smooth exists. The small irregularities of textures, more often are psychologically desirable and visually pleasurable (Weinhold, 1988).

According to Evenson (1987), coarse texture gives weight to the wall and also gives a rejecting look but in a different way than a smooth wall. While smooth wall seems to protect something within, coarse wall draw the inner substance of the wall to the surface nearly in an aggressive way. We do not want to get close to a coarse wall because its surface is so rough that we may hurt ourselves. So it represents its resistance, its own power and weight in the space. But similar to the fine textured walls, it also seem to be coming from nature (Figure 3.4-c).





**Figure 3.4. Surface Texture of Walls**

Source: Evenson, Thomas Thiis. 1987. *Archetypes In Architecture*. Norway.

Norwegian University Press.

### 3.5. Surface Pattern of Walls

According to Rodemann (1991), pattern is imitative. It is a man made, manufactured interpretation. Patterns are used for variety of purposes beyond the decorative purposes. They are also used indicate status and impressive stature and to create an image or to set a mood.

Texture at a larger scale becomes pattern. Just like the texture, pattern adds visual interest and pleasure to the spaces according to most people. Patterns applied on the surfaces of the walls are grouped in three categories: an abstract character dictated by independent patterns of lines, grids or curves, figurative drawings which are based on the representations of people, animals or things, and the last one is rooted in the materials and building methods that indicates how a wall is built up. And all of these three categories can be: organized horizontally, vertically or

diagonally; appear as a pattern flush with the wall itself; or be composed of various plastic reliefs. The pattern according to it, being abstract, figurative or constructive will give the wall a different weight expression.

Abstract patterns will express a feeling of lightness. They do not give any clue about how it was built and they seem like a skin, a membrane which covers and hides the massive wall behind. A figurative pattern will also give a light appearance and a depth to the wall. Again it act like skin and covers the massive wall behind. A constructive pattern completely expresses the material patterns and way that the wall is built (Evenson,1987).

### **3.6. Surface Material of Walls**

The hard, white, institutional look of hospitals, nursing homes and other healthcare facilities has changed in the last twenty years. This cold and institutional look was preferred because of the need for durable and easily maintainable finish materials.

As Weinhold stated (1988), limited budgets and limited choices of color, texture and patterns deffected the designs of healthcare facilities until the importance of colors, textures and patterns, on psychological and physiological being of humans were proved. The variety started with warm and restful tones of colors. With the recent technologies, the availability of many finish materials in many different color, textures patterns and dimension became possible.

Now, it is possible to have a variety of functional finish materials that are durable, easily maintainable and at the same time, aesthetically pleasing and

psychologically supportive, which will enable the designer to create a supportive environment for the patients' well being (Weinhold,1988).

### **3.7. Wall covering and Surface Design in Healthcare Settings**

Surface design and wall treatments have greater importance in healthcare settings than in any other spaces. According to Rodemann ( Marrberry, 1997), choosing the appropriate treatment, form and color can play an important role in healing, stress reducing, which are very necessary and primal in healthcare settings.

There are several aspects unique to the healthcare settings such as functional, financial, and aesthetic considerations. Functional considerations include flammability, toxicity, indoor air quality, specific maintenance needs, and replacement needs. The financial concern relates to the cost of the process to prepare the product from the start, until it appears with its specific image and ambiance. But the most important of all is the aesthetic considerations because of the facilities healing and diagnostic role. Appearance and aesthetics of the space has a behavioral and psychological impact on staff, patients and patients' families.(Rodemann, as edited by Marrberry, 1997).

#### *Functional and Performance Considerations:*

Another important factor is the activity that will take place in the space. The resistance of the material should be determined by the activity that will take place because in a highly-use space the material will be subject to abuse, wear and tear and require frequent cleaning and replacement. The rigid wall covering products offer good performance, especially in below-chair-rail applications. Another important point is the behavior of the material used on walls against natural and

artificial lighting. It will automatically affect the hue, saturation, color and texture that are selected.

*Financial Considerations:*

In bidding a project for healthcare facilities, the thing that should be considered is how often replacement will be needed for the material and whether the maintenance practices will be adequate.

*Aesthetic Considerations:*

In healthcare settings, colors and patterns are very important. While choosing the patterns and the colors, the universal qualities, the users' psychological and behavioral responses to the colors and patterns should be considered. There are some groups of patients and individuals that are sensitive to the particular patterns.

-Migraines

-Motion sickness

-Epilepsy

-Certain visual corrections

-Conditions requiring medication that may predispose individual to sensitivity

-Alcohol and drug use

-Advanced age

-Dementia/mental instabilities(Rodemann, as edited by Marrberry, 1997).

For cancer patients the situation is more serious, for the other groups. The cancer patients who are going through especially chemotherapy treatment, face the dizziness, blurred vision, and confusion. For this reason busy patterns and strong colors should not be used in Cancer Centers (Malkin, 1991).

According to Rodemann ,as an example of the ability of surface design to affect occupants` behavior, migraine sufferers found to be stripe sensitive. Also studies showed that the geometric patterns liked by a group of young people, is disliked by a group of old people (Marrberry, 1997).

As Rodeman stated, one of the most important factors in using patterns in healthcare settings is whether the pattern has movement or not. Less movement is better if the goal of the environment is relaxation and healing, so hard edged shapes, high contrasts are not suitable for such places. The natural physiology of vision, the spacing of our eyes, and the eye-brain connection, along with our inherent tendencies to want to fill in the lines, connect the dots are all biologically, psychologically, and neurologically based (Marrberry, 1997).

Different patient groups respond differently to the patterns and colors of the wall surfaces. They respond according to their sensitivity about a particular pattern and color. This sensitivity is directly related with that individuals health (Marrberry, 1997).

Human beings are creatures that are used to live in interaction with the exterior environment and are used to designs from nature. We are used to the changing patterns of sunlight and changing color and atmospheres according to the earth's movement around the sun. According to Rodemann, in a healthcare setting, simulating these characteristics and features of nature, may help the patient to recover. The right environment can create uplifting, positive, calming, and healing effect ( Marrberry, 1997).

According to the information about the characteristics and effects of walls, that is given in this chapter, the response of the cancer patients and medical doctors were evaluated and analyzed. In the next chapter the results were shown in detail with tables which were prepared in order to ease the analysis stage.

## 4. CASE STUDY - PREFERENCES OF CANCER PATIENTS AND MEDICAL DOCTORS RELATED TO THE CHARACTERISTICS OF WALLS IN ONCOLOGY HOSPITAL OF HACETTEPE UNIVERSITY

### 4.1. Design of the Survey

This study was composed of two parts and was prepared to enlighten the preferences on walls as an architectural component of space, of the cancer patients who are suffering psychologically as much as they do physically, as the first part and the preferences of a group of medical doctors whose duty is to heal these patients as the second part.

Considering walls as the architectural component to be discussed was because of its dominance in space. Besides having a role of shaping and enclosing a space, they also occupy the greatest portion of the angle of vision. More over they present lots of varieties in the space with their 2 and 3 dimensional characteristics such as color, form, height, length, texture, pattern and material.

The reason for choosing cancer patients as the experimental group is to find out what they need to see, to feel and what they prefer in a medical setting, where they spend hours everyday. The point that differentiates cancer patients from the other patient groups is the direct relationship between their psychological conditions and their hope and speed of recovery.

While deciding on the control group for this study, medical doctors appeared to be the most suitable group because, besides carrying the duty of healing and

spending a whole day in the hospital they also are healthy. Although these two groups share the same spaces in the hospital for long periods of time, the difference lies in the point that one group is ill and the other is healthy and at the same time healthy group has the duty of healing the other group. As a result of their duty and spending long periods of time together, control group became aware of the patients physical and psychological needs.

Besides benefiting from their closeness to the situation of the patients, it was possible to compare the results of two groups and to define the preferences of the healers, by choosing medical doctors as the control group.

So the aim of the study is to brought some points to light, which will enable designers to create supportive medical settings for cancer patients and for the real owners of the medical spaces, medical doctors.

#### **4.2. Analysis of the Survey**

As the experimental group, 50 cancer patients who were being diagnosed and treated periodically in the Outpatient Clinic of Oncology Hospital of Hacettepe University were chosen by clustered sampling in terms of in terms of the education levels.

For the experimental group, the first part of the questionnaire consisted of 11 questions (see Appendix A). They were about the personal characteristics of the patients and were asked to determine the effects of these characteristics on the preferences.



As the control group 40 medical doctors, which was the total number of medical doctors who were working in the Oncology Hospital of Hacettepe University were chosen from the health personnel without making any clustering.

For the control group, 7 questions were prepared to determine the personal characteristics of the medical doctors in the first part of the questionnaire (see Appendix B). In the second part they were asked to determine the effects of those characteristics on their preferences.

As the architectural components, walls were discussed in seven steps such as: color of walls, form of walls, surface texture of walls, height of walls, length of walls, surface pattern of walls and surface material of walls.

For obtaining information about the color preferences of both the patients and the medical doctors, two groups of color cards were prepared. The colors which grouped as warm color group and cool color group, were chosen from Munsell Color System. Warm Color group matches with the colors located in the red portion, cool color group matches with the colors located in the blue portion of the color spectrum. The reason of choosing only blue and red portions of the spectrum is their different physiologic effects on human body (Birren, 1963). Both of the color groups have subgroups as, dark, vivid, dull and light colors. Finally 8 color cards were shown to each patient and doctor as two separate groups, 4 color cards for warm colors and 4 color cards for cool colors, and asked to enumerate their preferences (see Appendix C-1 and C-2).

For the determination of the preferences on the forms of walls, forms were classified in 3 groups such as: width and height of walls matches the dimensional characteristics, depth of walls matches the curvilinear characteristics of walls and finally slant of walls matches the slants of the walls. Both groups again were shown drawing cards to enumerate their preferences (see Appendix D-1, D-2, D-3).

Preferences on the surface texture of walls were also determined by showing drawing cards to each patient and doctor, and they were asked to enumerate their preferences from 3 different textures (see Appendix E) .

Surface patterns of the walls were asked to be enumerated without showing any drawings because in the pilot study, subjects in both of the groups were found out to be affected from the examples. So the enumeration was made among 6 different patterns which were defined by Rodemann (1991) (see Appendix C-4).

Determination of preferences on surface materials were again asked to be enumerated without showing any samples to prevent the subjects from being affected by the colors and shapes of each material. Subjects were asked to enumerate their preferences from 7 different materials.

Finally, in the data tabulation, the computer program Minitab was used and the interpretation of the results were completed. The results of experimental and control group were completed separately. The results of both experimental and control group were analyzed under 3 subtitles as Personal Profile, Priorities and Preferences related to Interior Walls of Oncology Hospitals according to the Personal Characteristics of each group.

### 4.3. Results of the Survey

#### 4.3.1 Results of the Experimental Group, Cancer Patients

##### 4.3.1.1 Personal Profile of Patients

According to the results, distribution in the group appeared as 74% female and 26% male participants. These patients have the age mean of 45.68. 22% of them belong to the young adult, 42% of them belong to the adult, 24% of them belong to the middle-aged adult and finally 12% of them belong to young elderly age group as seen in Table 4.1.

**Table 4.1.** Percentage Distribution of the Age Groups of patients

Age Groups	Female Percentage	Male Percentage
19-34 Young Adult	14	8
35-49 Adult	32	10
50-64 Middle-aged Adult	20	4
65-74 Young Elderly	8	4
Percentage	74	26

In order to minimize the communication problem, the high school graduates and university graduates were chosen as subjects. 76% of the subjects were graduated from university and 24% of them were graduated from high school.

Although the 50 patient in the sample group is composed of people coming from different cities of Turkey, 64% of the group were citizens of Ankara. This percentage was followed by Antalya and Gaziantep in the second and third places.

While observing the group according to the type of jobs the subjects have,

greatest portion belongs to the scientific, professional, technical and related workers with the percent of 44, as seen in the Table 4.2. The second important group is formed by the service workers with 24%, and the third group is the clerical workers with 18%.

**Table 4.2.** Percentage Distribution of Job Types

Job Type	Distribution Percentage
Scientific, professional, technical and related personnel workers	44
Administrative, executive and managerial personnel	2
Clerical and related personnel	18
Commercial and sales personnel	2
Service workers	24
Non-agricultural production and transport equipment operators workers	2
Student	8
Percentage	100

In the classification of the subjects according to their cancer types, breast cancers with 42% takes the first place, then the brain neoplasm follow with a percentage of 18, and finally the third important group is formed by the gastro-intestinal neoplasm with 12% as shown in the Table 4.3.

**Table 4.3.** Percentage Distribution of Cancer Types

Types of Cancer	Distribution Percentage
Breast Cancer	48
Gastro-intestinal Neoplasm	12
Lymphoid Neoplasm	4
Brain Neoplasm	18
Head and Neck Cancer	6
Genitourinary Neoplasm	6
Gynecologic Neoplasm	2
Bone Sarcomas	2
Skin Cancer	2
Percentage	100

Although the total time of the treatment changes with the type of cancer and with the bodily constitution of each patient, the major portion of the subject group were in their 1 month-6 month period of treatment as seen in Table 4.4.

**Table 4.4.** Percentage Distribution of Treatment Time

Treatment Time	Distribution Percentage
1 month $\leq$ X<6 months	30
6 months $\leq$ X<1 year	20
1 year $\leq$ X< 2 years	24
2 year $\leq$ X< 5 years	20
5 years $\leq$ X	6
Percentage	100

As seen in Table 4.5, the major portion of the subject group that is 42%, had all 3 treatment types that are radiotherapy, chemotherapy, and surgery. The second group with 22% had radiotherapy and surgery. The third group with 14% had chemotherapy and surgery.

**Table 4.5. Percentage Distribution of Treatment Types**

Type of Treatment	Distribution Percentage
Radiotherapy (R)	8
Chemotherapy (C)	2
Surgery (S)	10
R + C	2
R + S	22
C + S	14
R + S + C	42
Percentage	100

Waiting times and waiting places were also very important issues in determining their preferences related to the characteristics of walls because there is a direct relationship between the preferences and the specific time spent in specific places. The results showed that for the major group with 42%, waiting time was 15 minutes (Table 4.6) and again the largest group with 38% waits in the waiting room (Table 4.7) for the diagnosis or treatment.

**Table 4.6. Percentage Distribution of Waiting Times**

Waiting Time	Distribution Percentage
None	24
0-15 minutes	42
0-30 minutes	12
30-1 hour	10
More than 1 hour	12
Percentage	100

**Table 4.7. Distribution Percentage of Waiting Places**

Waiting Place	Distribution Percentage
No waiting	24
Waiting Room	38
Corridor	34
Others	4
Percentage	100

#### 4.3.1.2. Priorities of Patients

According to the results of the questionnaire, the color of walls appeared to be the most important and the first striking characteristic of the hospital interior walls for patients. As seen in Table 4.8, color of walls is followed by another characteristic that is the height of walls as the 2<sup>nd</sup> important priority. Finally, form and length of walls settled in the 7th and last place.

**Table 4.8.** Distribution of Priorities according to the Characteristics of Walls

	Color of Walls	Form of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Pattern of Walls	Surface Material of Walls
Priority 1	33	1	0	11	1	4	2
Priority 2	10	8	2	13	3	5	9
Priority 3	1	11	6	8	8	7	9
Priority 4	4	5	8	5	10	6	12
Priority 5	2	5	12	5	5	11	10
Priority 6	1	7	14	6	10	6	6
Priority 7	1	13	8	2	13	11	2
Total	50	50	50	50	50	50	50

As seen in Tables 4.9 and 4.10, a difference was observed between the enumeration of the of the priorities in the warm color group and cool color group. While light colors settle in the first and dark colors settle in the last places in both of the groups, vivid and dull colors changed places. In the warm color group which symbolizes the red portion of the spectrum, vivid colors and dull colors appeared to share the third place second priority was not defined. For the cool color group which symbolizes the blue portion of the color spectrum, dull colors were observed in the second and vivid colors in third places.

**Table 4.9.** Distribution of Priorities Determined according to the Warm Colors

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Priority 1	2	1	0	47
Priority 2	4	22	22	2
Priority 3	1	23	26	0
Priority 4	43	4	2	1
Total	50	50	50	50

**Table 4.10.** Distribution of Priorities Determined according to the Cool Colors

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Priority 1	1	2	8	39
Priority 2	0	3	39	8
Priority 3	5	41	2	2
Priority 4	44	4	1	1
Total	50	50	50	50

While dealing with the only three dimensional characteristic that's been asked, forms were distributed into 3 groups such as dimensional characteristic of walls (length, width), curvature of walls, and finally slant of walls and upright walls as seen in Tables 4.11, 4.12, 4.13. In the enumeration of the priorities, flat walls in second and third groups, took the first place. Horizontally long and vertically short walls appeared to be in the first place in the first group, and vertically long and horizontally short moved to the second place. Convex walls in the second group settled in the second and concave walls in the third places. For the third group, walls slanted outwards were second and walls slanted inwards were third and last.



**Table 4.11.** Distribution of Priorities Determined according to the Width and Height of Walls

Width and Length of Walls	Horizontally long and vertically short	Vertically long and horizontally short
Priority 1	30	20
Priority 2	20	30
Total	50	50

**Table 4.12.** Distribution of Priorities Determined according to the Depth of Walls

Depth of Walls	Flat Walls	Concave Walls	Convex Walls
Priority 1	33	5	12
Priority 2	15	14	21
Priority 3	2	31	17
Total	50	50	50

**Table 4.13.** Distribution of Priorities Determined according to the Slant of Walls

Slant of Walls	Upright Walls	Slanted Inwards	Slanted Outwards
Priority 1	42	2	6
Priority 2	8	7	35
Priority 3	10	41	9
Total	50	50	50

As seen in Table 4.14, smooth walls had the first priority for the major portion of the subject group. Fine textures settled in the second and rough surfaces settled in the third places.

**Table 4.14.** Distribution of Priorities Determined according to the Surface

Texture of Walls

	Smooth Walls	Fine Textured Walls	Rough Walls
Priority 1	34	16	2
Priority 2	12	32	4
Priority 3	4	2	44
Total	50	50	50

As the pattern of walls, the cancer patients chose natural scenes as the first priority, floral patterns as the second, and geometric patterns as the third as seen in Table 4.15. The construction material itself appeared as the last priority as the surface material of the hospital interior walls.

**Table 4.15.** Distribution of Priorities Determined according to the Surface

Pattern of Walls

	Floral	Geometric	Stripe	Graphic	Natural Scenes	Construction Material Itself
Priority 1	13	4	2	6	17	8
Priority 2	14	13	5	4	12	2
Priority 3	5	16	9	8	6	6
Priority 4	5	8	14	15	6	2
Priority 5	7	5	16	10	6	6
Priority 6	6	4	4	7	3	26
Total	50	50	50	50	50	50

The cancer patients' first priority for the surface material of walls was paint as shown in Table 4.16. Wood panels and ceramics followed as the second and third priorities. Carpet and metal panels were the last priorities stated by the major portion of the subject group. Fifth and sixth priorities were not defined.

**Table 4.16.** Distribution of Priorities Determined according to the Surface

Material of Walls

	Paint	Wall Paper	Carpet	Wood Panels	Metal Panels	PVC-Vinyl	Ceramic
Priority 1	26	1	0	11	0	3	9
Priority 2	9	9	3	12	0	6	11
Priority 3	10	7	2	9	2	6	14
Priority 4	3	14	2	7	2	14	8
Priority 5	1	9	6	7	7	13	7
Priority 6	1	6	13	4	19	6	1
Priority 7	0	4	24	0	20	2	0
Total	50	50	50	50	50	50	50

**4.3.1.3. Preferences Related to Interior Walls of Oncology Hospitals**

according to the Personal Characteristics of the Experimental Group

**4.3.1.3.1. General Characteristics of Walls according to the Personal**

**Characteristics of Patients**

When the relation between personal characteristics of the patients and general characteristics of interior walls was analyzed, it is observed that the most important and striking characteristic of the hospital interior walls is the color and it is followed by the height of the interior walls (see Tables A. F.1- A. F.4, p:103-104)

The template of distribution of priorities appears as color of walls 1<sup>st</sup>, height of walls 2<sup>nd</sup>, surface material of walls 4<sup>th</sup>, surface pattern of walls 5<sup>th</sup>, surface textures of walls 6<sup>th</sup>, and form and length of walls 7<sup>th</sup> and last. When we analyze the relation between different personal characteristics and the different characteristics of walls it is observed that, for the first and second priorities there were very few opposite situations (see Table A. F.1, p:103). The results of adults and middle-aged adults were very stable. But the results of young adult and young elderly were very

contradictory to the template of distribution of priorities. For the Young Elderly group, height as well as color, became the 1<sup>st</sup> priority.

When the results were analyzed in terms of sex, it is observed that female patients preferred patterns of walls as 7<sup>th</sup>, and male patients preferred color and height of walls as 1<sup>st</sup>, forms of walls as 3<sup>rd</sup>, texture of walls as 7<sup>th</sup> (see Table A. F.2, p:103).

According to the waiting times, not much has changed. For the patients who do not wait, color and height of walls appeared as 1<sup>st</sup> for the patients who wait 1 hour surface material as 2<sup>nd</sup> and forms of walls as 3<sup>rd</sup> priorities, and the patients who wait more than 1hour prefer color as 1<sup>st</sup>, surface texture as 2<sup>nd</sup> and height of walls as 3<sup>rd</sup> priorities (see Table A. F.3, p:103).

According to the waiting places, it is observed that patients who do not wait prefer both color and height of walls as 1<sup>st</sup> priority, the patients who wait in the waiting room prefer color as 1<sup>st</sup>, height is 2<sup>nd</sup> and form of walls as 3<sup>rd</sup> priority. In the results of patients waiting in other places color appeared as 1<sup>st</sup> but other priorities are not so definite (see Table A. F.4, p:104).

#### **4.3.1.3.2. Preferences on Color of Walls according to the Personal**

##### **Characteristics of Patients**

#### **4.3.1.3.2.1. Preferences on Warm Colors according to the Personal**

##### **Characteristics of Patients**

While observing the relation between warm colors and personal characteristics, first and last priorities remained the same according to all personal characteristics,

as first priority light colors and last priority dark colors, although the personal characteristics changed (see Tables A. F.5- A. F.8, p:104-105). But vivid and dull colors shared second and third places. The template of distribution of priorities appeared as, light colors 1<sup>st</sup>, dull and vivid colors 3<sup>rd</sup>, and dark colors 4<sup>th</sup> and last.

According to the age groups, and sex first priority was light, last priority was dark as (see Tables A. F.5, A. F.6, p:104). According to the age groups, young adult and adult groups preferred vivid colors as 2<sup>nd</sup> and dull colors as 3<sup>rd</sup>, middle aged adults and young elderly group preferred dull colors as 2<sup>nd</sup> and vivid colors 3<sup>rd</sup> priority (see Table A. F.5, p:104).

When the results were analyzed in terms of sex, it is observed that female patients preferred vivid colors as 2<sup>nd</sup> and dull colors as 3<sup>rd</sup> priority and male preferred just the opposite (see Table A. F.6, p:104).

For the patients who do not wait and who wait for an hour results appeared as vivid colors 2<sup>nd</sup>, dull colors 3<sup>rd</sup>. For the other groups who wait 30 minutes and more than 1hour, results appeared as vivid colors 3<sup>rd</sup>, dull colors 2<sup>nd</sup> priorities and for the group who wait 15 minutes vivid and dull colors shared 3<sup>rd</sup> place (see Table A. F.7, p:104).

Results for patients waiting in the waiting room and patients who do not wait appeared as vivid colors 2<sup>nd</sup>, dull colors 3<sup>rd</sup> priorities. For the patients who are waiting in the corridor and anywhere in the hospital vivid colors settle in 3<sup>rd</sup>, dull colors in 2<sup>nd</sup> places (see Table A. F.8, p:105).

#### **4.3.1.3.2.2. Preferences on Cool Colors according to the Personal**

##### **Characteristics of Patients**

When the relationship between the personal characteristics and cool color preferences were analyzed, it is observed that the results were very stable just on the contrary of warm colors. Template of distribution of priorities were observed as: 1<sup>st</sup> priority light, 2<sup>nd</sup> priority dull, 3<sup>rd</sup> priority vivid and 4<sup>th</sup> priority was dark colors. Especially for the age groups, sex, and waiting time, results were completely stable (see Tables A. F.9, A. F.10, and A. F.11, p:105).

The only difference was observed in the dark and vivid color preferences of patients who are waiting anywhere in the hospital, when the results were analyzed according to the waiting places (see Table A. F.12, p:106).

#### **4.3.1.3.3. Preferences on Forms of Walls according to the Personal**

##### **Characteristics of Patients**

##### **4.3.1.3.3.1. Preferences on Width and Height of Walls according to the**

##### **Personal Characteristics of Patients**

For the preferences of width and height of the walls according to the personal characteristics, the results showed that, horizontally long and vertically short walls were first and vertically long horizontally short walls were second priorities of the patients. The results were stable in terms of sex (A. F.14,p: 106), waiting places (A. F.15- A. F.16, p:106-107) and waiting times except the patients who do not wait. When the results were analyzed in terms of age , it is observed that the middle

aged adult group and young elderly group, prefer both types of walls in the same amount (see Table A. F.13, p:106).

#### **4.3.1.3.3.2. Preferences on Depth of Walls according to the Personal**

##### **Characteristics of Patients**

According to the results of this part of the questionnaire, flat walls were appeared to be the first priority of the patients (see Tables A. F.17- A. F.20, p:107-108). Results were similar to the template which appeared as flat walls 1<sup>st</sup>, concave walls 2<sup>nd</sup> and convex walls 3<sup>rd</sup> in terms of age groups and sex (see Tables A. F.17 and A. F.18, p: 107).

When the waiting time considered, 1<sup>st</sup> and 2<sup>nd</sup> priorities of the patients who are waiting 30 minutes and 1hour, changed places as flat walls 2<sup>nd</sup> and convex walls became 1<sup>st</sup> priorities (see Table A. F.19, p:107).

For the patients who are waiting in the waiting room, convex walls appeared as both 1<sup>st</sup> and 3<sup>rd</sup> priorities. In addition this group did not define 2<sup>nd</sup> priority (see Table A. F.20, p:108).

#### **4.3.1.3.3.3. Preferences on Slant of Walls according to the Personal**

##### **Characteristics of Patients**

For all of the personal characteristics, enumeration of the priorities were the same. Template of distribution of priorities appeared as Upright walls 1<sup>st</sup>, walls slanted outwards 2<sup>nd</sup> and walls slanted inwards 3<sup>rd</sup> and last (see Tables A. F.21-A. F.24,

p:108-109). According to the age groups and sex, the results were completely similar to the template.

When the results were analyzed in terms of waiting times, it is observed that patients who wait 1 hour prefer walls slanted outwards as 1<sup>st</sup> as well as the upright walls (see Table A. F.23, p: 108).

The patients who are waiting anywhere in the hospital, preferred walls slanted inwards and walls slanted outwards as both 2<sup>nd</sup> and 3<sup>rd</sup> priorities (see Table A. F.24, p: 109).

#### **4.3.1.3.4. Preferences on Surface Texture of the Walls according to the Personal Characteristics of Patients**

When dealing with surface textures, template of distribution of priorities appeared as smooth walls 1<sup>st</sup>, fine textured walls 2<sup>nd</sup>, and rough textured walls 3<sup>rd</sup> and last. According to the age, young adult group chose fine textured walls as both 1<sup>st</sup> and 2<sup>nd</sup>, young elderly group chose smooth walls and fine textured walls as both 1<sup>st</sup> and 2<sup>nd</sup> priorities (see Table A. F.25, p:109). And the preferences of patients in terms of sex were completely similar to the template of distribution (see Tables A. F.26, p:109).

In the preferences of patients who are waiting 1 hour and more than 1 hour a change is observed (see Table A. F.27, p:109). Both groups preferred smooth walls as 2<sup>nd</sup> and fine textured walls as 1<sup>st</sup> priorities. Patients waiting anywhere in the hospital preferred smooth surfaces as 1<sup>st</sup> and fine textures as 2<sup>nd</sup> priorities (see Table A. F.28, p:110).



#### 4.3.1.3.5. Preferences on Surface Pattern of Walls according to the Personal Characteristics of Patients

Pattern preferences of patients appeared as natural scenes 1<sup>st</sup>, floral patterns 2<sup>nd</sup>, geometric patterns 3<sup>rd</sup>, graphic patterns 4<sup>th</sup>, stripes 5<sup>th</sup> and construction material itself 6<sup>th</sup> and last.

When these preferences of patients were analyzed according to their age groups, it is observed that adults prefer floral patterns as 1<sup>st</sup> besides natural scenes and they also prefer stripes as 3<sup>rd</sup> and 4<sup>th</sup> priorities. Middle aged adults prefer floral patterns as 1<sup>st</sup>, natural scenes as 2<sup>nd</sup> (see Table A. F.29, p:110).

In terms of sex, results of female patients are similar to template but male patients prefer both floral patterns and natural scenes as 1<sup>st</sup> priorities (see Table A. F.30, p:110).

According to the waiting times, patients waiting 15 minutes prefer floral pattern as 1<sup>st</sup>. The results of patients who do not wait and patients who wait 30 minutes are similar to template (see Table A. F.31, p:110). Patients waiting in the waiting room prefer floral patterns as 1<sup>st</sup> and geometric patterns as 2<sup>nd</sup>. Patients who wait in the corridor prefer natural scenes as 2<sup>nd</sup> priority (see Table A. F.32, p: 111).

#### 4.3.1.3.6. Preferences on Surface Material of the Walls according to the Personal Characteristics of Patients

When the preferences on surface material of walls were analyzed according to the personal characteristics, the template of distribution of priorities appeared as paint 1<sup>st</sup>, wood panel 2<sup>nd</sup>, ceramic 3<sup>rd</sup>, wall paper and PVC-vinyl 4<sup>th</sup>, carpet and metal panel 7<sup>th</sup> and last. And when the results were analyzed according to age groups, it is observed that young adults prefer ceramic as 1<sup>st</sup>, adults prefer paint and wood panels as 1<sup>st</sup> and middle aged preferred wood panel as 1<sup>st</sup> priorities (see Table A. F.33, p:111).

When the results were analyzed in terms of sex, the answers of female patients were similar to the template but male patients prefer wood panels as 1<sup>st</sup> (see Table A. F.34, p: 111).

According to waiting times, for patients who do not wait and who wait 1 hour and more, paint and wood panel were 1<sup>st</sup> and for patients who wait 15 minutes, paint and ceramic were 1<sup>st</sup> priorities (see Table A. F.35, p: 111).

While analyzing the surface material preferences according to waiting places, it is observed that the patients who do not wait and who wait in the waiting room preferred wood panels as 1<sup>st</sup> and 3<sup>rd</sup> priorities. The patients who are waiting anywhere in the hospital chose paint as 1<sup>st</sup> and 3<sup>rd</sup> priorities (see Table A. F.36, p: 112).

### 4.3.2. Results of the Control Group, Medical Doctors

#### 4.3.2.1 Personal Profile of Medical Doctors

According to the results, distribution in the group appeared as 45 % female and 55% male participants as seen in Table 4.17. The age mean of the participant medical doctors were 33.35. 62.5% of the medical doctors belong to the young adult, 30% of them belong to adult, and finally 7.5% of them belong to middle aged adult group. There was not any participant from the young elderly group as seen in Table 4.18.

**Table 4.17.** Distribution Percentage according to Sex

Medical Doctors	Distribution Percentage
Female	45
Male	55
Total	100

**Table 4.18.** Distribution Percentage according to Age Groups

Age Groups	Distribution Percentage
19- 34 Young Adult	62.5
35-49 Adult	30
50-64 Middle Aged Adult	7.5
Total	100

The control group was composed of medical doctors from several departments of Oncology Hospital and the medical doctors from the department Radiation Oncology with 42.5% formed the major part. Medical doctors from Medical Oncology with 22.5% take the second place as seen in Table 4. 19.

**Table 4.19.** Distribution Percentage according to the Field of Profession

Field of Profession	Distribution Percentage
Radiation Oncology	42.5
Medical Oncology	22.5
Radiology	10
Pathology	2.5
Clinical Biochemistry	2.5
Not Definite yet	20
Total	100

In the control group, major portion was occupied by the general practitioners with 25% and associate doctors appeared in the 2<sup>nd</sup> place with 22.5% as seen in Table 4.20.

**Table 4.20.** Distribution Percentage according to the Titles.

Title	Distribution Percentage
Professor	15
Associate Professor	10
Assistant Professor	22.5
Specialized Doctor	7.5
General Practitioner	25
Intern Doctor	20
Total	100

While observing the total months and years spent in the building, the group which consists of medical doctors who spent 3 and more than 3 years occupied the biggest portion with 55%. Second biggest portion was occupied by the new comers with 30% as seen in Table 4.21.

**Table 4.21.** Distribution Percentage of Time spent in the Oncology Hospital

Total Time Spent in Oncology Hospital	Distribution Percentage
1 month $\leq X < 6$ months	30
6 months $\leq X < 1$ year	2.5
1 year $\leq X < 2$ years	7.5
2 years $\leq X < 3$ years	5
3 years $\leq X$	55
Total	100

As seen in Table 4.22 every doctor from every department do not work less than 6 hours everyday. 75% is the biggest portion of medical doctors who work between 8 hours and 10 hours.

**Table 4.22.** Distribution Percentage according to Average Time Spent in Hospital Per Day.

Average Time Spent in Hospital Per Day	Distribution Percentage
2 hours $\leq X < 4$ hours	0
4 hours $\leq X < 6$ hours	0
6 hours $\leq X < 8$ hours	17.5
8 hours $\leq X < 10$ hours	75
10 hours $\leq X$	7.5
Total	100

While analyzing the number of treated patients everyday, it is observed that a group of medical doctors who are treating 5-10 patients and another group who are treating 15-20 patients, are sharing the first place with 30% as seen in Table 4.23.

**Table 4.23.** Distribution Percentage according to the Average Number of Treated Patients Per Day

Average Number of Treated Patients Per Day	Distribution Percentage
No patient	2.5
$1 < X < 5$ patients	10
$5 \leq X < 10$ patients	30
$10 \leq X < 15$ patients	5
$15 \leq X < 20$ patients	30
$20 \leq X$ patients	22.5
Total	100

#### 4.3.2.2. Priorities of Medical Doctors

According to the results the questionnaires, color of walls appeared to be the most important and striking characteristic of the hospital interior walls for medical doctors. As seen in Table 4.24, any of the characteristics was not found to be suitable as priority 2. So color of walls was followed by surface materials of walls as 3<sup>rd</sup> important characteristic.

**Table 4.24.** Distribution of Priorities according to the General Characteristics of Walls.

	Color of Walls	Forms of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Surface Materials of Walls
Priority 1	24	1	4	5	1	1	4
Priority 2	10	2	4	8	0	9	7
Priority 3	3	7	8	3	3	6	10
Priority 4	1	10	3	7	1	10	7
Priority 5	1	8	10	3	10	4	5
Priority 6	1	3	5	13	10	3	5
Priority 7	0	9	6	1	15	7	2
Total	40	40	40	40	40	40	40

As seen in Tables 4.25 and 4.26 any difference was not observed between the enumeration of the priorities in the warm color group and cool color group. In both of the groups the most preferred colors were light colors. Light colors were followed by dull colors in the 2<sup>nd</sup> place, vivid colors in the 3<sup>rd</sup> place and finally dark colors in the 4<sup>th</sup> and last place.

**Table 4.25.** Distribution of Priorities according to Warm Colors

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Priority 1	0	5	1	34
Priority 2	0	12	24	4
Priority 3	5	18	15	2
Priority 4	35	5	0	0
Total	40	40	40	40

**Table 4.26.** Distribution of Priorities according to Cool Colors

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Priority 1	0	2	7	31
Priority 2	0	3	29	8
Priority 3	5	30	4	1
Priority 4	35	5	0	0
Total	40	40	40	40

The only 3 dimensional characteristic of walls, form was observed with 3 groups such as dimensional characteristics of walls, curvilinear characteristics of walls and finally slant of walls as seen in Tables 4.26, 4.27, and 4.28.

While observing the width and length of walls, horizontally long and vertically short walls was the 1<sup>st</sup> priority of the major group of medical doctors as seen in Table 4.27.

**Table 4.27.** Distribution of Priorities according to Width and Height of Walls.

	Horizontally long and vertically short	Vertically long and horizontally short
Priority 1	23	17
Priority 2	17	23
Total	40	40

While observing the preferences on depth of walls, flat walls appeared as the 2<sup>nd</sup> priority and concave and convex walls shared the 3<sup>rd</sup> place as seen in Table 4.28. None of the choices appeared as 1<sup>st</sup> priority.

**Table 4.28.** Distribution of Priorities according to Depth of Walls

	Flat Walls	Concave Walls	Convex Walls
Priority 1	17	13	10
Priority 2	19	13	8
Priority 3	4	14	22
Total	40	40	40

In the enumeration of priorities about the slant of walls, upright walls settle in the 1<sup>st</sup>, walls slanted outwards in the 2<sup>nd</sup> and finally walls slanted inwards settled in the 3<sup>rd</sup> places as seen in Table 4.29.

**Table 4.29.** Distribution of Priorities according to Slant of Walls

	Upright Walls	Slanted Inwards	Slanted Outwards
Priority 1	30	3	7
Priority 2	8	7	25
Priority 3	2	30	8
Total	40	40	40



As seen in Table 4.30, smooth walls settled in the 1<sup>st</sup> place. Fine textured walls appeared as 2<sup>nd</sup> and rough textured walls appeared as 3<sup>rd</sup> and last priority.

**Table 4.30.** Distribution of Priorities according to the Surface Textures of Walls

	Smooth Walls	Fine Textured Walls	Rough Textured Walls
Priority 1	24	13	3
Priority 2	13	25	2
Priority 3	3	2	35
Total	40	40	40

While observing the preferences about the surface patterns of walls, natural scenes appeared as the 1<sup>st</sup>, floral patterns as the 2<sup>nd</sup> and stripes and graphical patterns as 3<sup>rd</sup> priorities as seen in Table 4.31.

**Table 4.31.** Distribution of Priorities according to the Surface Pattern of Walls

	Floral	Geometric	Stripe	Graphic	Natural Scenes	Construction Material Itself
Priority 1	5	8	2	7	11	7
Priority 2	12	7	7	7	6	1
Priority 3	5	6	14	10	3	2
Priority 4	3	14	4	6	8	5
Priority 5	8	4	11	7	5	5
Priority 6	7	1	2	3	7	20
Total	40	40	40	40	40	40

As seen in Table 4.32, paint appeared as the 1<sup>st</sup> priority, as the surface material of walls. Wall paper settled in the 2<sup>nd</sup> and ceramic 3<sup>rd</sup> place. Wood panel and PVC-Vinyl shared the 4<sup>th</sup> place. Two other materials that were preferred as the last were, metal panel and carpet . These two materials shared the 7<sup>th</sup> and last place.

**Table 4.32.** Distribution of priorities according to the Surface Material of Walls

	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
Priority 1	20	9	0	4	0	1	6
Priority 2	9	12	0	6	1	2	10
Priority 3	9	5	1	6	0	5	14
Priority 4	0	6	2	10	2	13	7
Priority 5	1	4	9	7	5	12	2
Priority 6	1	3	11	7	12	5	1
Priority 7	0	1	17	0	20	2	0
Total	40	40	40	40	40	40	40

#### 4.3.2.3. Preferences Related to Interior Walls of Oncology Hospitals

according to the Personal Characteristics of the Control Group, Medical Doctors.

##### 4.3.2.3.1. Preferences on General Characteristics of Walls according to Personal Characteristics of Medical Doctors

Template of distribution appeared as color of walls 1<sup>st</sup>, surface material of walls 3<sup>rd</sup>, surface patterns and forms of walls 4<sup>th</sup>, surface texture of walls 5<sup>th</sup>, height of walls 6<sup>th</sup> and length of wall 7<sup>th</sup> and last for the general characteristics of walls. When the results were analyzed according to medical doctors age groups, it is observed that surface patterns of walls was 2<sup>nd</sup> priority for young adult group of medical doctors. Construction materials settled in 4<sup>th</sup> and form of walls settled in 5<sup>th</sup> place for adult group (see Table A. G.1, p:113).

In terms of sex, a difference was observed in 2<sup>nd</sup> priority of female medical doctors as surface patterns and 5<sup>th</sup> priority of female medical doctors as forms of walls, when compared to the template of distribution (see Table A. G.2, p:113).

When the total time spent in the hospital was considered, it is observed that medical doctors who spent 1-6 months in the oncology hospital chose height as 1<sup>st</sup>, colors as 2<sup>nd</sup> priorities. Medical doctors who spent 6 months-1 year chose height of walls as 2<sup>nd</sup> and medical doctors who spent 1-2 years in the hospital chose surface patterns as 2<sup>nd</sup> priorities. The results of medical doctors who spent 3 and more than 3 years, were similar to the template of distribution of priorities (see Table A. G.3, p:113).

According to the average time doctor spent in the hospital everyday, it is observed that medical doctors who spent 6-8 hours preferred height of walls as 1<sup>st</sup> priority as (see Table A. G.4, p:114).

When analyzing preferences according to the average number of patients treated everyday, it is observed that medical doctors who do not treat any patients surface textures and construction materials as 1<sup>st</sup> and color of walls as 3<sup>rd</sup> priorities. Medical doctors who treat 1-5 patients everyday prefer surface patterns as 2<sup>nd</sup>, medical doctors who treat 10-15 patients everyday color and surface texture of walls as 1<sup>st</sup> and finally medical doctors who treat more than 20 patients everyday prefer color as 1<sup>st</sup>, surface textures as 2<sup>nd</sup> and forms of walls as 3<sup>rd</sup> priorities (see Table A. G.5, p:114).

#### **4.3.2.3.2. Preferences on Color of Walls according to the Personal**

##### **Characteristics of Medical Doctors**

#### **4.3.2.3.2.1. Preferences on Warm Color of Walls according to the Personal**

##### **Characteristics of Medical Doctors**

The template of distribution of priorities for warm colors appeared as, light colors 1<sup>st</sup>, dull colors 2<sup>nd</sup>, vivid colors 3<sup>rd</sup> and dark colors 4<sup>th</sup> and last. While analyzing the warm color preferences of doctors, according to their age groups, it is observed that middle aged adult group chose vivid colors as 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> priorities (see Table A. G.6, p:114). The results in terms of sex is completely similar to the template of distribution of priorities (see Table A. G.7, p:114).

When the results were analyzed in terms of the total time spent in oncology hospital, it is observed that medical doctors who spent 6 months-1 year and 1-2 years in Oncology Hospital preferred vivid colors as 3<sup>rd</sup> and dull colors as 3<sup>rd</sup> priorities (see Table A. G.8, p:115).

According to the time spent in the hospital everyday, it is observed that the medical doctors who spent 6-8 hours chose vivid colors as 2<sup>nd</sup> dull colors as 3<sup>rd</sup> and the medical doctors who spent more than 10 hours in the hospital preferred vivid colors as 1<sup>st</sup> light colors as 2<sup>nd</sup>, dull colors as 3<sup>rd</sup> (see Table A. G.9, p:115).

While analyzing the preferences according to the average number of patients treated everyday, it is observed that medical doctors who treat 10-15 patients preferred dark colors as 3<sup>rd</sup> and 4<sup>th</sup>, vivid colors as 2<sup>nd</sup> and 4<sup>th</sup> and dull colors as 2<sup>nd</sup>

and 3<sup>rd</sup>. The other group of medical doctors who treat 15-20 patients preferred vivid colors as 1<sup>st</sup> and 2<sup>nd</sup> and dull colors as 3<sup>rd</sup> priorities (see Table A. G.10, p:115).

#### **4.3.2.3.2.2. Preferences on Cool Color of Walls according to Personal Characteristics of Medical Doctors**

The template of distribution of priorities appeared as light colors 1<sup>st</sup>, dull colors 2<sup>nd</sup>, dull colors 3<sup>rd</sup> and dark colors 4<sup>th</sup> and last for the cool colors of walls. While analyzing cool color preferences of medical doctors according to their age groups, it is observed that middle aged adult group chose as dull colors as 1<sup>st</sup> and light colors as 2<sup>nd</sup> priorities (see Table A. G.11, p:115). In terms of sex, the results were completely similar to the template of distribution of cool colors (see Table A. G.12, p:116).

According to the total time spent in the Oncology hospital, medical doctors who spent 1-2 years in the Oncology Hospital preferred dull colors as 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> priorities. Medical doctors who spent 2-3 years chose both dark and vivid colors as 3<sup>rd</sup> and 4<sup>th</sup> priorities (see Table A. G.13, p:116). While analyzing the preferences according to the average time spent in the hospital everyday, it is observed that the results were completely similar to the template (see Table A. G.14, p:114).

According to the average number of treated patients per day, medical doctors who treat 10-15 patients everyday preferred dull colors as 1<sup>st</sup> and light colors as 2<sup>nd</sup> priorities (see Table A. G.15, p:116).

#### **4.3.2.3.3. Preferences on Forms of Walls according to the Personal Characteristics of Medical Doctors**

##### **4.3.2.3.3.1. Preferences on Width and Height of Walls according to the Personal Characteristics of Medical Doctors**

Template of distribution appeared as horizontally long and vertically short walls 1<sup>st</sup> and vertically long and horizontally short walls 2<sup>nd</sup>. While analyzing the preferences of medical doctors on width and height of walls according to their age groups, it is observed that the medical doctors of young adult group prefer vertically long, horizontally short walls as 1<sup>st</sup> priority (see Table A. G.16, p:117). Preferences in terms of sex were not so different. Male medical doctors preferred both types of walls at the same time (see Table A. G.17, p:117).

When the total months and years spent in the Oncology Hospital is considered, it is observed that medical doctors who spent 1-6 months and 6 months-1 year chose vertically long, horizontally short walls as 1<sup>st</sup> priority (see Table A. G.18, p:117). According to the average time spent in the hospital per day, medical doctors who spent 6-8 hours in the hospital everyday chose vertically long, horizontally short walls as 1<sup>st</sup> priority (see Table A. G.19, p:118).

Medical doctors who treat 1-5 patient everyday preferred vertically long, horizontally short walls as 1<sup>st</sup> priority and the medical doctors who treat 10-15 patients everyday preferred both types of walls as 1<sup>st</sup> and 2<sup>nd</sup> priorities (see Table A. G.20, p:118).

#### **4.3.2.3.3.2. Preferences on Depth of Walls according to the Personal Characteristics of Medical Doctors**

The preferences on depth of walls according to the personal characteristics, were very dynamic when compared to the template. Template appeared as flat walls 2<sup>nd</sup>, concave and convex walls 3<sup>rd</sup>. Adult and middle aged adult groups preferred flat walls as 1<sup>st</sup> priority. Concave walls appeared to be 2<sup>nd</sup> for adult and convex walls appeared to be 2<sup>nd</sup> for middle aged adult group (see Table A. G.21, p:118). In terms of sex, female medical doctors preferred concave walls and male medical doctors preferred flat walls as 1<sup>st</sup> priority (see Table A. G.22, p:118).

According to the total time spent in the Oncology hospital, medical doctors who spent 1-6 months, 1-2 years and more than 3 years preferred concave walls as 1<sup>st</sup> priority. Medical doctors who spent 2-3 years and more than 3 years preferred flat walls as 1<sup>st</sup> as well (see Table A. G.23, p:119).

When the average time spent in the hospital per day is considered, medical doctors who spent 6-8 hours and more than 10 hours preferred concave walls as 2<sup>nd</sup> priority and medical doctors who spent 6-8 hours preferred flat walls as 2<sup>nd</sup> priority as well. Medical doctors who spent more than 10 hours everyday in the hospital preferred flat walls as 1<sup>st</sup> priority (see Table A. G24, p:119).

According to the number of patients treated per day, medical doctors who treat 1-5, 5-10, 10-15 and 15-20 patients everyday preferred flat wall as 1<sup>st</sup> priority. Medical doctors who do not treat any patients and who treat more than 20 patients

everyday preferred flat walls as 2<sup>nd</sup> and concave walls as 1<sup>st</sup> priority (see Table A. G.25, p:119).

#### **4.3.2.3.3. Preferences on Slant of Walls according to the Personal**

##### **Characteristics of Medical Doctors**

While analyzing the preferences of medical doctors on slant of walls according to their age groups and sex, it is observed that the results of were completely similar to the template of distribution of priorities of slant of walls (see Table A. G.26, A. G.27, p:120). The template appeared as, Upright walls 1<sup>st</sup>, walls slanted outwards 2<sup>nd</sup> and walls slanted inwards 3<sup>rd</sup> and last.

According to the total months and years spent in the Oncology Hospital, it is observed that medical doctors who spent 1-2 years in the Oncology Hospital chose walls slanted inwards as 2<sup>nd</sup>, and walls slanted outwards as 3<sup>rd</sup> (see Table A. G.28, p:120). When the average time spent in the hospital per day is considered, Medical doctors who spent more than 10 hours in the hospital preferred walls slanted outwards as 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> at the same time (see Table A. G.29, p:120).

According to the average number of patients treated everyday is considered, medical doctors who treated 1-5 patients chose both upright walls and walls slanted outwards as 1<sup>st</sup> and 2<sup>nd</sup> priorities. The medical doctors who treat over 20 patients chose walls slanted outwards as 1<sup>st</sup> and 2<sup>nd</sup> priorities (see Table A. G.30, p: 120).



#### **4.3.2.3.4. Preferences on Surface Textures of Walls according to the Personal Characteristics of Medical Doctors**

Template of distribution of priorities for surface texture of walls are observed as smooth walls 1<sup>st</sup>, fine textured walls 2<sup>nd</sup> and rough textured walls 3<sup>rd</sup> and last. While analyzing texture preferences of, medical doctors according to age groups, it is observed that medical doctors from adult group chose smooth walls as 2<sup>nd</sup> and fine textured walls as 1<sup>st</sup> priorities (see Table A. G.31, p:121). The results of the preferences according to sex were similar to the template (see Table A. G.32, p:121).

According to total months and years spent in the hospital, it is observed that medical doctors who spent more than 3 years chose smooth walls as 1<sup>st</sup> and 2<sup>nd</sup> priorities (see Table A. G. 33, p:121).

When the average time spent in the hospital per day I considered, medical doctors who spent 6-8 hours everyday in the hospital chose smooth walls as 2<sup>nd</sup> and fine textured walls as 1<sup>st</sup> priorities (see Table A. G.34, p:121).

The preferences of medical doctors who do not treat patients are completely different than others. They chose rough textured walls as 1<sup>st</sup>, smooth walls as 2<sup>nd</sup> and fine textured walls as 3<sup>rd</sup>. The other groups who treat 5-10 patients everyday chose fine textured walls as 1<sup>st</sup> and smooth walls as 2<sup>nd</sup> priorities (see Table A. G.35, p:122).

#### **4.3.2.3.5. Preferences on Surface Pattern of Walls according to the Personal Characteristics of Medical Doctors**

While analyzing preferences of medical doctors on surface patterns of walls according to their age groups, it is observed that the results of young adult medical doctors are similar to the template. Template of distribution appeared as natural scenes 1<sup>st</sup>, floral patterns 2<sup>nd</sup>, stripe and graphic patterns 3<sup>rd</sup>, geometric patterns 4<sup>th</sup>, and construction material itself 6<sup>th</sup> and last. Medical doctors from adult group prefer graphic patterns as 1<sup>st</sup>, stripes as 2<sup>nd</sup> and middle aged adult group preferred geometric patterns as 1<sup>st</sup> priority (see Table A. G.36, p:122).

When the results were analyzed in terms of sex, it is observed that they were similar to the template except 4<sup>th</sup> priority of male medical doctors which is natural scenes (see Table A. G.37, p:122).

When the total time spent in Oncology hospital is considered, It is observed that 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 6<sup>th</sup> priorities stayed same, although the priorities in between changed (see Table A. G.38, p:123).

According to the average time spent in the hospital per day, medical doctors who spent 6-8 hours preferred graphic patterns as 1<sup>st</sup> in addition to natural scenes. Medical doctors who spent more than 10 hours in the hospital preferred floral patterns as 1<sup>st</sup> and natural scenes as 2<sup>nd</sup> priority (see Table A. G. 39, p:123).

While observing the preferences according to the average number of patients treated everyday, it is observed that the results of medical doctors who do not treat

any patients are completely different from others. Their 1<sup>st</sup> priority was graphic patterns, 2<sup>nd</sup> was stripes and 3<sup>rd</sup> was geometric patterns. Medical doctors who treat 5-10 patients preferred graphic patterns as 1<sup>st</sup> and medical doctors who treat 10-15 patients preferred construction materials as 1<sup>st</sup> priority (see Table A. G.40, p:123).

#### **4.3.2.3.6. Preferences on Surface Material of Walls according to the Personal Characteristics of Medical Doctors**

Template of distribution appeared as paint 1<sup>st</sup>, wall paper 2<sup>nd</sup>, ceramic 3<sup>rd</sup>, wood panel and PVC-vinyl 4<sup>th</sup> and carpet and metal panel 7<sup>th</sup> and last. While analyzing the preferences on surface materials according to the age groups of medical doctors, it is observed that adults preferred wall paper and paint as 1<sup>st</sup> priority. Middle aged adults preferred wood panels in the 6<sup>th</sup> place. (see Table A. G.41, p:124). When the results were analyzed in terms of sex, it is observed that female medical doctors preferred ceramic as 2<sup>nd</sup> and wall paper as 4<sup>th</sup> priority (see Table A. G.42, p:124).

According to the total time spent in Oncology hospital, medical doctors spent 1-6 months in Oncology Hospital prefer wall paper and paint as 1<sup>st</sup>, medical doctors who spent 6 months-1 year preferred wood panel as 1<sup>st</sup>, paint as 2<sup>nd</sup>, wall paper as 3<sup>rd</sup> priority. Medical doctors who spent 1-2 years preferred wall paper as 2<sup>nd</sup> priority and PVC-vinyl as 3<sup>rd</sup>. The results of medical doctors who spent more than 3 years were similar to the template (see Table A. G.43, p:124).

According to average time spent in the hospital everyday, it is observed that medical doctors who spent more than 10 hours in hospital prefer wall paper as 1<sup>st</sup> and paint as 3<sup>rd</sup> priority (see Table A. G.44, p:124).

It is observed that medical doctors who do not treat patients preferred ceramic as 1<sup>st</sup>, paint as 2<sup>nd</sup>, and wall paper as 3<sup>rd</sup> priority. Medical doctors who treat 1-5 patients everyday preferred paint and ceramic as 1<sup>st</sup> and wallpaper as 2<sup>nd</sup> priority. Medical doctors who treat 15-20 patients everyday preferred paint and wall paper as 1<sup>st</sup> priority (see Table A. G.45, p:125).

### 4.3.3. The Comparison of the Results of Experimental and Control Group

#### 4.3.3.1. The Comparison of the Results of General Characteristics of Walls

In the case study which was prepared and applied to both groups, the characteristics of walls were evaluated and according to the results of both cancer patients' and their doctors' questionnaires. The most important characteristic of interior walls of Oncology Hospitals appeared as color (Table 4.33). Color was also expected to be the 1<sup>st</sup> preference of both patients and doctors according to the literature review that was made before the case study (Marberry,1995) and these results confirm the expectations and gives clues to designers to consider first the color while designing. Another common point appeared in their last priorities. Length of walls became the last priorities of both groups (Table\_4.33).

**Table 4.33.** The Comparison Of Priorities of Cancer Patients and Medical Doctors on General Characteristics of Walls

Comparison of Priorities	Cancer Patients	Medical Doctors
Color of Walls	Priority 1	Priority 1
Form Of Walls	Priority 7	Priority 4
Surface Texture of Walls	Priority 6	Priority 5
Height of Walls	Priority 2	Priority 6
Length of Walls	Priority 7	Priority 7
Surface Pattern of Walls	Priority 5	Priority 4
Surface Material of Walls	Priority 4	Priority 3

#### **4.3.3.2. The Comparison of Priorities of the Characteristics of Walls of Cancer Patients and Medical Doctors, in detail.**

According to the results, color appeared as the 1<sup>st</sup> priority as a result of the possibility for patients to see and to decide on colors from the color cards which was not possible for surface textures, patterns and materials of walls. Although patients had the chance to observe and decide about the forms of walls by looking at the drawing cards, they were not expected completely to visualize themselves within in a room with different forms, textures, patterns and materials of walls and then answer the questions according to their feelings.

As colors were grouped as warm and cool colors, two groups were evaluated separately. According to both patients and doctors among warm colors, the most preferred one was warm light color and the least preferred appeared as warm dark color as expected but according to patients' preferences the vivid and dull colors together shared the 3<sup>rd</sup> place (Table 4.34). While evaluating the cool colors according to both doctors' and patients' questionnaires, the most preferred one was the cool light color and it is followed by the cool dull color in the 2<sup>nd</sup> place. In the last place again settled the dark color as expected. The results of these color group evaluations showed that, preferring the light and dull colors whether it is warm or cool, will be the right choice for a medical settings, in searching for the right color palette, as designers.

**Table 4.34.** Comparison of all Priorities of Cancer Patients and Medical Doctors on Characteristics Walls .

Characteristics of Walls			Cancer Patients	Medical Doctors
Color of Walls	Warm Colors	Dark Colors	Priority 4	Priority 4
		Vivid Colors	Priority 3	Priority 3
		Dull Colors	Priority 3	Priority 2
		Light Colors	Priority 1	Priority 1
	Cool Colors	Dark Colors	Priority 4	Priority 4
		Vivid Colors	Priority 3	Priority 3
		Dull Colors	Priority 2	Priority 2
		Light Colors	Priority 1	Priority 1
Form of Walls	Width and Height of Walls	Horizontally long vertically short	Priority 1	Priority 1
	Height of Walls	Vertically long horizontally short	Priority 2	Priority 2
	Depth of Walls	Flat Walls	Priority 1	Priority 2
		Concave Walls	Priority 3	Priority 3
		Convex Walls	Priority 2	Priority 3
	Slant of Walls	Upright Walls	Priority 1	Priority 1
		Inwards Slanted Walls	Priority 3	Priority 3
		Outwards Slanted Walls	Priority 2	Priority 2
Surface Texture of Walls	Smooth Walls	Priority 1	Priority 1	
	Fine Textured Walls	Priority 2	Priority 2	
	Rough Textured Walls	Priority 3	Priority 3	
Surface Pattern of Walls	Floral Patterns	Priority 2	Priority 2	
	Geometric Patterns	Priority 3	Priority 4	
	Stripe Patterns	Priority 5	Priority 3	
	Graphic Patterns	Priority 4	Priority 3	
	Natural Scenes	Priority 1	Priority 1	
	The Construction Material	Priority 6	Priority 6	
Surface Material of Walls	Paint	Priority 1	Priority 1	
	Wall Paper	Priority 4	Priority 2	
	Carpet	Priority 7	Priority 7	
	Wood Panel	Priority 2	Priority 4	
	Metal Panel	Priority 7	Priority 7	
	PVC-vinyl	Priority 4	Priority 4	
	Ceramic	Priority 3	Priority 3	

Forms of walls were also examined under three groups, as width and height of walls, depth of walls and slants of walls. The results showed that both patients'

and doctors' preferences were contradictory to the expected results of width and height of walls (Table 4.34). Although the literature review showed that vertically long and horizontally short walls were more communicative (Evenson, 1987), enables people to socialize by directing attention to the center of the space, horizontally long vertically short walls were preferred to be the 1<sup>st</sup> by both groups. Besides these properties, the most important of all, hospitals considered to be depressing places for many people, vertically long walls seem lighter because of the rising effect (Evenson, 1987). In the second group which deals with the depth of walls. Flat walls settled in the 1<sup>st</sup> place for both groups while convex walls in the 2<sup>nd</sup> and concave walls in the 3<sup>rd</sup> places for patients, on the contrary of the expected because of the feeling of protection and friendliness represented by concave walls (Table 4.34). Although concave walls permits to move forward but convex walls show resistance to the approach, convex walls were more preferable than concave walls for patients (Evenson, 1987). Doctors preferred both of them in the 3<sup>rd</sup> place. Finally in the 3<sup>rd</sup> group, the slant of the walls, preferences of both doctors and patients were same and were similar to the expected results (Evenson, 1987). Upright walls settled in the 1<sup>st</sup> walls slanted outwards in the 2<sup>nd</sup> place.

While dealing with surface textures of walls, it is observed that the preferences of both patients and doctors were same (Table 4.34). For both groups smooth walls was the 1<sup>st</sup> and rough textured walls were the 3<sup>rd</sup> preferences. Fine textures were expected to be 1<sup>st</sup> or were expected at least to share the 1<sup>st</sup> place with smooth walls because of soft, warm and natural look of fine textures and hard, impenetrable and unapproachable look of smooth walls (Evenson 1987), but fine textures settled in the 2<sup>nd</sup> place. While designing, besides the hygienic properties, smooth walls is 1<sup>st</sup> and fine textures are the 2<sup>nd</sup> to be preferred both for patients and doctors, by the designers.



The preferences of both groups on surface pattern of walls appeared to be similar. Both groups preferred natural scenes as 1<sup>st</sup> and floral patterns as 2<sup>nd</sup> priority as expected from the literature review (Rodemann,1991). Construction material itself settled in the 6<sup>th</sup> and the last place. So another clue appears here as natural scenes and floral patterns are to be considered while designing with surface patterns.

Finally, the preferences related to the surface materials of walls, paint was the most preferred surface material of walls for both patients and doctors (Table 4.34). According to patients' choices wood panels settled in the 2<sup>nd</sup> and ceramic settled in the 3<sup>rd</sup> place as expected because both of them were natural materials (Weinhold, 1988). Doctors' preferences differ from patients' with their 2<sup>nd</sup> preference that is wall paper. But the least preferred materials were carpet and metal panels for both groups as (Table 4.34) expected because the application of carpet and metal on walls is not common in Turkey. It was expected to sense weird to both patients and doctors and it really did, although the application of carpet on walls in healthcare facilities is very common in Europe and USA (Weinhold, 1988).

## 5. CONCLUSION

The aim of this study was to enlighten the needs, expectations and mostly the preferences of both cancer patients and their doctors, on characteristics of interior walls of Oncology Hospitals.

While deciding on the experimental group, cancer patients psychological conditions, which is very important for their recovery, played an important role. While choosing cancer patients as experimental group, the aim was to capture some important design clues that will support and speed the recovery, rather than exploring the specific effects of their psychology on their preferences.

In the decision about the control group, doctors duty of healing, the time that they spent in the hospital everyday, their close relationships with patients and patients' psychological conditions and having better health conditions from patients showed that this group is the most suitable. By choosing medical doctors, comparison of the results according to different health conditions and discussing and accepting the need of an environment that will support both groups' psychological conditions became possible. Physical environment design in medical settings appeared as an important factor that will ease and increase the work performance of medical doctors and support and speed the recovery of the patients by compensating both functional and psychological needs of these two groups.

As the greatest portion of a space, walls, with the dominance and several treatments that can completely change the ambiance, character and messages hidden in the space and so the behavior and psychology of space, appears as an important component that should be considered in designing medical settings.

When the preferences related to the characteristics of walls were analyzed, a lot of important points were captured within the preferences of both patients and medical doctors, on interior walls of medical spaces that should be considered while designing such spaces. It is observed that both groups showed color as the most important characteristic of walls. Moreover, while choosing color for hospital interior walls, they both prefer light and dull colors.

Although they did not have the possibility to experience the different forms, textures, patterns and materials of walls by going around in a specially designed space with such varieties on walls, they answered the questions by looking on the drawing cards which were prepared to show the different forms and textures of walls. The preferences for forms of walls which were grouped in 3 different categories appeared as, horizontally long, vertically short walls; straight and flat walls; and upright walls as 1<sup>st</sup> priorities.

The texture preferences of both groups again appeared to be same. They both preferred smooth walls as the 1<sup>st</sup> priority. Similarity in the pattern preferences of both groups was again striking. They both preferred natural scenes as 1<sup>st</sup>, floral patterns as 2<sup>nd</sup> and construction material as last priorities. Same striking similarity appeared in the material preferences of both groups as well. They preferred paint as 1<sup>st</sup> and carpet and metal panels as last priorities.

Although control group is healthy on the contrary of the experimental group, it is observed that the answers of both groups did not differ very much, especially when we consider the first and last priorities of both groups for each characteristic of walls. The reason for such results is using same spaces, spending same periods of time together in that spaces and sharing the stress of loosing and saving lives.

Although there is an important difference between their health conditions, there are several common functional and psychological needs as a result of the shared spaces, times and feelings. These clues about the preferences of both patients and doctors on the characteristics of walls will hopefully help the healthcare designers in future projects to create environments which will support and speed the healing process of patients and to create working environments that will support their performances and decrease stress of saving lives for doctors who spend their lives in hospitals.

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## APPENDICES

### APPENDIX A.

#### HACETTEPE UNIVERSITY ONCOLOGY HOSPITAL PATIENT QUESTIONNAIRE

1- Age:

2- Sex:

3- Hometown:

4- Education Level:

5- Job:

6- Type of cancer:

7- What type of treatment you had and you are going through at the moment?

Radiotherapy

Chemotherapy

Surgery

8- For how long have you been going through this treatment ?

1 month $\leq$ X<6 months

6 months $\leq$ X<1year

1 year $\leq$ X<2 years

2 years $\leq$ X<5 years

5 years $\leq$ X

9- How long does a session of treatment take?

- 15 minutes $\leq$ X<30 minutes
- 1 hour $\leq$ X<2 hours
- 2 hours $\leq$ X<3 hours
- 3 hours $\leq$ X<4 hours

10- How long do you have to wait for your turn in every session of treatment?

- 0 minute
- 0 $\leq$ X<15 minutes
- 15 $\leq$ X<30 minutes
- 30 $\leq$ X<1 hour
- 1 hour $\leq$ X

11- Where do you wait for your turn for every session of treatment?

- No waiting
- Waiting Room
- In the Corridor
- Others

12- Please enumerate the characteristics of the interior walls of the hospitals, beginning from the most important to the least important.

- Color of the walls
- Forms of the walls
- Surface texture of the walls
- Height of the walls
- Length of the walls
- Surface patterns of the walls

13- Please enumerate the tones of warm colors that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Dark Colors
- Vivid Colors
- Dull Colors
- Light Colors

14- Please enumerate the tones of cool colors that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Dark Colors
- Vivid Colors
- Dull Colors
- Light Colors

15- Please enumerate the forms of the walls that you prefer to see in the in the hospital and that can be healing for you, beginning from the most important to the least important.

- Horizontally long, vertically short
- Vertically long, horizontally short

16- Please enumerate the forms of the walls that you prefer to see in the in the hospital and that can be healing for you, beginning from the most important to the least important.

- Flat Walls
- Concave Walls
- Convex Walls

17- Please enumerate the forms of the walls that you prefer to see in the in the hospital and that can be healing for you, beginning from the most important to the least important.

- Upright Walls
- Inward Slanted Walls
- Outward Slanted Walls

18- Please enumerate the surface textures of the walls that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Smooth Walls
- Fine Textured Walls
- Rough Textured Walls

19- Please enumerate the surface patterns that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Floral Patterns
- Geometric Patterns
- Stripe Patterns
- Graphic Patterns
- Natural Scenes
- The Construction Material Itself

20- Please enumerate the surface materials that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Paint
- Wall Paper
- Carpet
- Wood Panel
- Metal Panel
- PVC-Vinyl
- Ceramic

**APPENDIX B.**

**HACETTEPE UNIVERSITY ONCOLOGY HOSPITAL DOCTORS'  
QUESTIONNAIRE**

1- Age:

2- Sex:

3- Field of Profession:

4- Title:

5- The total time spent in Oncology Hospital.

1month $\leq$ X<6months

6months $\leq$ X<1year

1year $\leq$ X<2years

2years $\leq$ X<3years

3 years $\leq$ X

6-The total time spent in the hospital per day.

2hours $\leq$ X<4hours

4hours $\leq$ X<6hours

6hours $\leq$ X<8hours

8hours $\leq$ X<10hours

10hours $\leq$ X

7-The average number of patients treated per day

- $1 \leq X < 5$
- $5 \leq X < 10$
- $10 \leq X < 15$
- $15 \leq X < 20$
- $20 \leq X$

8- Please enumerate the characteristics of the interior walls of the hospitals, beginning from the most important to the least important.

- Color of the walls
- Forms of the walls
- Surface texture of the walls
- Height of the walls
- Length of the walls
- Surface patterns of the walls

9- Please enumerate the tones of warm colors that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Dark Colors
- Vivid Colors
- Dull Colors
- Light Colors

10- Please enumerate the tones of cool colors that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Dark Colors
- Vivid Colors
- Dull Colors
- Light Colors

11- Please enumerate the forms of the walls that you prefer to see in the in the hospital and that can be healing for you, beginning from the most important to the least important.

- Horizontally long, vertically short
- Vertically long, horizontally short

12- Please enumerate the forms of the walls that you prefer to see in the in the hospital and that can be healing for you, beginning from the most important to the least important.

- Flat Walls
- Concave Walls
- Convex Walls



13- Please enumerate the forms of the walls that you prefer to see in the in the hospital and that can be healing for you, beginning from the most important to the least important.

- Upright Walls
- Inward Slanted Walls
- Outward Slanted Walls

14- Please enumerate the surface textures of the walls that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Smooth Walls
- Fine Textured Walls
- Rough Textured Walls

15- Please enumerate the surface patterns that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Floral Patterns
- Geometric Patterns
- Stripe Patterns
- Graphic Patterns
- Natural Scenes
- The Construction Material Itself

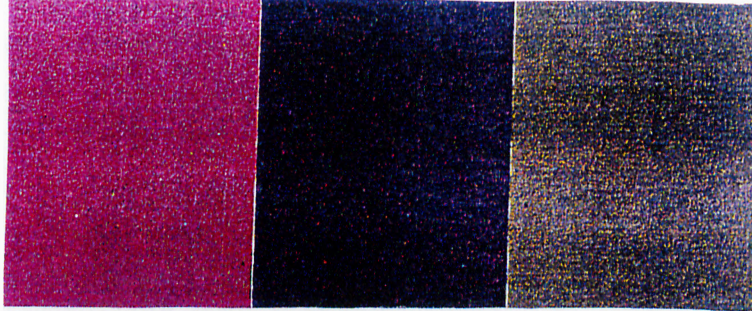
16- Please enumerate the surface materials that you prefer to see on the interior walls of the hospital and that can be healing for you, beginning from the most important to the least important.

- Paint
- Wall Paper
- Carpet
- Wood Panel
- Metal Panel
- PVC-Vinyl
- Ceramic

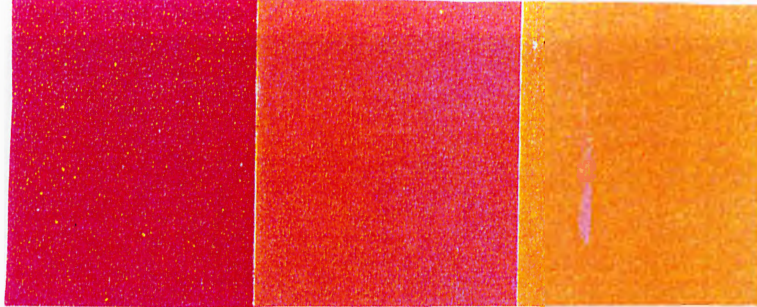
APPENDIX C. Color Cards

APPENDIX C-1. Warm Colors Cards

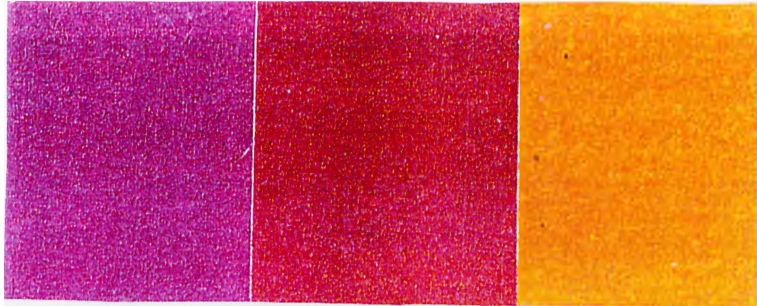
Warm Dark Colors



Warm Vivid Colors



Warm Dull Colors



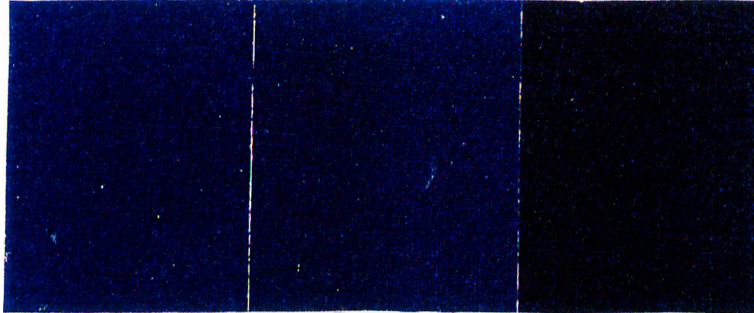
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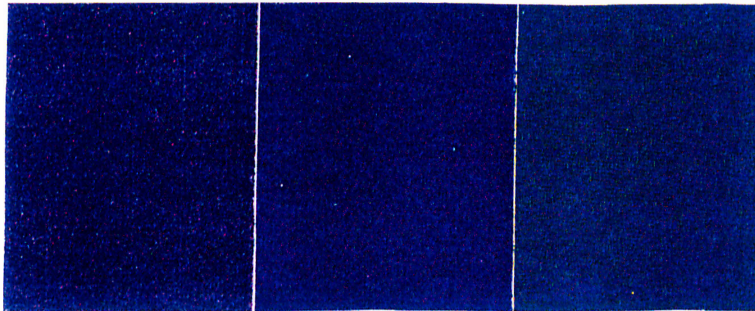
APPENDIX C. Color Cards

APPENDIX C-2. Cool Colors Cards

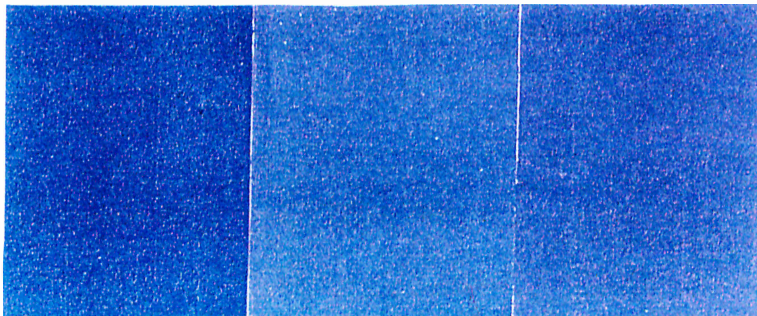
Cool Dark Colors



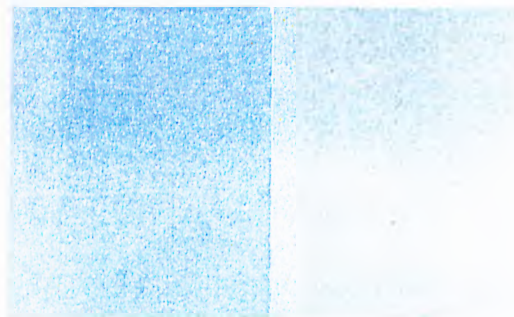
Cool Vivid Colors



Cool Dull Colors

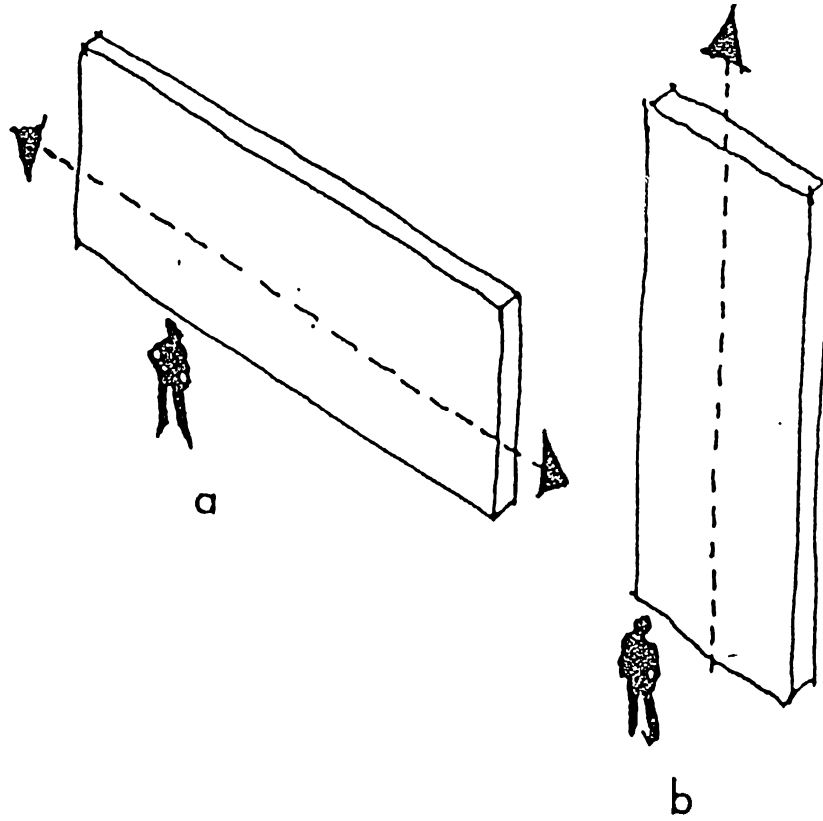


Cool Light Colors

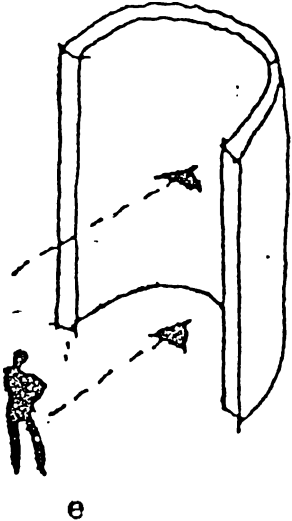
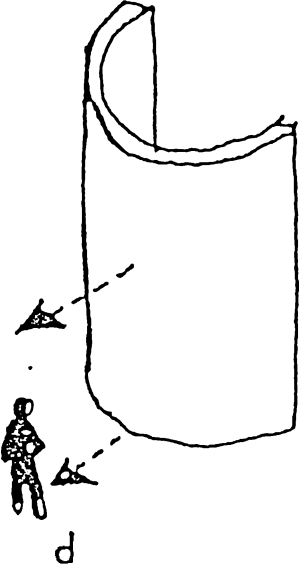
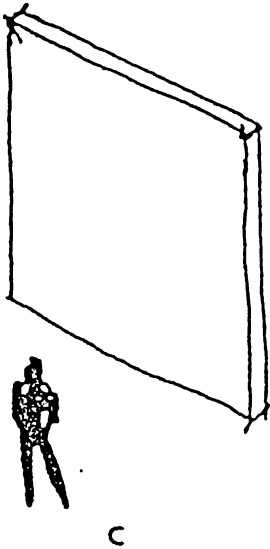


APPENDIX D. Forms of Walls

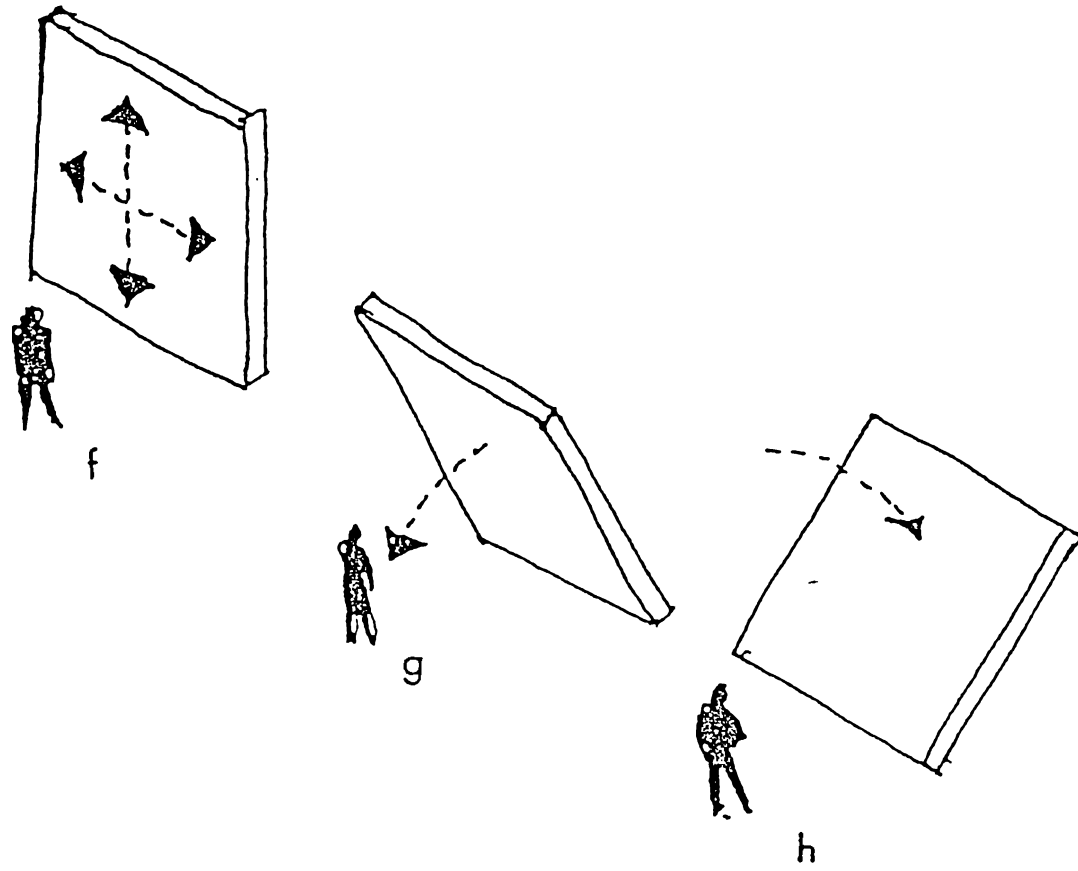
APPENDIX D-1. Width and Height Of Walls



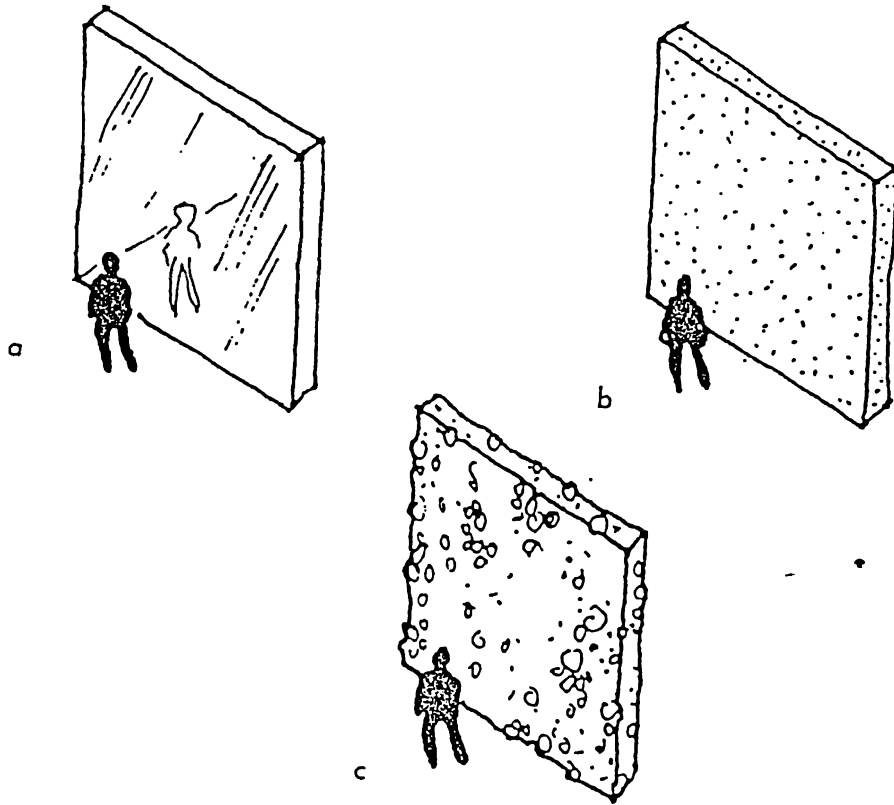
APPENDIX D-2. Depth of Walls



APPENDIX D-3. Slants of Walls



APPENDIX E. Surface Texture of Walls





**AAPENDIX F. Preferences of Cancer Patients on Characteristics of Interior Walls**

**Table A. F.1. Preferences on General Characteristics of Walls according to the Age Groups.**

Age Groups	Color of Walls	Form of Walls	Surface texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Surface Material of Walls
19-34 Young Adult	1	3	3,4	2,6	7	5	2,3,4
35-49 Adult	1	7	6	3	4,7	3,4,7	5
50-64 Middle Aged Adult	1	3	5	2	3,4,6	7	4,5
65-74 Young Elderly	1,2	7	3,6	1	3,6	5	2,4

**Table A. F.2. Preferences on General Characteristics of Walls according to Sex**

Sex	Color of Walls	Form of Walls	Surface texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Surface Material of Walls
Female	1	7	6	2	6,7	7	4
Male	1	3	7	1	6,7	5	3,4,5,6

**Table A. F.3. Preferences on General Characteristics of Walls according to the Waiting Times of Patients.**

Waiting Time	Color of Walls	Form of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Pattern of Walls	Surface Material of Walls
0 minute	1	7	6	1	4,7	5	4
$0 \leq X < 15$ minutes	1	7	6	1,2	4	7	2,5
$15 \leq X < 30$ minutes	1	2,3,4,5,6,7	7	2	3	4	6
$30 \text{ minutes} \leq X < 1 \text{ hour}$	1	3	5	6	7	5	2
$1 \text{ hour} \leq X$	1,4	6,7	2	3	5,6	5,7	1,2

**Table A. F.4.** Preferences on General Characteristics of Walls according to the Waiting Places

Waiting Place	Color of Walls	Form of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Pattern of Walls	Surface Material of Walls
No waiting	1	7	6	1	7	5	4
Waiting Room	1	3	7	2	7	5	5
Corridor	1	7	5	2	3,6	7	4
Others	1	5,7	4,6	3,6	5,7	2,4	2,3

**Table A. F.5.** Preferences on Warm Colors of Walls according to Age Groups

Age Groups	Dark Colors	Vivid Colors	Dull Colors	Light Colors
19-34 Young Adult	4	2	3	1
35-49 Adult	4	2,3	3	1
50-64 Middle Aged Adult	4	3	2	1
65-74 Young Elderly	4	3	2	1

**Table A. F.6.** Preferences on Warm Colors of Walls according to Sex

Sex	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Female	4	2	3	1
Male	4	3	2	1

**Table A. F.7.** Preferences on Warm Colors of Walls according to the Waiting Times

Waiting Times	Dark Colors	Vivid Colors	Dull Colors	Light Colors
0 minute	4	2	3	1
$0 \leq X < 15$ minutes	4	3	3	1
$15 \leq X < 30$ minutes	4	3	2	1
$30 \text{ minutes} \leq X < 1 \text{ hour}$	4	2	3	1
$1 \text{ hour} \leq X$	4	3	2	1

**Table A. F.8.** Preferences on Warm Colors of Walls according to the Waiting Places

Waiting Places	Dark Colors	Vivid Colors	Dull Colors	Light Colors
No waiting	4	2	3	1
Waiting Room	4	2	3	1
Corridor	4	3	2	1
Others	4	3	2	1

**Table A. F.9.** Preferences on Cool Colors of Walls according to the Age Groups

Age Groups	Dark Colors	Vivid Colors	Dull Colors	Light Colors
19-34 Young Adult	4	3	2	1
35-49 Adult	4	3	2	1
50-64 Middle Aged Adult	4	3	2	1
65-74 Young Elderly	4	3	2	1

**Table A. F.10.** Preferences on Cool Colors of Walls according to Sex

Sex	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Female	4	3	2	1
Male	4	3	2	1

**Table A. F.11.** Preferences on Cool Colors of Walls according to the Waiting Times

Waiting Times	Dark Colors	Vivid Colors	Dull Colors	Light Colors
0 minute	4	3	2	1
$0 \leq X < 15$ minutes	4	3	2	1
$15 \leq X < 30$ minutes	4	3	2	1
$30 \text{ minutes} \leq X < 1$ hour	4	3	2	1
$1 \text{ hour} \leq X$	4	3	2	1

**Table A. F.12.** Preferences on Cool Colors of Walls according to the Waiting

Places

Waiting Places	Dark Colors	Vivid Colors	Dull Colors	Light Colors
No waiting	4	3	2	1
Waiting Room	4	3	2	1
Corridor	4	3	2	1
Others	3,4	3,4	2	1

**Table A. F.13.** Preferences on Width and Height of Walls according to the Age

Groups

Age Groups	Horizontally long and vertically short	Vertically long and horizontally short
19-34 Young Adult	1	2
35-49 Adult	1	2
50-64 Middle Aged Adult	1,2	1,2
65-74 Young Elderly	1,2	1,2

**Table A. F.14.** Preferences on Width and Height of Walls according to Sex

Sex	Horizontally long and vertically short	Vertically long and horizontally short
Female	1	2
Male	1	2

**Table A. F.15.** Preferences on Width and Height of Walls according to the

Waiting Times

Waiting Times	Horizontally long and vertically short	Vertically long and horizontally short
0 minute	1	2
$0 \leq X < 15$ minutes	2	1
$15 \leq X < 30$ minutes	2	1
$30 \text{ minutes} \leq X < 1$ hour	2	1
$1 \text{ hour} \leq X$	2	1

**Table A. F.16.** Preferences on Width and Height of Walls according to the Waiting Places

Waiting Places	Horizontally long and vertically short	Vertically long and horizontally short
No waiting	1	2
Waiting Room	2	1
Corridor	2	1
Others	2	1

**Table A. F.17.** Preferences on Depth of Walls 2 according to the Age Groups

Age Groups	Flat Walls	Concave Walls	Convex Walls
19-34 Young Adult	1	3	2
35-49 Adult	1	3	2,3
50-64 Middle Aged Adult	1,2	3	2
65-74 Young Elderly	1	2,3	2

**Table A. F.18.** Preferences on Depth of Walls according to Sex

Sex	Flat Walls	Concave Walls	Convex Walls
Female	1	3	2
Male	1	3	1,2

**Table A. F.19.** Preferences on Depth of Walls 2 according to the Waiting Times.

Waiting Times	Flat Walls	Concave Walls	Convex Walls
0 minute	1	3	2
$0 \leq X < 15$ minutes	1	3	2
$15 \leq X < 30$ minutes	2	3	1
$30 \text{ minutes} \leq X < 1 \text{ hour}$	2	3	1
$1 \text{ hour} \leq X$	1	3	2,3

**Table A. F.20.** Preferences on Depth of Walls according to the Waiting Places

Waiting Places	Flat Walls	Concave Walls	Convex Walls
No waiting	1	3	2
Waiting Room	1	3	1,3
Corridor	1	3	2
Others	1	3	2

**Table A. F.21.** Preferences on Slant of Walls according to the Age Groups

Age Groups	Upright Walls	Slanted Inwards	Slanted Outwards
19-34 Young Adult	1	3	2
35-49 Adult	1	3	2
50-64 Middle Aged Adult	1	3	2
65-74 Young Elderly	1	3	2

**Table A. F.22.** Preferences on Slant of Walls according to Sex.

Sex	Upright Walls	Slanted Inwards	Slanted Outwards
Female	1	3	2
Male	1	3	2

**Table A. F.23.** Preferences on Slant of Walls according to the Waiting Times.

Waiting Times	Upright Walls	Slanted Inwards	Slanted Outwards
0 minute	1	3	2
$0 \leq X < 15$ minutes	1	3	2
$15 \leq X < 30$ minutes	1	3	2
$30 \text{ minutes} \leq X < 1$ hour	1	3	1,2
$1 \text{ hour} \leq X$	1	3	2

**Table A. F.24.** Preferences on Slant of Walls according to the Waiting Places

Waiting Places	Upright Walls	Slanted Inwards	Slanted Outwards
No waiting	1	3	2
Waiting Room	1	3	2
Corridor	1	3	2
Anywhere	1	2,3	2,3

**Table A. F.25.** Preferences on Surface Texture of Walls according to the Age Groups.

Age Groups	Smooth Surface	Fine Textured Walls	Rough Surface
19-34 Young Adult	1	1,2	3
35-49 Adult	1	2	3
50-64 Middle Aged Adult	1	2	3
65-74 Young Elderly	1,2	1,2	3

**Table A. F.26.** Preferences on Surface Texture of Walls according to Sex

Sex	Smooth Surface	Fine Textured Walls	Rough Surface
Female	1	2	3
Male	1	2	3

**Table A. F.27.** Preferences on Surface Texture of Walls according to the Waiting Times

Waiting Times	Smooth Surface	Fine Textured Walls	Rough Surface
0 minute	1	2	3
$0 \leq X < 15$ minutes	1	2	3
$15 \leq X < 30$ minutes	1	2	3
$30 \text{ minutes} \leq X < 1 \text{ hour}$	1,2	1	3
$1 \text{ hour} \leq X$	2	1	3

**Table A. F.28.** Preferences on Surface Texture of Walls according to the Waiting Places

Waiting Place	Smooth Surface	Fine Textured Walls	Rough Surface
No waiting	1	2	3
Waiting Room	1	2	3
Corridor	1	2	3
Others	2	1	3

**Table A. F.29.** Preferences on Surface Pattern of Walls according to the Age Groups.

Age Groups	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material itself
19-34 Young Adult	2	3,4	5	2,4	1	6
35-49 Adult	1,2	2,3	3,4	4,5,6	1	6
50-64 Middle Aged Adult	1	3,4	4	4,5	2	6
65-74 Young Elderly	2,6	3	5	4	1,5	1,6

**Table A. F.30.** Preferences on Surface Pattern of Walls according to the Sex.

Sex	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material itself
Female	2	3	4,5	4	1	6
Male	1	2,3	5	4	1	6

**Table A. F.31.** Preferences on Surface Patterns according to the Waiting Times

Waiting Times	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material itself
0 minute	2,4	2,3	5	4	1	6
$0 \leq X < 15$ minutes	1	3	4	4	1,2	6
$15 \leq X < 30$ minutes	2	3	5	4	1	6
$30 \text{ minutes} \leq X < 1 \text{ hour}$	2	1,2,4,5,6	5	4	3	6
$1 \text{ hour} \leq X$	3,4	2,4	4	5	1	6



**Table A. F.32.** Preferences on Surface Patterns of Walls according to the Waiting Place.

Waiting Place	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material itself
No waiting	2,4	2,3	5	4	1	6
Waiting Room	1	2	4,5	5	1	6
Corridor	2	3	5	4	2	6
Others	3,6	3,6	4	2,6	1	2,5

**Table A. F.33.** Preferences on Surface Materials of walls according to the Age Groups.

Age Groups	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
19-34 Young Adult	1	5	7	2	6	4	1
35-49 Adult	1	4	7	1,2	6	5	3
50-64 Middle Aged Adult	1	4	7	1	7	5	4
65-74 Young Elderly	1,2	2,3	6	3,5	7	4	1,3

**Table A. F.34.** Preferences on Surface Materials of Walls according to Sex.

Sex	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
Female	1	4	7	2	6,7	4	3
Male	1,2	5	6	1	7	4,5	3

**Table A. F.35.** Preferences on Surface Materials of Walls according to the Waiting Times

Waiting Times	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
0 minute	1	5	7	1,3	7	4	1,2,3
0≤X<15 minutes	1	4	6,7	3	7	5	1,2
15≤X<30 minutes	1	3	7	2	6	5	2,4
30 minutes≤X<1 hour	1	2,3,4,5,6	7	1	6	4	3
1 hour≤X	1	2,4	7	1,5	6	5	3

**Table A. F.36. Preferences on Surface Materials of Walls according to the  
Waiting Places**

Waiting Places	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
No waiting	1	5	7	1,3	7	4	1,2,3
Waiting Room	1	4,5	7	1,3	6	4,5	2,3
Corridor	1	4	7	2	6,7	5	3
Others	1,3	2,7	7	1,2	4,6	5,6	3,4

## APPENDIX G. Preferences of Medical Doctors on Characteristics of Interior

### Walls

**Table A. G.1.** Preferences on General Characteristics of Walls according to the Age Groups.

Age Groups	Color of Walls	Forms of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Construction Material Itself
19-34 Young Adult	1	4	5	6	7	2	3
35-49 Adult	1	5	5	6	7	3,4,7	4
50-64 Middle-aged Adult	1	5,6,7	2,3,5	2,4,5	6	3,4,7	1,2,4

**Table A. G.2** Preferences on General Characteristics of Walls according to Sex.

	Color of Walls	Forms of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Construction Material Itself
Female	1	5	5	6	7	2	3
Male	1	4	3,5	6	5,6	4	3

**Table A. G.3.** Preferences on General Characteristics of Walls according to the Total Time Spent in Oncology Hospital.

Total Time Spent in Oncology Hospital	Color of Walls	Forms of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Construction Material Itself
1month $\leq$ X<6 months	2	4	6,7	1	7	4	3,5
6 months $\leq$ X<1 year	1	4	7	2	5	3	6
1 year $\leq$ X<2 years	1	7	3,4,5	6	5,6,7	2	1,3,4
2 years $\leq$ X<3 years	1	3,4	3,5	2,5	1,6	2,7	4,7
3 years $\leq$ X	1	5,7	5	6	7	4	3

**Table A. G.4.** Preferences on General Characteristics of Walls according to the Average Time Spent in the Hospital Per Day

Average Time Spent in the Hospital Per Day	Color of Walls	Forms of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Construction Material Itself
2 hours $\leq$ X $\leq$ 4 hours	0	0	0	0	0	0	0
4 hours $\leq$ X $\leq$ 6 hours	0	0	0	0	0	0	0
6 hours $\leq$ X $\leq$ 8 hours	1	3,4	7	1	5	3	3,6
8 hours $\leq$ X $\leq$ 10 hours	1	4	5	6	7	4	3
10 hours $\leq$ X	1	5,7	3,6,7	2,4,6	5	2,3,4	1,4,6

**Table A. G.5.** Preferences on General Characteristics of Walls according to the Average Number of Patients Treated Per Day

Average number of patients treated everyday	Color of Walls	Forms of Walls	Surface Texture of Walls	Height of Walls	Length of Walls	Surface Patterns of Walls	Construction Material Itself
No patients	3	4	1	6	7	5	1
1 $\leq$ X $\leq$ 5 patients	1	2,3,4,5	5	1,3,4,6	6,7	2,3,4,7	2,4,5,7
5 $\leq$ X $\leq$ 10 patients	1	6	5	6	7	2	3
10 $\leq$ X $\leq$ 15 patients	1,2	5	1,3	4	5,6	6,7	2,3
15 $\leq$ X $\leq$ 20 patients	2	4,7	3	2,6	6	4	5
20 $\leq$ X patients	1	3	2	6	7	2,3,4,7	2,4,6

**Table A. G.6.** Preferences on Warm Color of Walls according to the Age Groups

Age Groups	Dark Colors	Vivid Colors	Dull Colors	Light Colors
19-34 Young Adult	4	3	2	1
35-49 Adult	4	3	2	1
50-64 Middle-aged Adult	4	2,3,4	2	1

**Table A. G.7.** Preferences on Warm Color of Walls according to Sex.

Sex	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Female	4	3	2	1
Male	4	2	2	1

**Table A. G.8.** Preferences on Warm Color of Walls according to the Total Time Spent in Oncology Hospital

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
1month $\leq$ X<6 months	4	3	2	1
6 months $\leq$ X<1 year	4	2	3	1
1 year $\leq$ X<2 years	4	2	3	1
2 years $\leq$ X<3 years	4	3	2	1
3 years $\leq$ X	4	3	2	1

**Table A. G.9.** Preferences on Warm Colors of walls according to the Average Time Spent in the Hospital Per Day

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
2 hours $\leq$ X<4 hours	0	0	0	0
4 hours $\leq$ X<6 hours	0	0	0	0
6 hours $\leq$ X<8 hours	4	2	3	1
8 hours $\leq$ X<10 hours	4	3	2	1
10 hours $\leq$ X	4	1	3	2

**Table A. G.10.** Preferences on Warm Colors of Walls according to the Average Number of Patients Treated Per Day

	Dark Colors	Vivid Colors	Dull Colors	Light Colors
No patients	4	3	2	1
1 $\leq$ X<5 patients	4	3	2	1
5 $\leq$ X<10 patients	4	3	2	1
10 $\leq$ X<15 patients	3,4	2,4	2,3	1
15 $\leq$ X<20 patients	4	1,2	3	1
20 $\leq$ X patients	4	3	2	1

**Table A. G11.** Preferences on Cool Color of Walls according to Age Groups

Age Groups	Dark Colors	Vivid Colors	Dull Colors	Light Colors
19-34 Young Adult	4	3	2	1
35-49 Adult	4	3	2	1
50-64 Middle-aged Adult	4	3	1	2

**Table A. G.12.** Preferences on Cool Color of Walls according to Sex.

Sex	Dark Colors	Vivid Colors	Dull Colors	Light Colors
Female	4	3	2	1
Male	4	3	2	1

**Table A. G.13.** Preferences on Cool Color of Walls according to the Total Time Spent in Oncology Hospital

Total Time Spent in Oncology Hospital	Dark Colors	Vivid Colors	Dull Colors	Light Colors
1 month $\leq$ X < 6 months	4	3	2	1
6 months $\leq$ X < 1 year	4	3	2	1
1 year $\leq$ X < 2 years	4	3	1,2,3	1
2 years $\leq$ X < 3 years	3,4	3,4	2	1
3 years $\leq$ X	4	3	2	1

**Table A. G.14.** Preferences on Cool Color of Walls according to the Average Time Spent in Hospital Per Day

Average Time Spent in Hospital Per Day	Dark Colors	Vivid Colors	Dull Colors	Light Colors
2 hours $\leq$ X < 4 hours	0	0	0	0
4 hours $\leq$ X < 6 hours	0	0	0	0
6 hours $\leq$ X < 8 hours	4	3	2	1
8 hours $\leq$ X < 10 hours	4	3	2	1
10 hours $\leq$ X	4	3	2	1

**Table A. G.15.** Preferences on Cool Color of Walls according to the Average Number of Patients Treated Per Day.

Average Number of Patients Treated Per Day	Dark Colors	Vivid Colors	Dull Colors	Light Colors
No patients	4	3	2	1
1 $\leq$ X < 5 patients	4	3	2	1
5 $\leq$ X < 10 patients	4	3	2	1
10 $\leq$ X < 15 patients	4	3	1	2
15 $\leq$ X < 20 patients	4	3	2	1
20 $\leq$ X patients	4	3	2	1

**Table A. G.16.** Preferences on Width and Height of Walls according to Age Groups

Age Groups	Horizontally long and vertically short	Vertically long and horizontally short
19-34 Young Adult	2	1
35-49 Adult	1	2
50-64 Middle-aged Adult	1	2

**Table A. G.17.** Preferences on Width and Height of Walls according to Sex

Sex	Horizontally long and vertically short	Vertically long and horizontally short
Female	1	2
Male	1,2	1,2

**Table A. G.18.** Preferences on Width and Height of Walls according to the Total Time Spent in Oncology Hospital.

Total Time Spent in Oncology Hospital	Horizontally long and vertically short	Vertically long and horizontally short
1 month $\leq$ X < 6 months	2	1
6 months $\leq$ X < 1 year	2	1
1 year $\leq$ X < 2 years	1	2
2 years $\leq$ X < 3 years	1	2
3 years $\leq$ X	1	2

**Table A. G.19.** Preferences on Width and Height of Walls 1 according to Average Time Spent in Hospital Per Day.

Average Time Spent in Hospital Per Day	Horizontally long and vertically short	Vertically long and horizontally short
2 hours $\leq$ X < 4 hours	0	0
4 hours $\leq$ X < 6 hours	0	0
6 hours $\leq$ X < 8 hours	2	1
8 hours $\leq$ X < 10 hours	1	2
10 hours $\leq$ X	1	2

**Table A. G.20.** Preferences on Width and Height of Walls according to Average Number of Patients Treated Per Day

Average Number of Patients Treated Per Day	Horizontally long and vertically short	Vertically long and horizontally short
No patients	1	2
1 $\leq$ X < 5 patients	2	1
5 $\leq$ X < 10 patients	1	2
10 $\leq$ X < 15 patients	1,2	1,2
15 $\leq$ X < 20 patients	1	2
20 $\leq$ X patients	1	2

**Table A. G.21.** Preferences on Depth of Walls according to the Age Groups

Age Groups	Flat Walls	Concave Walls	Convex Walls
19-34 Young Adult	2	1,3	3
35-49 Adult	1	2	3
50-64 Middle-aged Adult	1	3	2

**Table A. G.22.** Preferences on Depth of Walls according to Sex

Sex	Flat Walls	Concave Walls	Convex Walls
Female	2	1	3
Male	1	2,3	3



**Table A. G.23.** Preferences on Depth of Walls according to Total Time Spent in Oncology Hospital

Total Time Spent in Oncology Hospital	Flat Walls	Concave Walls	Convex Walls
1month $\leq$ X<6 months	2	1,2,3	1,3
6 months $\leq$ X<1 year	2	3	1
1 year $\leq$ X<2 years	2	1,2,3	3
2 years $\leq$ X<3 years	1	2,3	2,3
3 years $\leq$ X	1	1	3

**Table A. G.24.** Preferences on Depth of Walls according to Average Time Spent in Hospital Per Day.

Average Time Spent in Hospital Per Day	Flat Walls	Concave Walls	Convex Walls
2 hours $\leq$ X<4 hours	0	0	0
4 hours $\leq$ X<6 hours	0	0	0
6 hours $\leq$ X<8 hours	2	2	3
8 hours $\leq$ X<10 hours	2	3	3
10 hours $\leq$ X	1	2	3

**Table A. G.25.** Preferences on Depth of Walls according to the Average Number of Patients Treated Per Day

Average Number of Patients Treated Per Day	Flat Walls	Concave Walls	Convex Walls
No patients	2	1	3
1 $\leq$ X<5 patients	1	3	2
5 $\leq$ X<10 patients	1,2	2	3
10 $\leq$ X<15 patients	1,2	1,3	2,3
15 $\leq$ X<20 patients	1	2	3
20 $\leq$ X patients	2	1	3

**Table A. G.26.** Preferences on Slant of Walls according to the Age Groups

Age Groups	Upright Walls	Walls Slanted Inwards	Walls Slanted outwards
19-34 Young Adult	1	3	2
35-49 Adult	1	3	2
50-64 Middle-aged Adult	1	3	2

**Table A. G.27.** Preferences on Slant of Walls according to Sex.

Sex	Upright Walls	Walls Slanted Inwards	Walls Slanted outwards
Female	1	3	2
Male	1	3	2

**Table A. G.28.** Preferences on Slant of Walls according to the Total Time Spent in Oncology Hospital.

Total Time Spent in Oncology Hospital	Upright Walls	Walls Slanted Inwards	Walls Slanted outwards
1 month $\leq$ X < 6 months	1	3	2
6 months $\leq$ X < 1 year	1	3	2
1 year $\leq$ X < 2 years	1	2	3
2 years $\leq$ X < 3 years	1	3	2
3 years $\leq$ X	1	3	2

**Table A. G.29.** Preferences on Slant of Walls according to the Average Time Spent in Hospital Per Day.

Average Time Spent in Hospital Per Day	Upright Walls	Walls Slanted Inwards	Walls Slanted outwards
2 hours $\leq$ X < 4 hours	0	0	0
4 hours $\leq$ X < 6 hours	0	0	0
6 hours $\leq$ X < 8 hours	1	3	2
8 hours $\leq$ X < 10 hours	1	3	2
10 hours $\leq$ X	1	3	1,2,3

**Table A. G.30.** Preferences on Slant of Walls according to the Average Number of Patients Treated Per Day

Average Number of Patients Treated Per Day	Upright Walls	Walls Slanted Inwards	Walls Slanted outwards
No patients	1	3	2
1 $\leq$ X < 5 patients	1,2	3	1,2
5 $\leq$ X < 10 patients	1	3	2
10 $\leq$ X < 15 patients	1	3	2
15 $\leq$ X < 20 patients	1	3	2
20 $\leq$ X patients	1	3	1,2

**Table A. G.31.** Preferences on Surface Texture of Walls according to Age Groups.

Age Groups	Smooth Walls	Fine Textured Walls	Rough Textured Walls
19-34 Young Adult	1	2	3
35-49 Adult	2	1	3
50-64 Middle-aged Adult	1	2	3

**Table A. G.32.** Preferences on Surface Texture of Walls according to Sex

Sex	Smooth Walls	Fine Textured Walls	Rough Textured Walls
Female	1	2	3
Male	1	2	3

**Table A. G.33.** Preferences on Surface Texture of Walls according to Total Time Spent in Oncology Hospital.

Total Time Spent in the Hospital Per Day	Smooth Walls	Fine Textured Walls	Rough Textured Walls
1 month $\leq$ X < 6 months	1	2	3
6 months $\leq$ X < 1 year	1	2	3
1 year $\leq$ X < 2 years	1	2	3
2 years $\leq$ X < 3 years	1	2	3
3 years $\leq$ X	1,2	2	3

**Table A. G.34.** Preferences on Surface Texture of Walls according to Average Time spent in the Hospital Per Day.

Average Time Spent in the Hospital Per Day	Smooth Walls	Fine Textured Walls	Rough Textured Walls
2 hours $\leq$ X < 4 hours	0	0	0
4 hours $\leq$ X < 6 hours	0	0	0
6 hours $\leq$ X < 8 hours	2	1	3
8 hours $\leq$ X < 10 hours	1	2	3
10 hours $\leq$ X	1	2	3

**Table A. G.35.** Preferences on Surface Texture of Walls according to Average Number of Patients Treated Per Day.

Average Number of Patients Treated Per Day	Smooth Walls	Fine Textured Walls	Rough Textured Walls
No patients	2	3	1
1≤X<5 patients	1	2	3
5≤X<10 patients	2	1	3
10≤X<15 patients	1	2	3
15≤X<20 patients	1	2	3
20≤X patients	1	2	3

**Table A. G.36** Preferences on Surface Pattern of Walls according to Age Groups

Age Groups	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material Itself
19-34 Young Adult	2	4	3	3,5	1	6
35-49 Adult	6	4	2	1	6	5
50-64 Middle-aged Adult	2,3,6	1	2,4,5	3,4,6	2,3,4	1,5,6

**Table A. G.37.** Preferences on Surface Pattern of Walls according to Sex.

Sex	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material Itself
Female	2	4	3,5	3	1	6
Male	2	4	3	1,3,5	4	6

**Table A. G.38.** Preferences on Surface Pattern of Walls according to Total Time Spent in Oncology Hospital.

Total Time Spent In Oncology Hospital	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material Itself
1month≤X<6 months	2,5	1,2,4	3,5	2,3	4	7
6 months≤X<1 year	2	4	3	5	1	7
1 year≤X<2 years	2	1,2,4	3,4,5	3	5	7
2 years≤X<3 years	2,6	4	1,5	2,3	1,5	3,7
3 years≤X	6	4	3	1,4	6	7

**Table A. G.39.** Preferences on Surface Pattern of Walls according to the Average Time Spent in Hospital Per Day.

Total Time Spent In the Hospital Per Day	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material Itself
2 hours≤X<4 hours	0	0	0	0	0	0
4 hours≤X<6 hours	0	0	0	0	0	0
6 hours≤X<8 hours	2	3,4	3,4,5	1,5	1,6	6
8 hours≤X<10 hours	2,5,6	4	3	3	4	6
10 hours≤X	1,2,3	4	3,5,6	3,4,5	2	6

**Table A. G.40.** Preferences on Surface Pattern of Walls according to Average Number of Patients Treated Per day

Average Number of Patients treated Per Day	Floral	Geometric	Stripes	Graphics	Natural Scenes	Construction Material Itself
No patients	6	3	2	1	5	4
1≤X<5 patients	5	1,2,3,6	3	1	4	6
5≤X<10 patients	2,6	4	3	2,4	1,4,6	6
10≤X<15 patients	3,5	2,5	4,6	4,6	2,3	1
15≤X<20 patients	2	4	3,5	3	1	6
20≤X patients	2	4	5	3	1	6

**Table A. G.41.** Preferences on Surface Material of Walls according to Age Groups

Age Groups	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
19-34 Young Adult	1	2	6,7	4	7	5	3
35-49 Adult	1	1	7	5	6	4,6	3
50-64 Middle-aged Adult	1	2,4,7	6,7	6	4,5,7	3,4,6	2,3,5

**Table A. G.42.** Preferences on Surface Material of Walls according to Sex.

Sex	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
Female	1	4	5	3,6	7	4	2
Male	1	2	7	4,5	7	4,5	3

**Table A. G.43.** Preferences on Surface Material of Walls according to the Total Time Spent in Oncology Hospital

Total Time Spent in Oncology Hospital	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
1 month $\leq$ X < 6 months	1,2	1	7	4	7	4,5	3
6 months $\leq$ X < 1 year	2	3	6	1	7	4	5
1 year $\leq$ X < 2 years	1	2	5,6,7	3,5,6	7	3	4
2 years $\leq$ X < 3 years	1,3	1,2	4,6	2,6	7	5	3,4
3 years $\leq$ X	1	2	7	4,5	7	4	3

**Table A. G.44.** Preferences on Surface Material of Walls according to Average Time spent in the Hospital Per Day.

Average Time Spent in the Hospital Per Day	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
2 hours $\leq$ X < 4 hours	0	0	0	0	0	0	0
4 hours $\leq$ X < 6 hours	0	0	0	0	0	0	0
6 hours $\leq$ X < 8 hours	1	3	7	4	6	4	1,2,3
8 hours $\leq$ X < 10 hours	1	2	7	4,5,6	7	4,5	3
10 hours $\leq$ X	3	1	5	2,4,6	6	4,5,7	2,4,3

**Table A. G.45. Preferences on Surface Material of Walls according to Average Number of Patients Treated Per Day**

Average Number of Patients Treated Per Day	Paint	Wall Paper	Carpet	Wood Panel	Metal Panel	PVC-Vinyl	Ceramic
No patients	2	3	7	5	6	4	1
$1 \leq X < 5$ patients	1,2	2,3	6,7	4	5,7	5	1,3
$5 \leq X < 10$ patients	3	1,4,5	6,7	4	7	3,4	2,3
$10 \leq X < 15$ patients	1,2	2,3	6,7	1,6	5,7	4,5	3,4
$15 \leq X < 20$ patients	1	1	7	5	7	4	3,4
$20 \leq X$ patients	1	2	5	3	7	5	2,3