

## **Istanbul Şişli Etfal Hospital: Evaluating hospital's Outdoor Space and its Effect on the User's Health**

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### **ABSTRACT**

Hospitals are widely accepted as environments full of stress not only for the patients but even for the workers who spent long hours there. In this respect environmental quality plays an important role in understanding the relationship between the people and such kind of buildings. This research will be conducted to find out the Sisli Etfal hospital user's point of view on the outer space that surround the hospital building which by the time has changed dramatically. These rapid changes have been the driving force to establish the main aim of this research. Weather are these environmental conditions that influence significantly stress and what are the circumstances of the coping process are two issues that got answer by the end of the research. Conducted with the help of the questionnaires directed to the hospital's users who were randomly selected, the study emphasizes the importance of the outer space to the patient health. The evaluation of the found data from the survey together with researcher's observations of the spatial physical aspects of the outer space it is stressed the urgent need for intervention in the hospitals' outdoors in Istanbul.

**KEYWORDS:** hospital outdoor space, environmental stress, healthcare outcomes, healing environments

### **1 INTRODUCTION**

Hospitals are among those complex public buildings which are large and composite. Such kind of buildings is always issues of research. They should provide comfort and stress free environments for users. In this research Sisli Etfal Hospital will be investigated so that to evaluate its present conditions and look whether the outside environment affects negatively t the patient's stress. With its location in one of the most populated areas of Istanbul, this environment is selected due to the severe transformations in its outer physical environment.

The idea for the construction of a children's hospital in Istanbul was by Ambulhamid II in 1898. Within his command the hospital ought to be a hospital that offers good health facilities surrounded by gardens and pine trees.(Fig1) <sup>1</sup> Its outdoor garden and the presence of more than 1500 trees ( Selçuk, Çolak, 2011) highlight once more that nature helps in disease recovery. Based on Ambulhamid II's wish it was presented to him a hospital identical to Frederic hospital in Berlin. With his approval the hospital had launched construction. Interesting enough is the consciousness of the time about the transmittable

<sup>1</sup> Hamidiye Etfal Hastanesi, p.32.

diseases. The hospital was split out into 10 buildings to be prevented from the transfer of microbes, bacteria and infectious maladies.

Hospitals are widely accepted as environments full of stress not only for the patients but even for the workers who spent long hours there. By the time the Sisli Etfal hospital building outdoor environment has changed dramatically. These rapid changes have been the driving force to establish the main aim of this research. Are these environmental conditions that influence significantly on people stress and what are the condition of the coping with it.

The research is conducted with the help of the questionnaires directed to the hospital's users who were randomly selected. The evaluation of the found data from the survey together with

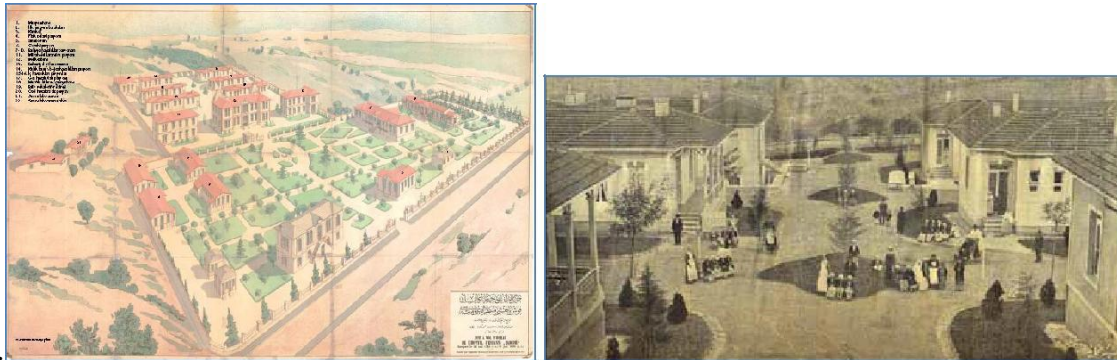


Figure1: On the left, (Yıldırım, 2010, p. 20); on the right, (Betül Altınbaş Selçuk, 2011)

researcher's observations about the spatial physical aspects of the outer space, this study intends to update the authorities about the present conditions of the selected area.

## 2 HOSPITALS AND ENVIRONMENTAL STRESS

Visiting hospitals in a hope to bring a solution to our health sometimes may happen for many reasons to be stressful and sometimes dangerous for patients, families and staff members. The visit to such spaces is accompanied by strong emotions, thus people are ready to act or react to the smallest stimuli. In this respect hospitals should provide designed environments that help staff, patients and their families to cope with stress and why not to facilitate environments for pain release or healing purposes. Still such an idea is not new. It has problems in design and implementation. Attention should be paid not to have implication in increasing stress.

There are some "environmental loads" that individuals are exposed to and that are subject of causing environmental stress. According to Mete Turan (Turan, 1973, p. 49) such load vary from physiological to psychological, and its intensity 'varies directly with the external and internal environmental loads of the environments.'" Evans and Cohen (Evans, 1987, p. 573) known for their contribution to environmental stress issues share the same ideas with Turan and other researchers (Lazarus, 1966; Lazarus& Launier, 1978; Mc Grathym 1970a). All together they agree with Cohen and Evans when they state that stress is present when "environmental stimuli are likely to tax or exceed ones; coping capacities". A sick individual is much likely to be victims of shrinkage coping capacity.

Looking back to the literature, the studies indicate Florence Nightingale (1969) to have proposed and set a number of environmental subjects such as temperature, noise, colour that have an impact on human health. Health and stress are very tightly bond and when the previous gets help from the environment the latter, being one of the crucial issues of the century may, be caused by the environment. This is present especially when the design is not properly planned and implemented. Evans and Cohen (Evans, 1987, p. 573) claims that the environmental stress comes out when there exist a lack, an insufficiency on the relation between the "environmental demand and human recourses"

Evans and McCay (Evans, 1998) when make a categorization of the built environmental factors that influence stress into five architectural dimensions mention that beside stimulations that may be deficient, those that are overloaded either cause deprivation and stress. On the other hand Cooper Marcus(2007) had done a research in over a hundred hospital gardens, as outdoor spaces that diminish stress, where he lists six considerations to be satisfied; “visibility, accessibility, familiarity, quite, comfort, unambiguously positive art.” Though some of these considerations coincide or are embedded to Evans at.al. (1998) they should be considered not only in the garden design but on the outer environments of the hospitals.

Hence, to start with, Evans at.al. (1998) define stimulation as the first architectural dimension that should be taken care when an area is designed. Because as Roger Ulrich(Ulrich 1991) claims there is an additional stress when someone is faced with poorly designed physical environments. Evans at.al. (1998) by quoting Berlyne, D. E. (1971) stresses that loud noise, bright light or unusual smells increase stimuli. That is why Evans at. al. (1998, p. 88) when talks about quite, suggests that for the designing of gardens of the hospitals it is important to locate them “way from traffic, parking areas, delivery driveways, and helicopter landing pads” .This is not only because Craig Zimring (1982) defines noise as a “pervasive stressor” but also because it “elevates physiological and psychological stress”.

On the other side, crowd areas where people lack personal space also increases the stimuli.(Marcus 2007) Coherence is another dimension. It is related to the immediate perceive of the space and the continuity of it. When something is missing, changed or reorganized it causes or influence stress. (Marcus, 2007, p. 87) How coherent is the environment, how easily can the users read it and how it helps in the way-finding are important scopes to be considered. Reasons for getting lost in the hospital areas vary. There are patients that are not familiar with such environments and there are others who carry different characteristics. Familiarity is a term also emphasized by Marcus(2007). He thinks that familiarity helps people deal with stress. In an unfamiliar space people feel scared. This may have consequences like loosing way. They may lack way-finding characteristics; they may have low education, poor vision or due to aging. (Schumaker and Reizenstein, 1982) For Marcus(2007, pp. 87-88) it is important to have signs and to inform people about the existence of specific units or places. “Visibility” reduces stress. Coherence is mutually related to the third architectural dimension; “affordance”. “Affordance” is about the functions of the spaces and how to use them. Spatial hierarchy, social interaction spaces, availability and exposure define “control” as another dimension that needs attention.

One of the most important elements that ensure some help in dealing with health problems is the availability of the restorative environments. Their presence in the hospital surrounding besides creating areas with “minimal destruction” are pleasurable to be seen. “In contrast to viewing nature dominated settings, there is convincing evidence that looking at built environment that lack nature is significantly less effective in furthering restoration and may worsen stress”. The garden effects are seen not only among patient but also among families. Furthermore it cultivates social support. (Zimring, 1984, p. 158)

From this categorization can be derived that the quality of the built physical environment effects and shows the impact on the quality of the users. In this respect evaluating a hospital outdoor area to answer questions about whether it satisfies the conditions a hospital should have to help people coping with stress!

### **3 METHODS**

#### **3.1 Participants**

The people were chosen randomly to participate in the research by varying from patients, their family members and staff, who work or visit and use Sisli Etfal hospital. Adults, passing by or waiting in the outer environments (n=25) was distributed a questionnaire. Among them there were hospital staff members (n=8), family members (n=9) and patients (n=8). Since 8 of them were staff members used the hospital every day and gave some more data related to the hospital outdoor environment.

#### **3.2 Data collection procedures**

Starting the observation was not the first time the researcher had on the site. Being a regular user of the outdoor area for about a year helped her in determining the factors that influence the stress of the people using the hospital outside areas, and extend the observation in a long time. On the other hand the observation hours and questionnaires were tools used to reach one of the goals of the research, the one of evaluating the hospital's outer area and look for issues that stress people.

### 3.2.1 Questionnaire data

Questions were structured and developed based on the environmental stress measures previously mentioned in the literature review. Demographic data, air quality, way-finding availability of restorative environments, all about finding out their opinions for an evaluation and their recommendations for improvements in the hospital surroundings

### 3.2.2 Observation data

Over a 5 day period in the month of December, 10 hours of observation were conducted at various times of the day both during the week and the weekend and both in good and rainy days. People were observed visiting and using the outdoor area of the hospital. To register the observation data sheets were used in terms of making clearer the crowds, people flow and the user activities.

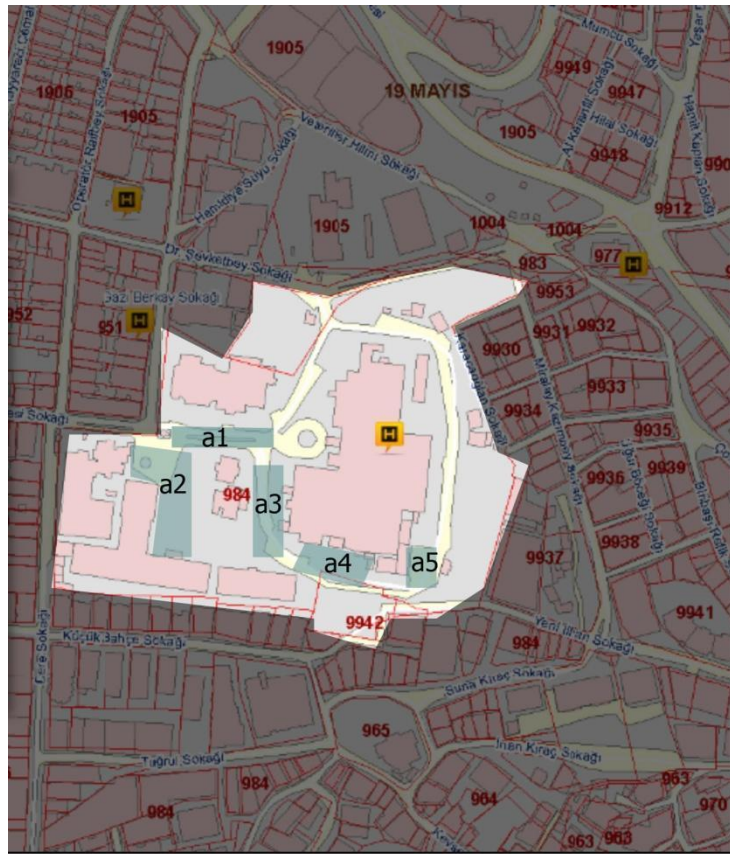


Fig.2 map of the zone (1, worked out by the author)

The researcher observed, mapped and photographed the outer environments of the hospital in mainly two different time slices; late morning and early afternoon. This was due to the observed high people, user movement at those particular time periods through the spaces. In a total 4h or more time frames the researcher observed and noted beside the flow of the activities. The outer hospital environment

is divided into 5 zones to make easier the observation. Zones are indicated according to the hospital building entrances. They are labeled as in the fig.2.

Then an evaluation of the outer area done by Gehnl and Marcus on seating standing, quality of the edges or protection are some stimulation that would affect the user psychology. Of course there are even the measures for the environmental stress surveyed by researchers.

### 3.3 Analysing the results

#### Questionnaire

Let's make clear that, though this step was prepared as a questionnaire to be distributed among the users of the outdoor area of the hospital, it ended the researcher asking the questions and reading the alternatives, because the people were on hurry, and were not willing to sit and fill out the questionnaire.

*Noise level.* As seen from the chart 1, the largest percentage of users think that the outer environment is noisy. It was not only patients or their family that frequent the hospital in cases and may not be acquainted with its conditions but even the staff members who come everyday agree on the idea that hospital's outdoor space is very noisy. For example, a member of the security staff participating in the questionnaire about the loud noise and was saying that sometimes large number of automobiles and large number of people coming and leaving hospital create a headache for him. Similarly, was saying that sometimes in her sleep was hearing the ambulance siren. There was no possibility to make a technical measure in decibels in site but from the survey data is seen that users are being disturbed by the noise level present in the site.

*Air quality.* In the questionnaire participants shared the idea that the air quality is in the considerable conditions. Only 20 % of the asked people were arguing about bad smells. "Even if time by time there are some bad smells around" says one of the cleaning staff members, "we work hard to improve the quality."

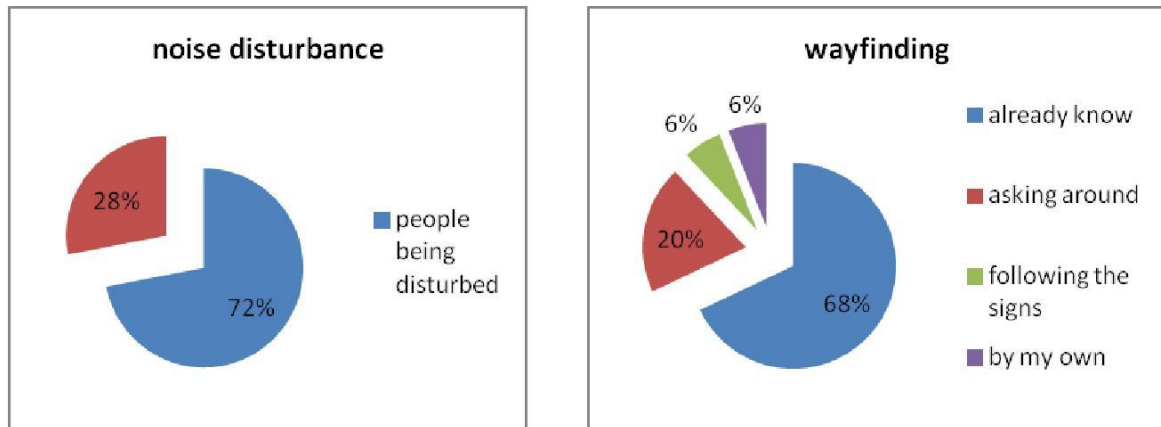


Chart1. (On the left): Noise disturbance among questioned 25 people; (on the right), how they find the target destination?

*Wayfinding.* Participants were asked if they had difficulty in finding their final unit and how they find it. As it can be seen in the chart1 68% of the questioned people already knew how to circulate around the site, but they were not coming for the first time. They were workers or highly frequenting the hospital. Other %32 had difficulty in finding the destination, and only %6 could find the desired units by following the signs. Yet, two of the interviewed patients were asking the researcher which way should follow.

*The crowd.*All the participants agree with the high number of people present in the hospital environments. The range varies from high to very high. (Chart 2)



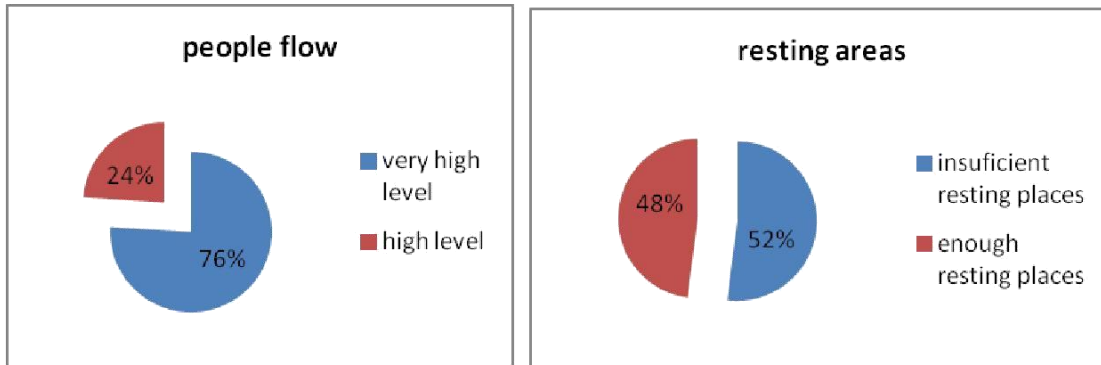


Chart 2. (On the left) people flow rate; (on the right) availability of resting places.

*Recreation areas.* Important for dealing with stress are recreation areas. When asked about the amount of greenery %84 of the participants shared the idea that there are few green areas. It has got an implicit goal this question. The researcher was hoping that it would provide some evidences about user satisfaction. It in some way did. The following question was asked about the suggestions that they would propose.(table 1)

Table 1 What do you suggest for hospital outdoor improvement?

proposals	percent n=25
more green area	88
more sitting places	84
more private spaces for patients and their families	80
less car, car parking in the outdoor space	60
better organisation in help to way-finding	56
more safe areas for children	80
other (parking area)	36

According to the results of the questionnaire, all the participants answered to the subject of proposing changes to the site. As it can be comprehended from the table1, more than %80 demanded for more trees, greenery, sitting places and for more private spaces for patients and their families. Actually all participants requests exceeded %50(table 1). In contradiction, though %60 of them requested less car parking lots and cars on the site, %36 proposed asked for more parking areas in the choice “other”. This is not because hospital users are against recreation areas, but finding a place to park their automobiles become a stressful situation in itself.

The need for improvement communicated in table 1, is combined to the participant’s responses in table2. The latter shows that people would feel quite much better and consequently stress free.

Table 2 Mood change in case of proposed improvement

Mood Change	percent n=25
More relaxed	64
less stressed	20
Pleased	32
positive	20
better organisation in help to way-finding	36
same	0
other	0

### Observation

*Zone a1.* The main entrance of the hospital outside area is from the street that links hospital with *Halaskar Gazi Caddesi*, in Sisli, Istanbul. This street brings the main flow of people to hospital and is a very crowded area. From both sides of the streets are developed shops and cafes which feeds the hospital. The main entrance that is indicated on the map (fig.2), is the main discrete driveway and the people flow. It is a longitudinal configuration (fig.3) divided into five long lanes. Automobile lanes separated by shrub in the middle and from the both sides by sidewalks.

Though on the right there is another entrance which is opened to pedestrians and to staff cars, staff members, visitors and patients use frequently the main entrance. In this zone there is no hospital unit but the tendency of people is seen in that region which after turns to the right to lead to the main building. Thus it was seen that the people usually use that area as a passage and passing through, especially on the rainy days, due to the lack of the shelters and protected areas. On the right of this space there is a green island, the only in this hospital, which is unfortunately fenced and belong to the coffee. Further, topography is steep and mothers with baby stroller and disabled with wheelchair encounter difficulties.



Figure 3: representation of the area a1 (on the left), its photo on the right (courtesy of the author)

The researcher investigated the area during the week and during the weekend by counting the number of people that pass through the area in an hour to find out the flow of people in the outdoor area. During the week the average of the people passing through was really high; 1404 people per one hour. On the other hand at the weekend it was decreased to 360 people per hour.

*Zone a2.* Area labeled as a2 is it more like a small plaza or more like a parking lot is not quite understandable. It is located on the right of the main entrance and it includes medical unit entrances such

as polyclinics, maternity, dermatology. It is represented here with an "L" shape and embedding a small circular shape raises from the ground where shrubs and bushes are planted. People gather around the circular shape and sit on its walls. They gather there to talk, to wait, to smoke or drink and eat something.(fig.4).



Fig.4, View from the area a2, shoot on weekend (courtesy of the author)

Beside this zone, the whole left area is a parking area. The flow of people is seen to have high rates (160 people/h in the weekday, and 207 people/h in the weekend) and is observed their difficulty in penetrating and diffusing among the automobiles this situation creates a feeling of unsafety especially for 3<sup>rd</sup> age people and for children, and pregnant women whose medical unit is located in that area. The massiveness of cars creates some filters that make impossible the immediate perceive of the the space. This situation may cause doubt and consequently stress.

*Zone a3* (fig. 5) The third labeled area is the space in front of the main building. Seen from the topography aspect this area may be indicated as sunken because someone can not see it from the main entrance of the hospital. Since this area corresponds to the main entrance of the core hospital building, not being visible causes somehow stress. This lack of coherence is one of the indicators that Evan and Cohen described as a stress generator. However being the central building entrance it has a high frequency rate; 336 people/h in a weekday and 335 people/h in the weekends.

Let's look the same are in terms of control, as another stress indicator of Evan and Cohen illustration.

The physical setting though deep and narrow have a number of spaces and shelters where a great number of activities were observed to take place at the same time. Some people walk through the space, some other stopped to sit, to stand , to smoke, drink something or to meet someone. The lack of the hierarchy of spaces causes irritation to users especially in the rainy days where everyone runs for a shelter or when water is sprayed over them by the cars that drive frequently though the spaces.



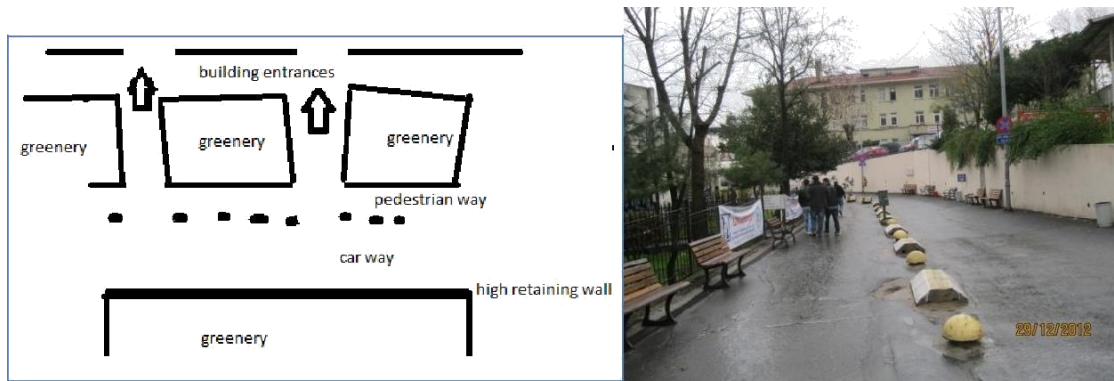


Figure 5: Area a3 represented on the left, its photo on the right (courtesy of the author)

*Zone a4* correspond to another entrance to the main building. (Fig.6) It is a steep area, and though so it it overcrowded by automobiles. People are generally waiting or smoking in that area. Cigarette and tea glasses leftovers are everywhere. It is noisy and people sit or stand very close to each other. People flow range from 543people/h in the weekdays to 500 people/h in the weekends. All these evidences increase and influence the stressful situations that companions hospital environments.

*Zone a5* is the emergency entrance. Compared to the other space observed in has plenty of places in front but no space for the users. In a 5 minute time there were about 16 people waiting outside and 34 passing by , entering and going out of the building. On average it was found to be 348 people/h at weekends and 417 people/h during the week.



Figure 6: View from area4on the left, view from the area a5 on the right (courtesy of the author)

#### 4 DISCUSSION

Despite the fact that outdoor physical environment is considered of not the main importance, it has its outcomes on someone's experience. The literature reveals that one of the roles is environmental stress factor. The questions that were asked to Sisli Hospital users together with the observations were to understand the present condition of the site and to learn about their feelings when visited this location.

Participants were sharing the idea of predominating high noise in the hospital surroundings. There is a high people flux there and not only. Cars, taxis, auto-ambulances their own noise and the the press of horn overtime is very disturbing for all hospital users. There should be taken into consideration the lack of spaces. An issue agreed from the participants in the questionnaire and the observation. Crowding brings lack of personal space, a stimulus to stress. In this respect these data may suggest to hospital management staff to maintain the environments throughout the hospital. Furthermore, yet not mentioned in the observation analysis of the activities that take place in the outer environment vary a lot. People

drink, eat, smoke or meet someone right in the middle of the automobile road or space corners. This situation makes a suggestion for designers in general and Sisli Hospital staff in particular to help to protect privacy and improve social interaction phenomena. Marcus (2007) pointed out such an important issue by stressing that socializing spaces, hierarchy in spaces are an important factor in coping with stress.

A greater attention is deserved for way-finding which is a critical issue for visitors and patients that come for the first time ( Zimering, 1987). Most of the results show a lack of signs and control over the area, resulting in users that lost in space.

Not too much stressed in this research but safety issue is important especially for the mother with babies and children or the patients who use wheelchairs. They follow, share the same way with automobiles. Consequently accessibility and safety are linked together. From the observations there were seen examples when family members tried to pass through the cars pushing a stretcher for medical care from one building to another.

It is not the goal of the study to compare the labeled areas (a1, a2, a3, a4, a5,) but to make easier investigation. Questionnaires done in those areas suggest for more recreational area, quieter areas, car parking, sitting areas, personal and socializing spaces.

## **5 CONCLUDING REMARKS**

The first major goal of their research was to investigate whether Sisli Etfal Hospital outdoor area instead of offering areas to cope with stress influence on increasing stress. Surveys revealed that most of the stress simulators were present in the site. Noise , crowding, problems on wayfinding, accessibility, control, need for restorative environments are issued to be considered. Thus the suggestions of this study about this environment are that each of the settings and issued reflected here that have a positive or negative effect on stress should be planned and programmed individually. What is presented in this research is a beginning, a structure, a framework for further detailed researches and that outdoor environment needs the same attention as the indoor.

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