

## Developing the external spaces and gardens of the hospitals (Basra Specialist Hospital for Children - as a model)

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### ABSTRACT

The study included an analysis of the open external spaces and gardens for the hospital and what the needs and deficiencies it suffers from, as well as conducting a questionnaire process to determine the users' desires for space, where the results of the questionnaire showed that the external spaces of the hospital lack attention to the design aspect and randomness in the distribution of its natural and structural components, the lack of gardens for diversity in the vegetation and most of the spaces are restricted to the Conocarpus plant. It was found through the study that the building's interconnection with nature and organizing the role of pathways and walkways of movement should be adopted to help users to move easily, identifying pathways and walkways with plant fences and complementary elements necessary to provide shade. The results of the questionnaire sample also showed the necessity of providing treatment in horticultural and agricultural as a type of psychotherapy in addition to regular treatment. Most of the opinions of the patient questionnaire sample (children) stressed the necessity of covering the floors of corridors and walkways with grass floors, where it allows easy movement for wheelchair users with special requirements. The results of the study showed that the majority of the respondents (children) prefer to see cartoons on the walls overlooking the garden, where this affects the perceptive awareness for the resident child, it also enriches the building sensually, and its impact is then reflected on the psychological aspect for the child. The researcher reached the necessity of integrating hospital buildings and their external spaces functionally, environmentally and sensually, where it raises the utilitarian and aesthetic value of the building and creates a sense of positive psychological comfort by the ideal relationship between the natural, structural and climatic elements in the concepts of curative and healing environments through beautiful green spaces. The researcher also confirms that the plans included in the appendices are designed according to the desires of the respondents to reach the best design decision.

**Keywords:** external spaces, hospital, natural ingredients.

### تطوير الفضاءات الخارجية والحدائق للمستشفيات ( مستشفى الطفل التخصصي لمدينة البصرة- نموذجاً )

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### الخلاصة:

شملت الدراسة تحليل الفضاءات الخارجية المفتوحة والحدائق للمستشفى وما تعانيه وتفتقر اليه من احتياجات وايضا اجراء عملية الاستبيان لتحديد رغبات المستخدمين للفضاء، اذ اظهرت نتائج الاستبيان ان الفضاءات الخارجية للمستشفى تفتقر الى الاهتمام بالجانب التصميمي والعشوائية في توزيع مكوناتها الطبيعية والانشائية وافتقار الحدائق الى التنوع في الغطاء النباتي واقتصار اغلب الفضاءات على نبات الكينوكاربس. ووجد من خلال الدراسة لا بد من اعتماد ترابط المبنى بالطبيعة وتنظيم دور مسارات وممرات الحركة لتساعد

المستخدمين على سهولة الحركة والتنقل وتحديد المسارات والممرات بالاسيجة النباتية والعناصر التكميلية الضرورية لتوفير الظل. كما ووضحت نتائج عينة الاستبيان على ضرورة توفير العلاج بالبستنة والزراعة كنوع من العلاج النفسي الى جانب العلاج العادي. وأكدت اغلب اراء عينة الاستبيان المرضى (الاطفال) على ضرورة اكساء ارضيات الممرات والمماشي بارضيات عشبية حيث تسمح بسهولة الحركة بالنسبة لمستخدمي الكراسي المتحركة من ذوي الاحتياجات الخاصة، وظهرت نتائج الدراسة بان غالبية المستبنيين (الاطفال) يفضلون رؤية الرسوم الكرتونية على الجدران المطللة على الحديقة حيث يؤثر ذلك على الادراك الحسي للطفل المقيم كما انها تغني المبنى حسيا ومن ثم ينعكس تأثيرها على الجانب النفسي للطفل. وتوصلت الباحثة الى ضرورة تكامل ابنية المستشفيات وفضاءاتها الخارجية وظيفيا وبيئيا وحسبا حيث يرفع من القيمة النفسية والجمالية للمبنى ويخلق الاحساس بالراحة النفسية الايجابية بواسطة العلاقة المثالية ما بين العناصر الطبيعية والبنائية والمناخية بمفاهيم البيئات العلاجية والشفائية من خلال مساحات جميلة خضراء. كما تؤكد الباحثة ان المخططات المدرجة في الملاحق صممت على ضوء رغبات المستبنيين لغرض الوصول الى افضل قرار تصميمي.

**الكلمات المفتاحية:** الفضاءات الخارجية، المستشفى، المكونات الطبيعية.

## 1. INTRODUCTION

The open spaces and gardens have an integrated relationship with the built environment of hospitals, and a global focus has emerged recently in the open spaces and gardens position to enhance the building's position in terms of curative and healing through an attractive and coordinated design in the organization of furniture and formation of privacy for sites. The need to pay attention to the external environment for the building came out not only to verify the aesthetic aspects but also aims to integrate the idea of therapeutic health benefits within the design of hospital buildings to reach ideal therapeutic environments with high performance and accessing the patients to the highest levels of luxury and satisfaction during their stay in the building where the health of the occupants for the building, in addition to the patients, doctors, technicians, and visitors, is greatly affected by the degree of internal air quality, which depends on the natural external environment (1). The importance of linking the building with the natural external spaces are cleared due to the importance of the natural requirements and the architectural features of the open external spaces and gardens to respond to the human requirements of the users for these spaces to provide lighting, ventilation and the external view as a view for the patient rooms to achieve human and psychological comfort through linking the building to the external nature of the hospital (2). As for young patients, the sick child must be exposed to sunlight. It is very

necessary for the health of the sick child where exposure to the open-air feels vital and active where the gardens have entered the field of medicine and treatment due to its many health benefits that contribute to speeding up the recovery of children and then reducing the length of their stay in the hospital, the benefit of the garden in the hospital contributes to the child as a place where sick children play toys to increase it, improve motor skills, enhance the improvement of the immune and physical response, reduce stress, fear and pain for them and improve their mood, increasing their sense of calm (3).

### 1- Research problem

Failure to provide sufficient spaces for external spaces in hospitals and according to international standards in the design of public hospital buildings and the exploiting most of the space for construction in Iraqi hospitals, because of the randomness of dimensions and areas that are not efficient for use and if it is found, it is neglected and not exploited appropriately, and its importance is to provide psychological comfort to patients and the medical and administrative staff, in addition to the lack of studies regarding the open spaces of general Iraqi hospitals, despite its medical, therapeutic, social, and environmental importance through improving the aesthetic view for the site.

### 2- Research objective

The research aims to shed light on the foundations and importance of designing the external spaces, where it is the first thing that the patient, visitor, and staff contact with, and by improving its performance, the general performance of the hospital is complemented through creating a comfortable healthy environment in line with the new and global design trends, and it achieves human comfort and breaks the usual barriers between the hospital and external spaces and achieves the required integration between healthy buildings and the natural environment.

### 3- Research hypothesis

- The research assumes that the absence of the foundations and design standards of open external space for hospital buildings leads to a lack of functional performance for them.
- The open external spaces and gardens of the hospital buildings are considered the first place that the patient and his companions contact with it when entering. The optimal design for the building is to create external spaces that play a positive role in influencing the psyche of the patient first and the medical and administrative staff secondly and the ease of their awareness for the external environment to meet their requirements as effectively as possible following a design vision with international foundations and standards.

## Chapter One: Theoretical study

### The general concept of outer space

The general concept of open external space is all kinds of external spaces between buildings and associated with different human activities and their size and shape depend on the nature of the buildings and the method of their design, so the external space is defined by the buildings surrounding it where forming buildings together, which generates external spaces between them, they are external spaces that complement the internal spaces and contain

elements and design of the natural landscape, and its goal is to meet a part of the human requirements and its activities (4).

### External pace design:

The design of open spaces is defined as that part of the external space that is created or coordinated by the human action starting from the open spaces and what it contains from natural elements (plant) and a complementary element about buildings, roads, public facilities, and even the vast nature through forming complementary relationships among buildings, surfaces, the external structures, floors, shapes of rocks, bodies of water, and plants, with emphasis on the human level and the relationship between human and external space in its three dimensions, both in quantity and quality (5).

## Hospital

It is an institution for professional medical care that is provided by doctors, nursing staff and other professionals, and according to the British Encyclopedia, it is an institution for the diagnosis and treating patients and the wounded and housing them during the period of their treatment and giving birth for women. Hospitals may be public (government ownership) or private (profit or non-profit "charitable") It is also classified as general and accepts all types of medical and surgical cases, especially in terms of determining the introductions of patients of a special type (children - women) or a specific disease (mental illnesses, tumors) (6).

### User group of open external spaces and gardens in the hospital:

#### 1- Patients

The design of external spaces for hospitals must be met in response to the humanitarian requirements within the hospital's spatial environment, material requirements and disabilities, to be employed in a manner that is

appropriate for the health of users for these spaces through the abundance of design elements and appropriate distribution and the presence of green spaces and good furnishing with the correct color and the presence of elements of the visual function such as artworks and children's games with respecting the privacy of some diseases, with knowing the duration of stay for the patient, whether in the long or short term, to enhance treatment through easy access to gardens to obtain an effective response by the patient to mechanisms of the treatment (7).

## **2- Visitors**

One of the design considerations for gardens is the comfort of patients to receive their relatives and friends from visitors when staying in the hospital because their communication with patients has emotional support that patients need to alleviate psychological stress, tension, and pain, so it is important to design open external spaces in a way that facilitates the process of social communication for patients with a visitors from the aesthetic and functional aspects and achieving the actual requirements for the place (8).

## **3- Medical and Technical Staff**

The medical and technical staff are the basic unit for building health institutions, thus green spaces and interest in coordinating gardens contribute significantly to raising morale and reducing tension and stress which they are exposed to from work pressure, therefore contact with nature and the external environment and watching the different types of nature from Water and plant elements and any other technical elements, wandering in the gardens and eating an hour-long lunch as a regular break is necessary to renew energy and improving mood and psychological state (9).

## **Standards for planning and designing open external spaces and hospital gardens**

### **1- Location and accessibility:**

The location is one of the most important factors that must be recognized by the design team in order to understand its capabilities, advantages, and disadvantages. Therefore, the optimum distribution for the total location area of the hospital should be as follows: 30% for buildings, 15% for spaces, roads, and parking, and 50% for gardens and yards (as green areas). The possibility to access to the garden is considered a basic requirement, even if the gardens are attractively designed, but users and patients need to be aware that they can easily reach through the internal and external entrances and corridors (10).

### **2- The feeling of security:**

patients often feel physical weakness, a feeling of fear and confusion in hospitals, and accordingly, the feeling of safety and comfort by hospital users, whether they are patients or relatives, and visitors to the patient is considered one of their basic requirements while they are in hospital gardens (11).

### **3- Visibility:**

Whenever the gardens are designed more clearly for users, the greater its functional effectiveness, and at least that the main entrance garden is clear and visible. Patient rooms should also have garden views, from which they can enjoy even if they are unable to go out (12).

### **4- Physiological comfort:**

Hospital patients are often sensitive to high temperatures, especially burn patients, and options must be provided within the gardens, such as seats fortified with structures away from direct sunlight. Some patients suffer from the problem of standing on their feet, special mobile seats must be provided or Seats they can lie on it (13).

### **5- Quiet**

Research conducted at four hospitals showed that users were disturbed by the sounds of

machines such as air conditioners and generators and traffic noise, therefore, the areas that should be used as garden spaces must be planned away from traffic, parking spaces and places of generators and The designed garden for therapeutic purposes should be quiet, free of sounds, and patients and their visitors should feel calm and be able to hear sounds such as birds or flowing water and the movement of tree leaves (14).

## **6- The feeling of control**

Recent research shows that the feeling of lack of control leads to depression, high blood pressure and a decrease in the functioning of the immune system and the feeling of controlling gardens can be strengthened by involving users from patients in the design, planning, and cultivation where gardening treatment is compatible with modern medical theories of treatment in order to be given the freedom to choose the functional effectiveness of the patient in the open air while providing shaded seating areas which helps the patient physically and psychologically to integrate naturally and quickly with the external environment in the garden (15).

## **7- Familiarity**

Some hospitals may cause psychological pressure for patients and their families because the environment is not familiar to them, therefore to be more comfortable and familiar it must include the natural aspects of the variety of plants, flowers and water in different heights to form a shade, privacy, and beauty, all of which are important for the healing and curative (11).

## **8- Privacy**

This requirement can be achieved by designs that support the privacy, requirements, and desires of all categories of patients by providing open and closed places for stopping and contemplation and awakening all the senses to stimulate the perception of patients and places for individual work by providing barriers or

walking in the sand while providing rocks and taking into consideration the different requirements and desires of patients, taking into account the humanity in design (16).

## **9- Gradation**

One of the most important foundations for the important design, which represents a successive chain, transitional compatibility, or streamlined continuity of various elements or components of external spaces, for example, must take into account the sizes and heights of plants with each other, especially perennial ones, such as trees and shrubs during their cultivation in their designated places or in the form of groups in the natural gardens so that it forms a gradient that starts from lawn plants and ends with tall perennial plants so that most plants can be seen with some garden axes (17).

## **Classification of open external spaces in hospitals:**

### **1- Entry gardens:**

It is pleasantly green spaces visually designed as gardens located near the hospital entrances and water can be added as a beauty element to cool the Ambience (18).

### **2- Landscape grounds**

These are green areas located between the buildings of the used hospital in the first place for waiting and eating by patients and their visitors, as well as in linking buildings with walking paths (19).

### **3- Landscape setbacks**

Gardens are located in front of the main entrances to the hospital and are designed to be a visual attraction that separates the hospital building from the main street (18).

### **4- Plazas**

These areas are found outdoors and are tiled for easy access by wheelchairs and crutches with

disabilities. It should include flowering and evergreen tree plants and also contain shaded seating areas and are decorated with annual plants of different colors, Shrubs, and lawns (Bermuda grass) and maybe water features (20).

### **5- Meditation gardens**

This type of quiet and closed gardens have designed in cool colors such as violet, blue and green instead of light or contrasting colors. This garden represents a comfortable seat for what it contains a central focal point of water that helps the patient to relax and focus, to pray, meditate and walk to relieve stress and anxiety, depression, mood improvement and memory stimulation (21).

### **6- Children gardens**

It is one of the necessary gardens in hospitals for sick children, in order to entertain the children and exposing their bodies to the sun and building their bones as psychological treatment to calm them down, in its design should be taking into account the simplicity and dominance the lawns on most of the designated garden area, while providing the garden with Shade trees, and these gardens are provided with simple, entertaining and harmless games (22). Flexible play areas should be designed that provide them with the pleasure and therapeutic benefits of creative activity due to their need to engage in imagination during play regardless of their health, and it is preferable to use basic colors in addition to providing child-sized sculptures with designing a wall as a whiteboard for drawing, the walkways should be stable and made of surfaces such as decomposed granite with placing a ground carpet anti-slip to facilitate the movement of wheelchairs for the disabled safely (23).

### **7- Viewing gardens:**

These are gardens designed in some health care hospitals with limited space, features, and budgets, and it is a small closed garden that can

be seen by patients' rooms as a psychological treatment because it reduces the feeling of surrounding isolation and the Claustrophobia to provide lasting contact with nature for the environment (16).

### **8- Horticulture gardens**

These are gardens whose design aims to create green spaces containing a nursery in order to promote gardening works as a human therapeutic method in a way that allows sick people to activity on a level in the gardens and leaving the hospital ambiance that is boring and routine where the garden provides agricultural containers raised within the reach of patients and allow them to exercise Horticulture activity, especially for the handicapped, and providing special paths that allow wheelchair users to pass through all corners of the garden (19).

### **9- Gardens for the blind and Amnesia**

It is special gardens for the blind and Amnesia that can help them wander through and enjoy the sun, the open air, the sound of birds, and the cultivation of colorful and aromatic flowering plants that provide a special sensory experience for the visually impaired and patients who suffer from low pathological function ( 24).

## **The second part: the practical study:**

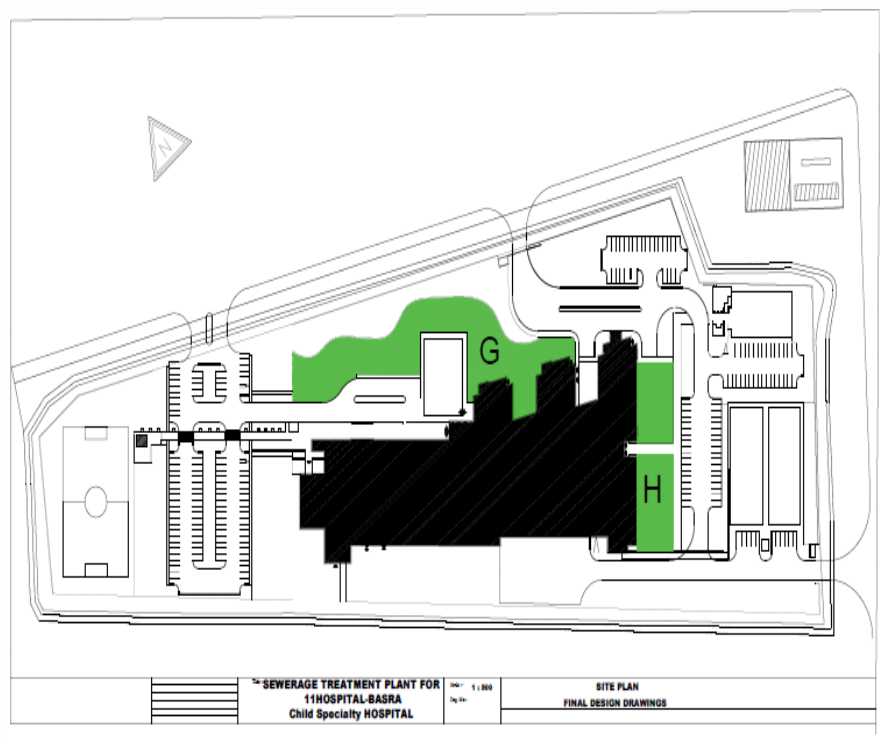
### **1- General description for the Child Specialist Hospital:**

The hospital is located southwest of Basra, it extends between Hayy Al-Jami'a and the main Zubair Street, and its neighborhood is a residential area. Also, in front of it is Bab-Al Zubair Colleges. The hospital was built in 2005 where it was designed by serves (UHS) Universal hospital as a specialized hospital for children and Tumor treatment. The building is located on a land area of 71000 m<sup>2</sup>, while the building area is 16.350 m<sup>2</sup>, and the building consists of two floors as well as a half-floor service and on an area of 1000 m<sup>2</sup>, It was

created in 2016 and It is a four-storey Tumor center and implemented on an area of 1500 m<sup>2</sup>. It contains a building for doctors, an electrical and mechanical service building, guard houses and a football field with an area of 1134 m<sup>2</sup>. The hospital includes 96 beds, eight beds for intensive care, seven premature nurseries, an MRI department and a department of Emergency and dental suite.

## 2- Access to the location and hospital entrances

It is clear from the field survey that the access is easy and conforms to the standard where the hospital building is located on the main streets represented in Al-Zubair Street and also the neighborhood of Hayy Al-Jami'a Street that links with Al-Qibla Street. Thus, access to the location is possible from the directions surrounding the location.



**Figure 1:** Child Hospital Specialized Scheme showing the proposed external spaces designed by the researcher.



**Figure 2:** Access to the location. Prepared by: the researcher, using google earth.

### 3- Research method

#### The questionnaire

The questionnaire is considered one of the important means in design studies because of its guarantee and clarity in answering the posed questions so that it has become one of the main tools by which information is gathered, as well as allowing the researcher to check that information and it examines the study hypotheses after defining the study problem and its goals. The questionnaire forms (Appendix 1 and 2) were randomly distributed to users of the location and its external spaces, with the number of (80 forms) on (pediatric patients) with the number of (30) and (medical and administrative staff) with the number of (50).

#### 4- Discussing the results of the questionnaire

##### 1- Results of the axes of the questionnaire, Appendix No. (1)

The results included an analysis of the children's information form on the following:

The components of the natural and industrial gardens

#### Q1: What makes you happy in the gardens by looking at:

The results showed that all members of the questionnaire sample were from children in a hospital who agreed with their preference to choose colored butterflies over the rest of the choices and with the percentage of 60%. The handling of children with pets is considered a type of treatment that has psychological benefits and reflects positively on the personality of children where it works to improve mood, reducing stress, anxiety, and the severity of depression resulting from fear of disease and their hospitalization (25).

#### Q2: When asked about their favorite water shape:

The result was that the choice of water fountains has excelled on the rest of the choices with a percentage of 43.00%. The researcher believes that the presence of the water element inside the



gardens adds pleasure to the children through the sound of purl and water in the form of fountains and that the enjoyment of gardens with the diversity of shapes, materials, and

colors during design stimulates the sensory aspect of sick children through communication with nature and dealing with it, which makes this a psychological treatment for them.

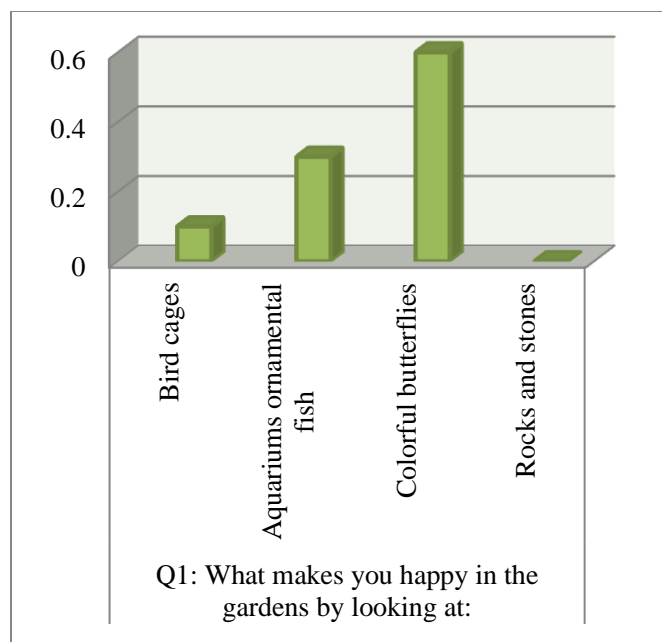


Figure (3)

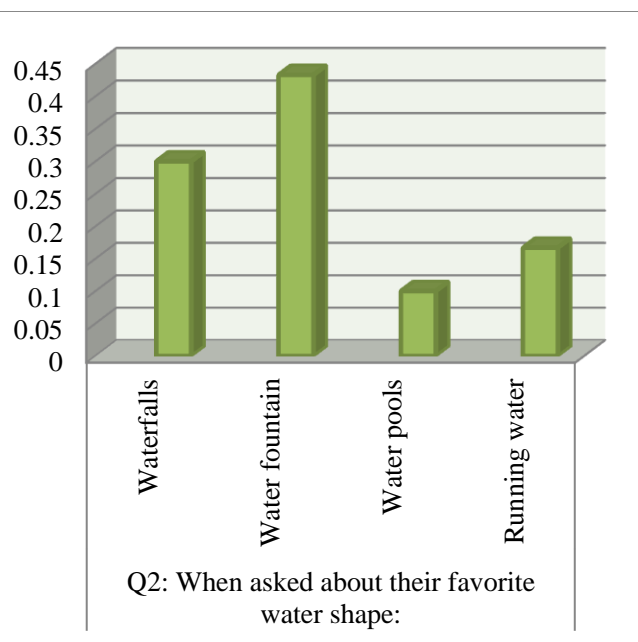


Figure (4)

### Q3: when inquiring about the games that they prefer to play:

The results came according to the following percentages: the games (swing and sliding) have excelled with a percentage of 46.7%, while there was a rapprochement between football and cycling with a percentage of 20%. The reason for the children's desire to play is the lack of adequate spaces that are used as a play area for children, which causes the selection of this percentage. These results agree with (26) that play is considered a type of treatment where it is used to rehabilitate the child and their communication with the surrounding environment, and this treatment is considered a challenge for the child to re-acquire his talents and skills, this is also considered one of the best and most successful treatment methods, especially with children with chronic diseases

who feel bored, it also one of the traditional methods of treatment.

### Q4: What would you like to see on the walls overlooking the garden?

Cartoon characters represent a key element that affects the perceptual awareness for the resident child, where it is close to children, it enriches the building sensually, its effects are then reflected on the psychological side, and the color wall selection was 50% higher than the rest of the choices in the child hospital, then the choice of green climbing plants was with a percentage of 30.0% in the second place as shown in Figure (6). The researcher believes that attention should be paid to the colors in the garden, whether it is the colors of plants or flowers, the colors of the ground covering materials or the equipment of the games, where the colors create a kind of psychological comfort for the children and motivate them to

integrate with nature and from the garden to achieve the luxury and friendly environment for the child inside the hospital. It develops a strong

sense of place by incorporating color, lighting, sound, specifications, and other materials that are essential to children's happiness.

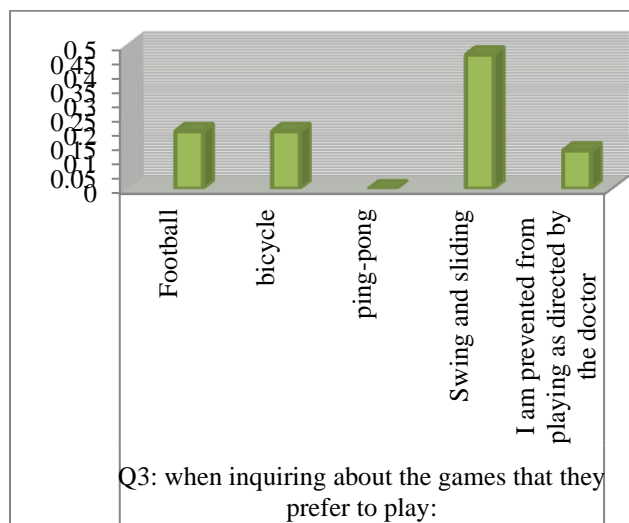


Figure (5)

#### Q5: What are the sculptural models you like to watch?

The results showed that game statues are more desirable for children in a hospital where their percentage amounted to 60%, then animal statues came in the second order with a percentage of 30% as shown in Figure (7). this confirms that the presence of beautiful decorations of games statues are characterized by their attractiveness to the child, equipment that complements the external spaces that would help The child merges his psyche comfortably and quickly with the outside environment for the garden or external space.

#### Q6: What attracts you most to playing in the garden?

From the comparison of the results for the questionnaire, Figure (8) shows the convergence

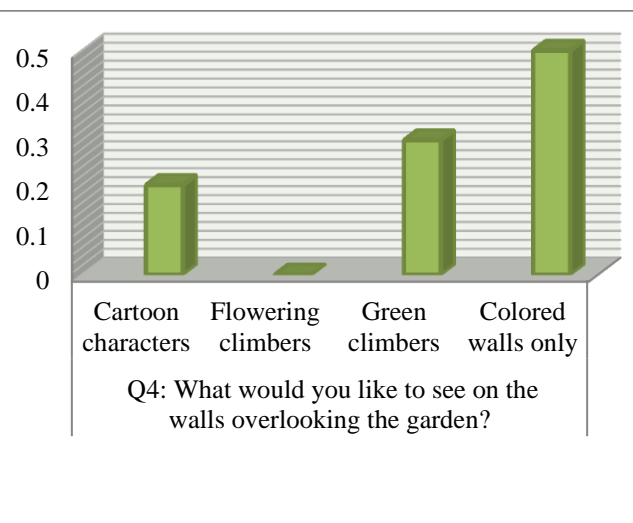


Figure (6)

of percentage in relation to the largest lawn area and most games and plant diversity, which amounted to 30%, and this is explained by (Solucient, 27). When designing the garden, it is noted that adequate spaces are provided in it to employ various types of activities at various levels, which is the privacy that the patient needs, especially the child. The researcher believes that the largest lawn area and the provision of games work to reduce the state of fear and anxiety that accompanies the child when entering the hospital which did not take into account such a situation in the presence of large areas designated in hospital gardens, where the diversity of plants, especially flowering and aromatic works to comfort them in stimulating the smell sense and away from the smell of sterilization materials.

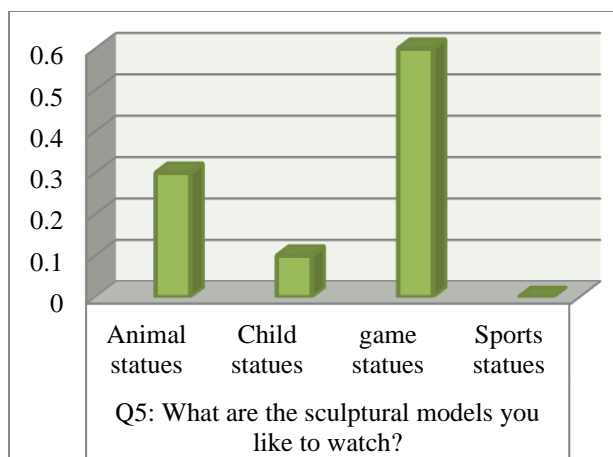


Figure (7)

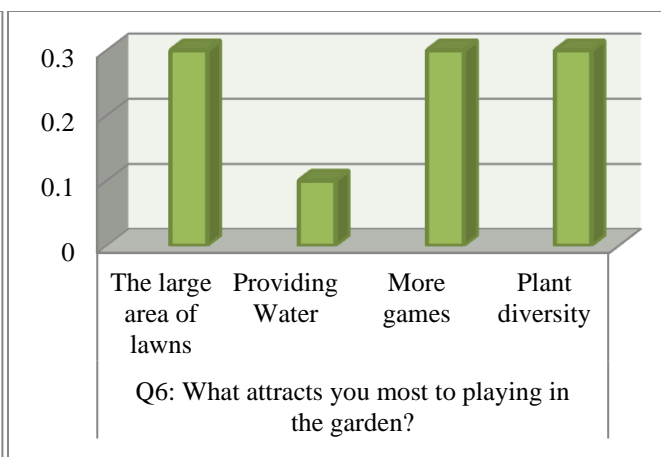


Figure (8)

### Q7: Do you like to hear a voice?

According to the results of the statistical analysis, the sound of music was the most preferred and the desire among children, with a percentage of 50%, followed by calmness, with a percentage of 26.7%. The sound of music is one of the audio stimuli that children want to listen to because it creates a feeling of enjoyment, which makes them interact with the ambiance of movement in the external spaces, where it affects the Nervous device to the child and generating feelings of joy for them and reducing the sound of crying that the rest of the children inside the hospital building.

### Q8: when inquiring about the type of floors for corridors and walkways that comfort the child in the garden:

Figure (10) clarifies the grass walkways have excelled with a percentage of 50% compared to the rest of the options, and the researcher believes that the necessity of the type of used tiling in covering the floors of the corridors and

walkways should be compatible with the purpose of its establishment, where it is preferable to be stable and non-slip materials and to allow smooth movement for wheelchairs that used by people with special needs or patients to create comfort while roaming as the presence of protrusions in the floor covering materials impede movement.

### Q9: What colors do you prefer in the garden?

The results of the study showed that the green color is the color most desirable for children with a percentage of 40% and then the red color came with a percentage of 30.0%. The color is the most important element in imparting beauty to external space, color is the first step for a child and it is a major factor in attracting attention and the child is sensitive to the color that he loves and is in harmony with it. This is what the studies reached through the results of the convergence of the favorite colors among children, where it gives them energy and activity, which enhances their feeling of recovery.

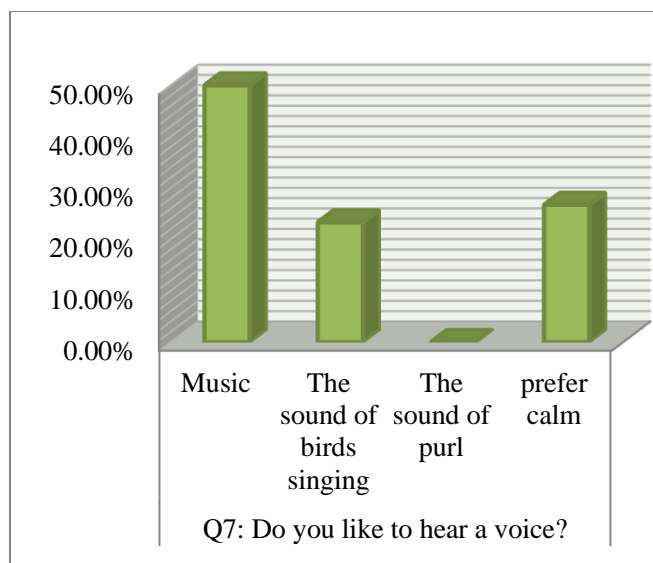


Figure (7)

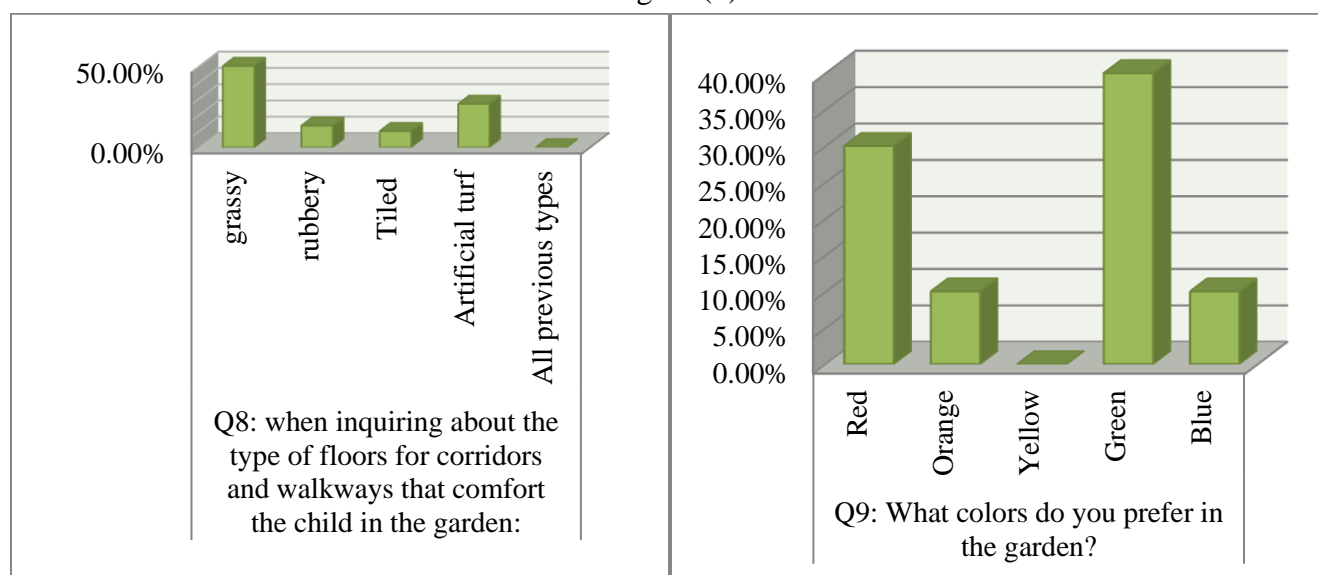


Figure (8)

Figure (9)

## 2- Results of the axes of the questionnaire, Appendix No. (2)

### Q1: How clear are the main hospital entrances to the building, do you think?

Figure (12) shows that the main hospital entrances to the building were clear and distinctive entrances according to the views of the investigators. A reason may be attributed to the interest in the shape of the hospital entrance from the design point of view to be at the

required level to achieve the visual and aesthetic vision in form and design.

### Q2: Given that parking spaces are an open space because it benefits all users, do you think it is?

Figure (13) shows the excelling of the first choice, which is car parking does not meet the increasing needs for the intensity of users because the number of users from the medical and administrative staff is large, as well as visitors and their vehicles with a high

percentage, and the fact that the space allocated for car parking is limited and the lack of major

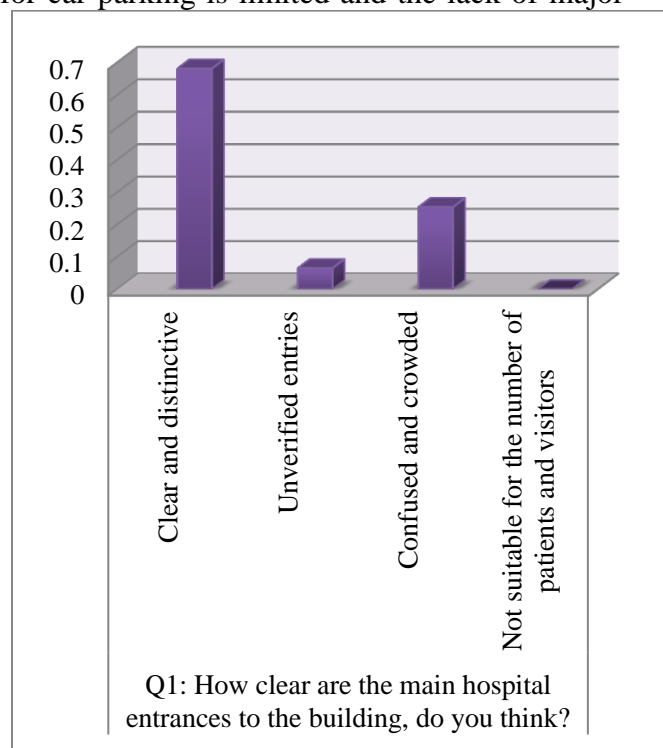


Figure (12)

parking spaces for what meets All users needed.

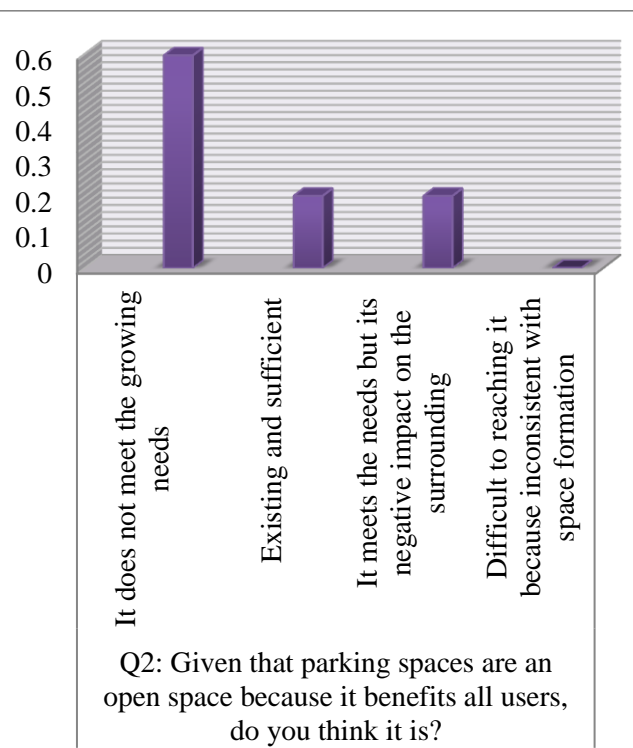


Figure (13)

### Q3: Do you find it necessary to design a separate entrance and exit for people with infectious diseases?

Figure (14) shows that most of the sample respondents responded to the second option, which indicates the necessity of designing an isolated entrance and exit for the injured to maintain the general health for users, which reduces the incidence of infectious diseases.

### Q4: Is the vision and access from the main entrance to all the hospital buildings:

Statistical results showed to inquire about the extent of visibility and access from the main entrance to all hospital buildings. It was noted that there is consensus on the third choice, Most of the sample questionnaire indicates that the possibility of vision and access from the main entrance to all buildings is difficult for lack of awareness and understanding, and this agrees with (28).

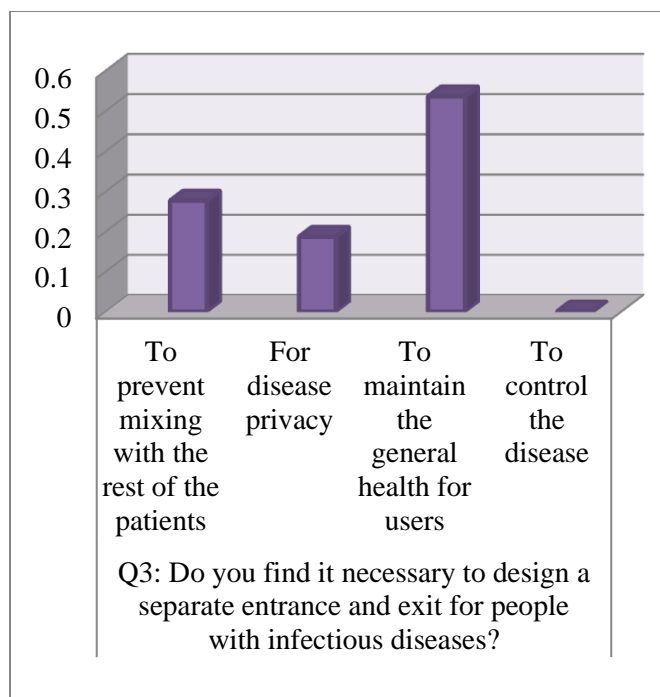


Figure (14)

#### Q5: Are the walkways and movement corridors for the building?

In an attempt to know the role of the walkways and movement corridors of the building, an inquiry was made about its design to help users to facilitate mobility. The results showed that the corridors are easy to understand and perceive by visitors, and its statistical indication of the sample shows that the process of movement is marred by some kind of disturbance to some elements of the full vision for the hospital and this affects the process of movement in it. The researcher sees determining the walkways and movement corridors between the fences or complementary elements necessary

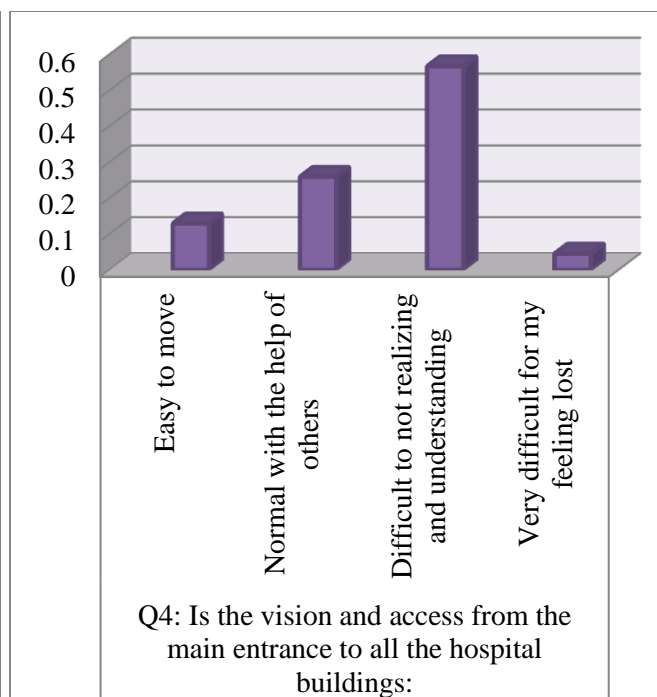


Figure (15)

to provide shade and also must be proportional dimensions for the walkways and to help the movement and ease.

#### Q6: What are your opinion on the style of the hospital building and its external facades?

The largest percentage was an attractive facade that gives visibility to the external views and ventilation, and this indicates that the buildings are interconnected in the elements of its external architectural formation, this affects its management process and remains an indication of psychological comfort and self-confidence during the movement through which is necessary.

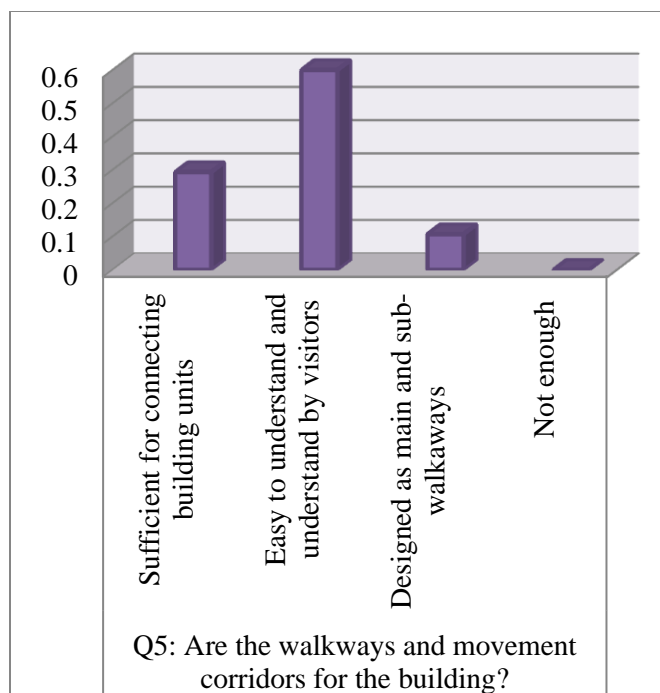


Figure (16)

**Q7: To increase the attractiveness and attention of visitors and to ease the pain for patients inside the hospital, do you want to establish vital places?**

Figure (18) shows that there is a strong desire to set up a gallery of flowers and shade plants, as well as the flower shop, to create a kind of vitality and attract the attention of visitors, as well as to ease the tension and pain of patients inside the hospital, where the flowers are a variable color visual psychological plays a big role in following the comfort mind and soul.

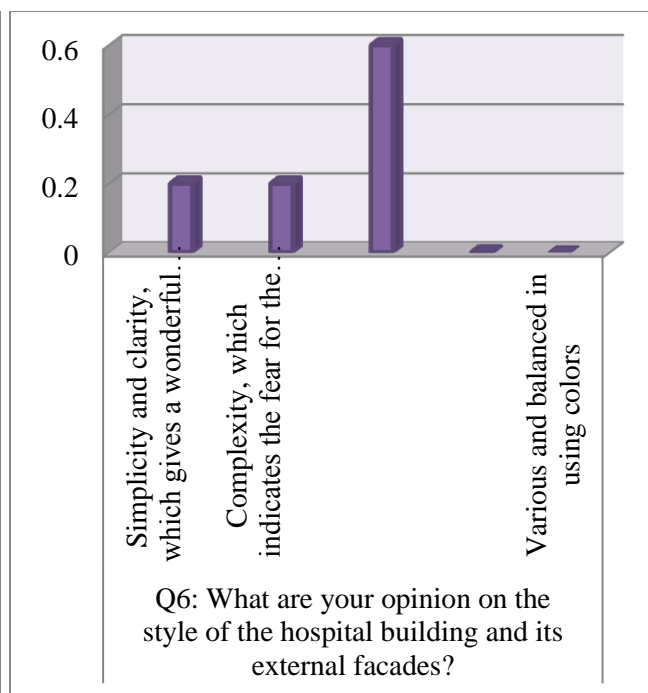


Figure (17)

**Q8: To attract aesthetic and visual organization for the external environment of the hospital, what do you think of designing gardens near?**

The gardens are considered a recreational, aesthetic and environmental place in the external spaces for the hospital, so it is preferable to have them in an organized way inside the hospitals. The results of the statistical analysis for the garden design near the hospital entrances obtained the highest value in comparison with the other proposed solutions.

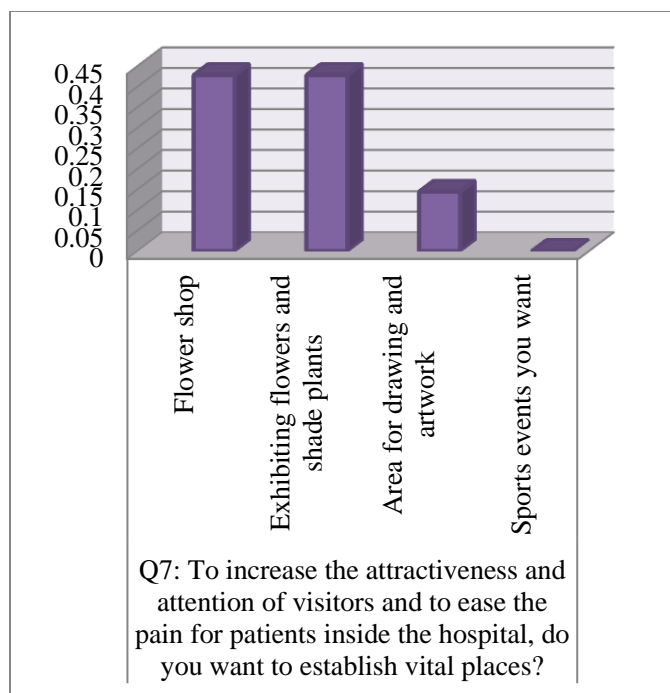


Figure (18)

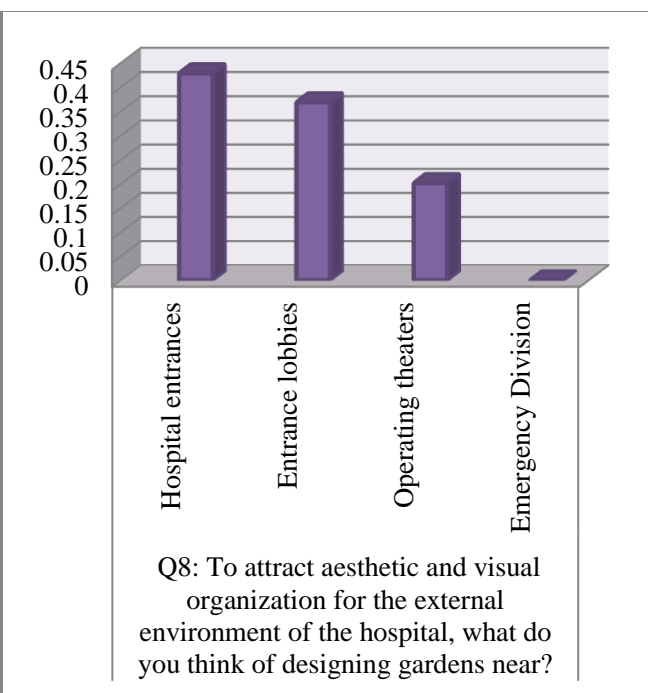


Figure (19)

**Q9: Would you like to help in regular treatment for patients with physical therapy by:**

Figure (20) shows that the diversity of games is one of the things that help in physical therapy in addition to the regular treatment for pediatric patients. The researcher believes that allocating enough space for use in creating play areas helps reduce stress and fear in children and how they deal with external spaces.

**Q10: Do you suggest the existence of private gardens as a method for effective treatment besides regular treatment?**

Figure (21) shows that the presence of therapeutic gardens for people with special needs and it is one of the most acceptable solutions where it came in second-order while the establishment of a special nursery for plant

propagation and horticulture work was in the first order.

**Q11: Which colors have the most influence in psychotherapy on human bio-functions?**

The results indicate that the medical and administrative staff used to choose blue in the first order, then the choice of green came in the second order.

**Q12: Do you want the idea of linking the building to nature through:**

Figure (23) shows the desire to link the building with nature and it was found that most of the research sample prefers the presence of mobile gardens (planting in ponds and pots). The researcher believes the reason may be due to the ease in the use of agricultural ponds and their transportation in addition to the lack of these places to the plant component.



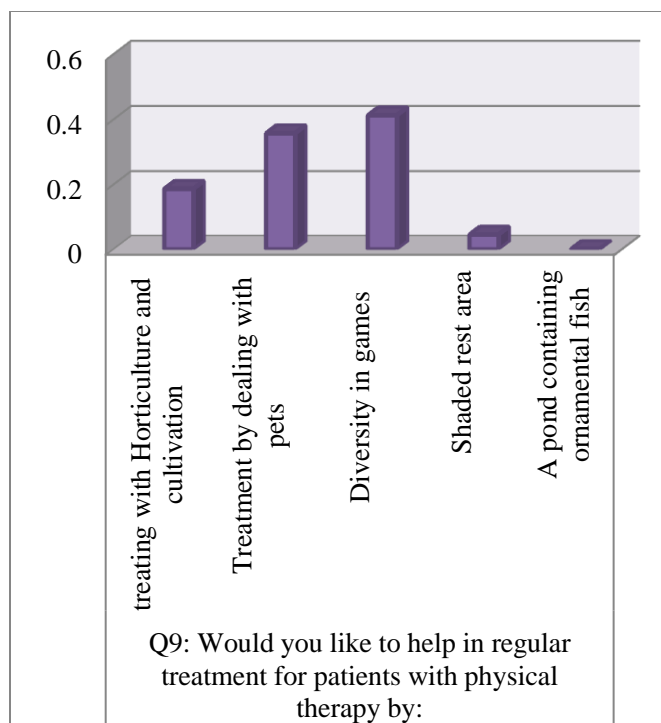


Figure (20)

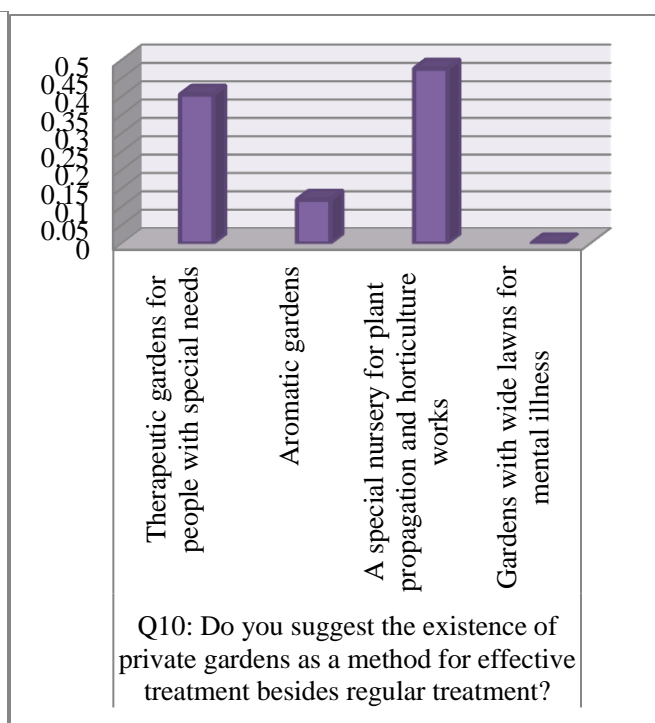


Figure (21)

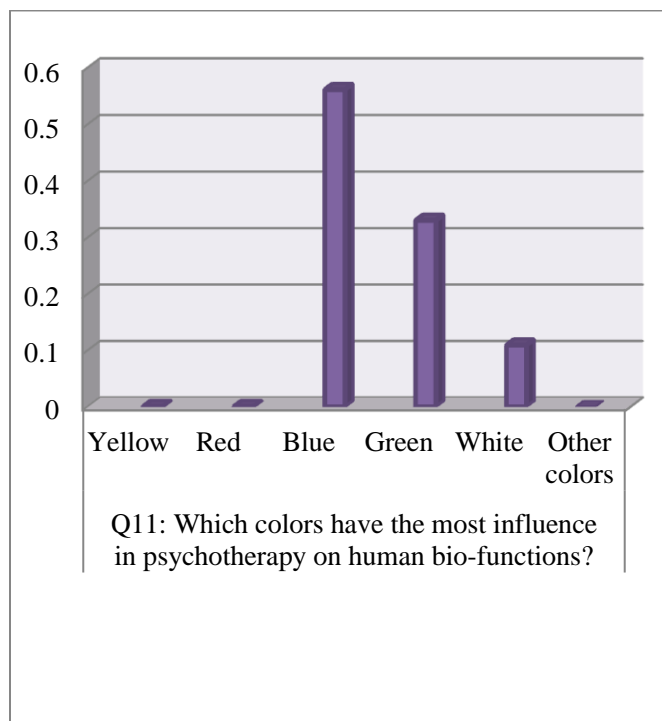


Figure (22)

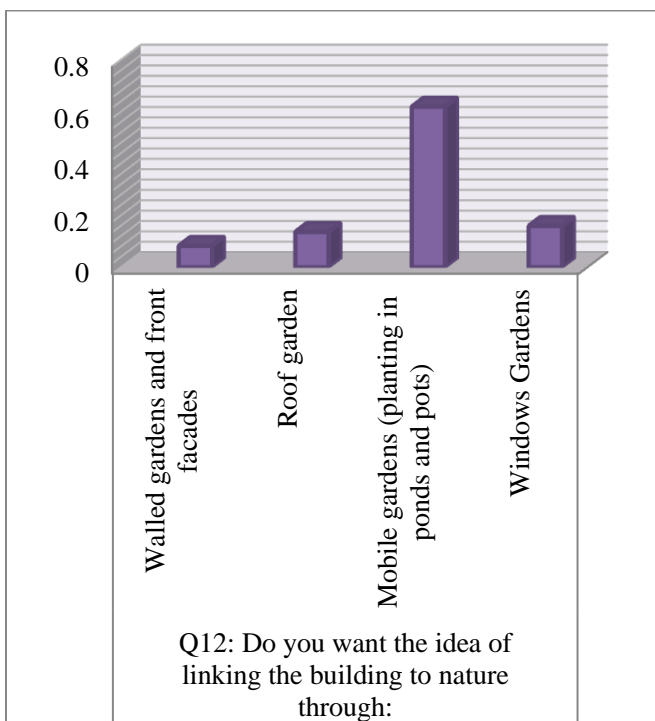


Figure (23)

**Q13: What kind of garden styles do you prefer to see?**

Due to the superiority of the first choice, which is the natural model, the researcher believes that this choice came as a result of the areas that are not utilized properly in the hospital, and most users want the presence of natural structural elements.

**Q14: Would you prefer to replace the Conocarpus trees currently planted in the gardens with cultivation?**

The sample of the questionnaire indicated that there was acceptance in replacing the selection of Conocarpus with palm trees, which obtained higher values. The reason may be that most of the hospital gardens were formed with one plant type and it lacks diversity and the researcher sees that the plant diversity makes the environment of the location close to thermal comfort through what the plants provide by tempering the atmosphere and reducing the temperature in addition to reducing dust, providing shade, and reducing external noise.

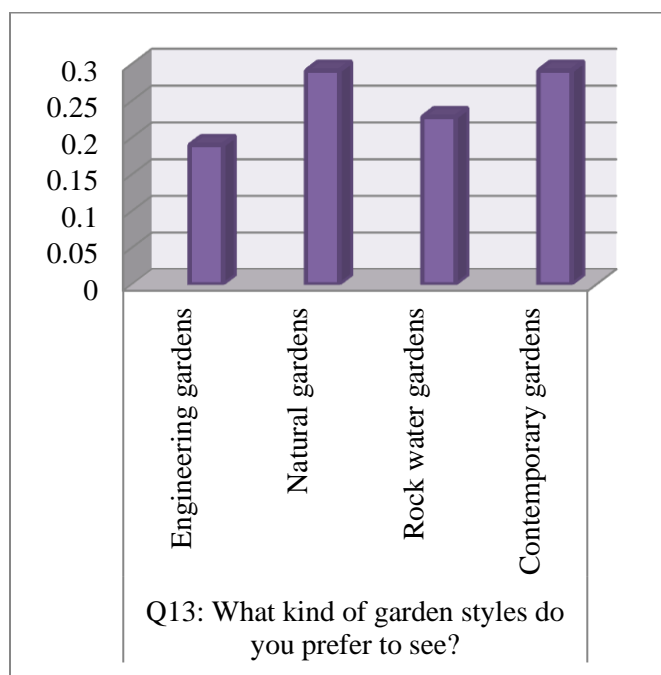


Figure (24)

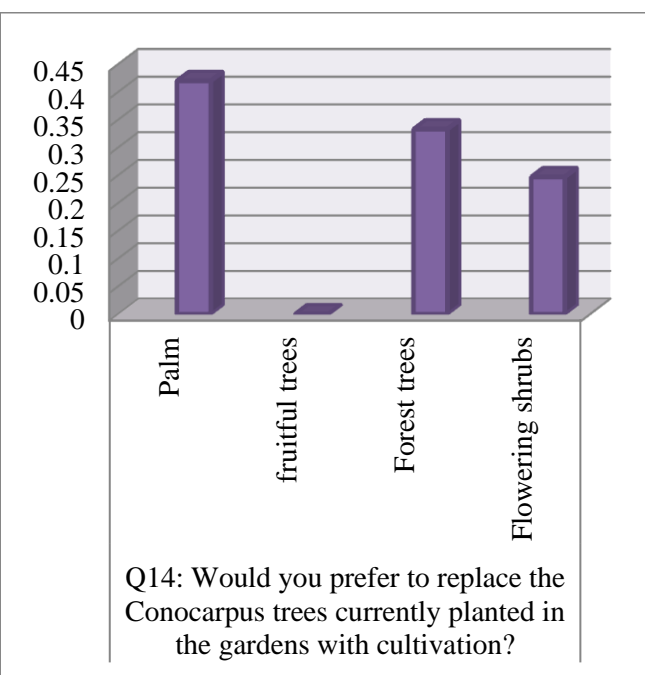


Figure (25)

**5. CONCLUSIONS**

- 1- Hospital entrances should be in a manner that reflects the psychological comfort of patients and visitors.
- 2- It is preferable to provide special entrances to the medical, administrative, and technical staff to enter their cars isolated from the main entrance, which interferes with the entry and exit of patients and visitors despite the presence of more than one entrance in some hospitals, but it is not activated.

- 3- The walkways and pathways due to the increasing importance in the center of the constituent elements for the spaces in the hospital, because the movement of both patients and staff depends on them to reach and their importance increases with the increase in the number of people present, so the efficiency must increase the job performance of these pathways.
- 4- It is preferable to surround the hospital's outer wall with a green belt, by planting evergreen trees such as Eucalyptus, as well as the Tamarix as a kind of

windbreak and reducing the external noise caused by car events, in addition to smoothing the atmosphere and reducing the temperature.

- 5- The apparent neglect for most of the hospital gardens, its lack of coordination of the natural components, and the dependence on its cultivation on randomness.
- 6- The lack of Gardens to maintenance by specialists, whether natural or complementary components, which have a major role in enhancing environmental and functional functions for them to be appropriate for continuous use.
- 7- The necessity to choose the appropriate design to connect the garden in the building and improving the aesthetic appearance and the environment spaces.

## 6. RECOMMENDATIONS

- 1-The researcher recommends not to expand the construction of buildings attached to hospitals at the expense of green open spaces from gardens and open tiled spaces that deprive patients and visitors of activities by exposing them to the open air, thereby working to speed their recovery.
- 2-The researcher stresses the necessity of applying the results of the current study and what conducted in it of the study, analysis and proposed designs for the external spaces in hospitals to achieve the results of this study.

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