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EVALUATION OF KASTAMONU STATE HOSPITAL GARDEN IN TERMS OF THERAPEUTIC EFFECT

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Abstract

While designing hospital gardens, aesthetic concerns should be put into the second plan, and design approaches should be included in line with the requests and needs of the users, unlike other outdoor design. The suitability of the garden of the new State Hospital in Kastamonu with the help of this study has been revealed. In the evaluation, 52 criteria, 14 sub-headings and 3 main headings were taken separately point average for each feature. For the evaluation of the garden, a survey study was conducted with 100 field users consisting of patients, visitor and staff and user satisfaction was determined. 3-point Likert scale was used in the evaluation of the questions. The Kruskal-Wallis test was used to determine whether there was a difference in scores between the user groups, and Mann-Whitney U test was used to compare the dissimilarity in the characteristics of the difference. Based on the results of the questionnaire and the design criteria of the Open Area Therapy Unit, the problems of the hospital garden were presented and solutions were offered to these problems, and a special stain design was proposed to convert the hospital garden into an open space therapy unit.

Keywords: Kastamonu State Hospital, Open Space Theraphy Units, Hospital Gardens, Healing Environment.

Introduction

Ulrich (1999) has stated that it can be called a healing garden in gardens that have beneficial effects on health. These areas enable the users to realize the seasons, move along the path, do physical exercise, develop their individual and social behaviors, realize the nature and perceive the time passed, benefit from the positive effects of outer space with sensory warnings, feel that they work and connect to life. Healing gardens are open spaces where passive or semi-passive activities are carried out, such as physical relaxation, stress reduction, improving feeling of well-being, renewing their memory, increasing their physical mobility and motivation (Elings, 2006; Sakıcı and Var, 2014).

'Healing' means the improvement of health status, or acceptance of the new conditions of the person and self-improvement, and often defines a useful process called self-state of well-being (Akın, 2006). The hospital gardens, called Open Space Therapy Unit by Sakıcı (2009), contribute to the 3 main condition healing process. The first is the elimination of physical symptoms of the disease and awareness of these

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symptoms. The second form of improvement is the relaxation and stress of individuals who are physically and emotionally exhausted in the medical environment. The garden contributes to the physical development of patients while preparing the environment for this, but also unaware of the improvement develops in all senses. Third, it is a feeling of well-being for patients with chronic diseases (Marcus and Barnes, 1995). For a patient in a hospital, naturalness, to look at the natural area, to live within that area, to visit the hospital garden, to provide therapy, to deal with the garden, to feel good about themselves, to reduce stress or relief stress away, are important factors in helping to affect their treatment (Söderback, Söderström and Schalander, 2004; Abdelaal and Soebarto, 2019).

The gardens can be curative and therapeutic in many aspects. In the gardens of the hospital, birds and butterflies should be attracted to the wildlife-attracting plant materials, which are attracted to the birds and butterflies, with a variety of wildly attractive plants, in both visual and sound waters, sculptures and other design elements (Marcus, 2001). To be outdoors in natural or natural environment, to feel the sunlight, to watch the trees and flowers, to listen to the sounds of water and birds, to recognize the garden components that decorate the garden cause stress-reducing effects on patients. (Akın, 2006; Abdelaal and Soebarto, 2019). The garden can be curative if used efficiently (Marcus and Barnes, 1995; 1999). Main purpose; to provide the highest quality of life in treatment. In the garden, activities such as observing, resting, walking, going around, sitting, feeling the space are realized and the positive effects of the area are utilized (Marcus and Barnes, 1999). The healing garden should include elements that support factors such as having the opportunity to be alone when they want, socializing when they want, being able to move around easily, to engage in more energy-intensive exercises, and to have a chance to choose if they want to be in the sun or in the shade (Akın, 2006).

With the help of this study, Kastamonu State Hospital, which was opened in 2017, was evaluated in the light of the criteria and the advantages and disadvantages of the current state of the hospital were revealed and solutions were proposed to be transformed into Kastamonu State Hospital Garden Open Area Therapy Unit.

Material and Method

In the study, the evaluation of Kastamonu State Hospital's garden in terms of therapy was made. In the island discussed in study, Kastamonu State Hospital, Hacettepe Faculty of Medicine, Hacettepe Housing, Oral Dental Health Center buildings are located and currently the State Hospital and Oral-Dental Health Center are actively used. Kastamonu State Hospital started its service in January 2017 and is located in Kuzeykent District of Kastamonu Province (Figure 1). The total work area in the state hospital project, which was built through TOKİ, is 44,693 m². 12.530 m² of this area is composed of Hospital Building, Polyclinics and Emergency Service Buildings, and 1060 m² Oral Dental Health Center Building. The area has 27.343m² rigid ground and only 3.760 m² green area. There is a total of 638 parking spaces in the area, 225 of which are parking garage. The state hospital with a capacity of 528 beds has 400 beds. The majority of the patient rooms in the hospital see the hospital garden area however, it overlooks the parking area where the rigid floor inside the garden area is dense.

Figure 1: Location of Kastamonu State Hospital

In order to evaluate the hospital garden in terms of therapy, firstly an analysis was conducted in the field, and then a survey was formed in accordance with the determined criteria for the users to evaluate the areaThe survey consist of two parts. In the first part, it is aimed to determine the demographic characteristics of the users and the second part is aimed to evaluate the hospital garden. For the evaluation of the hospital garden, Sakıcı's (2009) and Ghose (1999) three main headings are used in the PhD thesis, which is composed of comfort, healing and way-finding design features. Design features for Comfort have been evaluated under 5 sub-headings: Area-location, Comfort-care, Security-safety, Material choice and Activity-space have been questioned with a total of 22 questions. Design features for healing were evaluated in 7 sub-headings: Sensory Stimulation, Land Morphology, Plant Material, Wildlife, Water Element, Landmark and Architectural Elements. The design features of way-finding were investigated with the help of two subtitles, Accessibility and Landscape Design and 12 questions in total. Within the scope of these three main topics, a total of 52 questions were applied to a total of 100 field users including 20 staff, 30 visitors and 50 patients. 3-point Likert scale was used in the evaluation of the questions. It has been identified as 0: Absent, 1: Low, 2: Medium, 3: High in this Likert Scale. In the evaluation, 52 criteria, 14 sub-headings and 3 main headings were taken separately point average for each feature. Afterthat, the Kruskal-Wallis test was used to determine whether there was a difference in scores between the user groups, and Mann-Whitney U test was used to compare the dissimilarity in the characteristics of the difference. The problems and shortcomings of the hospital garden as a result of the field analyzes and user evaluations have been introduced and solution proposals have been developed for the existing area with the help of a table.

Results

Results Related to Questionnaire Data

A total of 100 area users,50 patients, 30 patients and 20 staff members participated in our survey. %53 of the area users are women and again %53 of them are young people between the ages of 18-30 and %56 are university graduated. The demographic characteristics of these users are shown in Table 1.

Table 1: Demographic features of hospital garden users

Demographic Features		Patients (n=50)		Visitors (n=30)		Staff (n=20)		All (∑) (n=100)	
		n	%	n	%	n	%	n	%
Sex	Male	22	44	17	57	8	40	47	47
	Female	28	56	13	46	12	60	53	53
Age	< 18 (Child)	2	4	0	0	0	0	2	2
	18-30 (Teen)	26	52	14	47	13	65	53	53
	30-50(Middle age)	14	28	12	40	6	30	32	32
	50+ (Elderly)	8	16	4	13	1	5	13	13
Education Level	Primary school	1	2	0	0	0	0	1	1
	Middle school	4	8	0	0	0	0	4	4
	High school	18	36	12	40	0	0	30	30
	University	23	46	16	53	17	85	56	56
	Post graduate	4	8	2	7	3	15	9	9

Area users have evaluated the hospital garden with the help of the 3-point Likert scale. When we look at the results, it can be seen that no criterion has a mean value of 2 points, the results are generally around 1 point and are extremely inadequate in terms of the determined criteria. In order to determine whether there is a difference between the groups, Kruskal-Wallis test showed a difference between 22 criteria in terms of design features for comfort and 1 criterion under activity-space 'there are enough moving sitting elements', and although all users find moving seating elements insufficient, the patients scored the lowest score (0.48 points) for this criteria. With regard to design features for healing, from 18 criteria, under the Landmark subhead and 2 other criteria which constitutive of this subhead ('There are some features that people may remember' and 'Field differences are used instead of places of the same nature') showed difference. Even though all of the users stated that in the area there was no landmark feature, the patients (0.46 points) and the visitors 0.42 points average, indicated that the hospital garden did not Show a landmark quality. This scores are lower than the stuff's opinion statistically. In terms of design features for way-finding, the difference in two criteria ('The roads are necessary for wheelchairs and breaks' and 'there

are hands and guiding panels in the field') has emerged under the heading accessibility of 12 criteria in terms of design features for way-finding. In both criteria, the patient relatives had lower scores (0.77 and 1.20 points) than the other users. In total, only 5 of the 52 criteria showed differences between groups. For revealing this difference between different user groups performed a Mann-Whitney U test results are presented in Table 2. According to the results, no difference was observed between the groups in the main and sub-design properties (except Landmark) in the statistical sense, but 5 of the criteria that formed these characteristics were observed between the groups.

When the hospital garden is examined in terms of comfort design features, the highest score is given by the visitors (1.13 points), the lowest score is given by the staff (1.00 points), the overall average of all users is only 1.08. When the design characteristics were evaluated in terms of healing, the average score of 0.78 points was given by the patients and the staff and the overall average score of all users was only 0.76. When the design characteristics of the way-finding were examined, the highest score was given to the staff (1.43 points), the lowest score was given to the visitors (1.21), and the overall average of all users was only 1.33. When the overall average of all design features were examined, the visitors group with the lowest score of the hospital garden with the average score of 1.00 and the user group with the highest score were the patients with the mean score of 1.05. The total score given by the all user group to the hospital garden is only 1.02 points. All the evaluation criteria and the scores given for the criteria are shown in Table 2. In line with these results, users have found the state hospital garden to be inadequate in terms of comfort, healing and way-finding design criteria.

Table 2: The evaluation result of hospital garden by area users

Evaluation Criteria	All (n=100)	Patient (n=50)	Visitor (n=30)	Staff (n=20)	*p*
Design Features for Comfort (Overall Average)	1.08	1.09	1.13	1.00	0.450
Area-Location	1.21	1.18	1.34	1.06	0.369
Beautiful landscape in the field	1.31	1.30	1.40	1.20	0.686
Hospital close to the city center	1.28	1.24	1.53	1.00	0.175
Garden area can be seen from patient rooms	1.26	1.22	1.37	1.20	0.791
The garden can be seen when entered hospital	0.97	0.96	1.07	0.85	0.750
Comfort and Care	1.33	1.32	1.41	1.24	0.684
There is enough seating units in area	1.38	1.36	1.43	1.35	0.901
The garden looks well cared for	1.28	1.20	1.37	1.35	0.660
Equipments are well-kept and comfortable	1.29	1.28	1.43	1.10	0.327
Equipments are suitable for users' anthropometric structures	1.37	1.44	1.40	1.15	0.459
Safety and Security	1.24	1.25	1.25	1.18	0.766
Do you feel in safe when you are in the field	1.60	1.54	1.67	1.65	0.933
Is there any unauthorized access to the hospital	0.91	1.10	0.83	0.55	0.055
Is the night illumination in the area sufficient for the safety of the area	1.62	1.54	1.73	1.65	0.483
Can staff observe patients in the garden	0.81	0.82	0.77	0.85	0.876
Material Choice	1.28	1.25	1.32	1.27	0.794
Soft-light tissue used instead of hard tissue	1.23	1.26	1.27	1.10	0.709
Tile includes a variety of textures and materials	1.28	1.24	1.37	1.25	0.664
There are voltage variations in lighting elements	1.32	1.26	1.33	1.45	0.813
Activity-Space (Social Environment Diversity)	0.70	0.75	0.70	0.60	0.850
Space offers variety of space	1.02	1.06	0.93	1.05	0.819
Sun and rain sheltered covered areas available	0.64	0.68	0.53	0.70	0.664
Provides free movement space	1.27	1.38	1.23	1.05	0.439
There are areas to do different activities	0.54	0.64	0.40	0.50	0.716
There are enough moving seating elements	0.64	0.48^{a}	0.93^{b}	0.60^{ab}	0.019*
There are areas for group events	0.40	0.46	0.43	0.20	0.245
There are areas for physical exercise and sporting activities	0.40	0.52	0.40	0.10	0.081
Design Features for Healing (Overall Average)	0.76	0.78	0,71	0.78	0.795
Sensory Stimulation	0.94	1.00	0.90	0.86	0.525
Produced a solution to the noise problem in the area	0.76	0.88	0.63	0.65	0.397
There are enough natural sounds in the area (water, birds, wind, etc.)	1.01	1.10	0.83	1.05	0.395
Visual stimulating elements used in the field	0.95	0.96	0.93	0.95	0.994
Color instead of single color is included in area	1.00	0.98	1.07	0.95	0.727
There are regulations for sensory organs	1.00	1.10	1.03	0.70	0.323
Land Morphology	1.60	1.65	1.60	1.48	0.442
There is movement in the field (hill, landing, exit, etc.)	1.79	1.90	1.73	1.60	0.390
Stairs and high walls were avoided.	1.41	1.40	1.47	1.35	0.821
Plant Material	0.60	0.63	0.58	0.58	0.918
There are plant diversity in the field	0.75	0.78	0.73	0.70	0.939
Suitable plant species used in the field	0.60	0.60	0.57	0.65	0.908

Seasonal changeable plants are included	0.52	0.54	0.50	0.50	0.925
Used plants with different texture, form, color, odor, flower feature	0.53	0.58	0.50	0.45	0.835
Wild life	0.61	0.64	0.60	0.55	0.978
There is wildlife in the garden that will not harm people	0.61	0.64	0.60	0.55	0.978
Water Element	0.26	0.28	0.23	0.23	0.987
Use of stagnant water in the garden	0.26	0.30	0.13	0.35	0.364
Use of moving water (flowing water)	0.25	0.26	0.33	0.10	0.338
Landmark	0.54	0.46[a]	0.42[a]	0.93[b]	0.002*
There are some features that people may remember	0.50	0.40[a]	0.40[a]	0.90[b]	0.003*
Field differences are used instead of places of the same nature	0.58	0.52[a]	0.43[a]	0.95[b]	0.010*
Architectural Elements	0.54	0.52	0.40	0.78	0.266
There are sculptures or artistic objects in the area	0.30	0.28	0.17	0.55	0.199
There are flowering, flower pots, containers in the area	0.77	0.76	0.63	1.00	0.454
Design Features for Way-Finding (Overall Average)	1.33	1.37	1.21	1.43	0.245
Accessibility	1.37	1.41	1.25	1.46	0.259
The roads are suitable for wheelchairs and crutches	1.16	1.22[b]	0.77[a]	1.60[b]	0.011*
The vehicle road reaches to the garden	1.87	1.88	1.90	1.80	0.824
Convenient access and transportation between locations suitable	1.52	1.42	1.57	1.70	0.526
Pedestrian-vehicle road separation is suitable	1.39	1.54	1.13	1.40	0.117
There are handles and guiding panels in the field	1.67	1.86[b]	1.20[a]	1.90[b]	0.004*
Pedestrian path width is suitable	1.30	1.36	1.30	1.15	0.577
The area has a path system that circulates from start to finish	0.86	0.80	0.93	0.90	0.743
Easy to switch between spaces	1.36	1.38	1.37	1.30	0.918
Levels differences solved by ramp instead of stairs	1.21	1.22	1.07	1.40	0.409
Landscape Design	1.22	1.25	1.10	1.33	0.484
The design is simple, simple and straightforward	1.32	1.34	1.33	1.25	0.958
There is layout in design	1.06	1.08	0.90	1.25	0.435
Round, curved, curved lines are used instead of vertical, straight lines	1.28	1.32	1.07	1.50	0.155
GENERAL AVERAGE OF ALL DESIGN PROPERTIES	1.03	1.05	1.00	1.02	

* $p<0.05$

Results Related to Field Analysis

According to the results of the field analysis study, the current problems of the hospital garden area have been put forward and solutions have been proposed for these problems in order to benefit from the field as an open space therapy unit. The current problems of the hospital garden and the solution suggestions are summarized in Table 3. The data obtained are in line with the results of the survey data.

Table 3: Kastamonu State Hospital Garden problems and suggestions

Problems	Suggestions
There is not enough parking space for the hospital indoor car park. The outdoor parking area in the hospital garden forms a very heavy rigid floor.	In the parking area, new floors can be used for vehicles or the amount of soft ground in the hospital area can be increased.
The majority of the windows of the patient rooms have a negative effect on the users because they look at the parking garage.	Vertical garden application can be done to provide a good view to patients which can be break the concrete image on the parking walls.
Perforated and uneven surfaces of the roads restrict the movement of patients with wheelchairs.	A smooth, flat floor application can be made in the garden for the patients to move comfortably.
The fact that the vehicles and people have to use the same route at the hospital front entrance carries a risk for security.	Complexity and risk factors can be reduced by directing vehicle entrances to the parking lot behind the hospital.
Lack of areas to encourage movement such as sports, exercise and walking.	For walking, sports and exercise, a walking path and exercise area should be used.
The garden does not offer a variety of space and activities to the user.	Different areas of use (individual and collective activity areas) should be offered in the garden to allow users to choose the activities they want to do.
The green field in the hospital garden is very low and a very large area is solved as a concrete surface.	By increasing the amount of green space, the rigid and negative effect of the concrete image should be reduced.
There are no plants that provide diversity in terms of color, odor and season change in the garden.	Plants that have a therapeutic effect and have a variety of characteristics that make them feel good should be preferred.
No water use was given to the audiovisual.	Water use should be included in the area to benefit from the relaxing and sensory stimulation effects of water.
Construction, excavation image and sounds are disturbing users.	In order to reduce the environmental negative effects, positive sounds such as music, water, bird and wind sounds should be used.
There are no areas where users can interact with the garden and nature.	Hobby gardens should be provided to psychologically relax users and improve their skills.

The existing armature elements in the area are insufficient and uncomfortable.	In appropriate places should be added to the urban furniture such as tables, single and group seating elements.
There are no areas in the garden that can be used in different seasons and can create a feeling of closeness - privacy.	Open-closed spaces should be created and the users should feel comfortable, good and safe in all four seasons.
The garden area is inadequate in size and the existing area is empty, undefined and large concrete surfaces are left.	Enlarging the area allocated to the garden to the extent of the possibilities, and evaluating the area in the more beneficial optimal condition.
There are no art works in the hospital garden.	Sculpture, visual elements, etc. The stimulating elements should be placed at different points of the garden.
There is no landmark in the hospital garden.	The emphasis in the garden will be on the points that will create a meeting point.
Hospital and garden design is confusing.	The field must have a simple, clear design that is legible and has directional signs.
There are low visual privacy areas.	Special spaces should be created to ensure that staff or patients can be left alone.
The use of single color in the outside and inside of the hospital does not have a variety of colors.	Sensory stimulation should be provided with color diversity and uniformity should be avoided.
Mainly used in cold and dark colors.	Light colors should be preferred so that the space can be displayed wider than it is. A mixture of hot and cold colors should be used.
Lack of illumination and illumination diversity.	In order to facilitate the transportation in the area and to identify the areas where the desired areas should be kept in the foreground, the lighting elements in different voltages should be included.

Discussion and Conclusion

Hospital gardens are special areas in the landscape. When arranging these areas, aesthetic and commercial concerns should be put into the second plan and the design approach should be exhibited according to the needs and needs of the patients. (Sakıcı, 2009; Sakıcı, Çelik and Kapucu, 2013; Sakıcı and Var, 2014). In the context of the study, it was revealed that the general characteristics of the garden of Kastamonu State Hospital in terms of therapy were extremely insufficient in the context of the spatial organization provided to the users and it was the result of field analyzes and user evaluations. The hospital garden area has been found to be extremely inadequate in terms of design features for healing especially for plant material, green area, accent points, sculpture and water element and sensory stimulation factors. In addition, in terms of design features for comfort, especially in terms of activity and space diversity (social environment diversity) and safety and security, there are serious shortcomings, especially in terms of design features for way-finding the problems experienced by all users in this circulation system have emerged. In the study, it was found that all 3 different users of the hospital were found to be extremely inadequate as a result of the evaluations made by the hospital garden, patients, visitors and staff.

In the light of the data obtained from the field analyzes and survey results, a special stain design was created by taking into consideration the design features for healing, comfort and way-finding. This generated stain design is seen in Figure 2.

Hospital authorities must take into account these problems, to correct, renew and improve their gardens, and to evaluate the hospital gardens as a part of the treatment. Thus, patients will be more peaceful, away from stress and happy and will respond more quickly to treatment (Paine and Francis, 1990; Theorell, 2001; Ulrich, 2001; Whitehouse et al. 2001; Söderback, Söderström, and Schalander, 2004). It should not be forgotten that hospital gardens are also open spaces in open green areas. However, more care should be taken when arranging, and the places where different activities are carried out should be organized according to the wishes and needs of the users. (Brawley, 1997; Rook, Vela and William, 2003; Sakıcı, 2009). In that point, landscape architects are very important.

Open space therapy units are open spaces that help patients to regain their lost abilities, socialize, move away from stressful hospital environment, move away from stress and distress and find peace and also have to take part in treatment processes of patients (Stigsdotter, 2005; Abdelaal and Soebarto, 2019). These areas are calming and relaxing areas for irritable, stressed and sad people (Varni and Katz, 1997; Pretty et al. 2005). Depending on the physical and social conditions of hospital gardens, the design elements and features that need to be considered can be summarized as follows.

The garden should appear as soon as when entered the hospital. When the garden is visible from the entrance to the hospital, it creates a warm welcome effect to the patients and visitors, especially when the hospital is first visited.

- Hospital garden should be positioned to prevent unauthorized access from outside.
- Patients, families and other users should be protected against all kinds of disturbing events and unwanted social interactions.
- The garden should be positioned according to patient rooms, patients who cannot use the garden should benefit from the view of the garden at least through the window.
- The garden should be positioned in daylight in winter, spring and autumn.
- The garden should provide sensuous access.
- Natural environment diversity should be provided in the area.
- Factors that produce highly successful results in sensory stimulation such as rain, wind, leaves and water should be included in the garden.
- Seasonal change should be perceived when looking at the garden.
- Plants used in the garden should not be selected from plants that are dispersed in the wind.
- Plants that display shadow, light and color patterns and also produce a pleasant sound even in a slight breeze should be used.
- Variety of plants should be included, seasonal selection such as early flowering, late coloration and long flowering should be considered in plant selection. Long lasting plants of different colors and textures and informative labels on plants should be included..
- Plant compositions should be arranged in a way that will be attractive, pleasant and memorable, and the texture, shape and colors of the plants should be in harmony.
- Wildlife is a living organism with a lot of effects. Wild animals, such as ladybirds, butterflies, squirrels, ducks, cats, dogs and birds, should be able to nest themselves in the garden.
- In terms of water, sound and image, it is very important in the healing gardens. The soothing effect of the moving water and the reflection of the still water should be used. Fish ponds can also cause interesting effects on patients.
- Mobility in the terrain, peaks, descents, exits are important elements in the perception of the area. Change, the difference is always an advantage to the attention of users to the garden.
- For pedestrian and vehicle transport, a flat or close area should be selected. The elevation differences in the area should be solved by inclined roads instead of stairs.
- The pathway in the garden should be encouraging and should be arranged on winding lines as much as possible. Sharp, stiff lines should not be used on the grounds that tension creates unease.
- Some reminder features should be created by users to define the garden. Sculptures of animal or architectural figures, water, flower clusters or vegetable garden will keep the garden in mind.
- In hospital lighting, low voltage should be used, dazzling lighting elements should be avoided and patients should be careful not to come to eye level.
- In the hot days of summer, the sun can be increased by providing sheltered areas due to excessive sunshine and during the fall and winter months by means of coverings against rainfall.
- Garden should offer a variety of social activity. In order to think and stay alone in the garden, collective activity areas should be included for individual and socialization.
- There should be many seating areas to be used for different purposes throughout the garden. In order to create different activity areas by bringing the armatures together, some chairs or benches should be moveable. The presence of back and arm cuffs of these elements is important for the comfort of the patients.

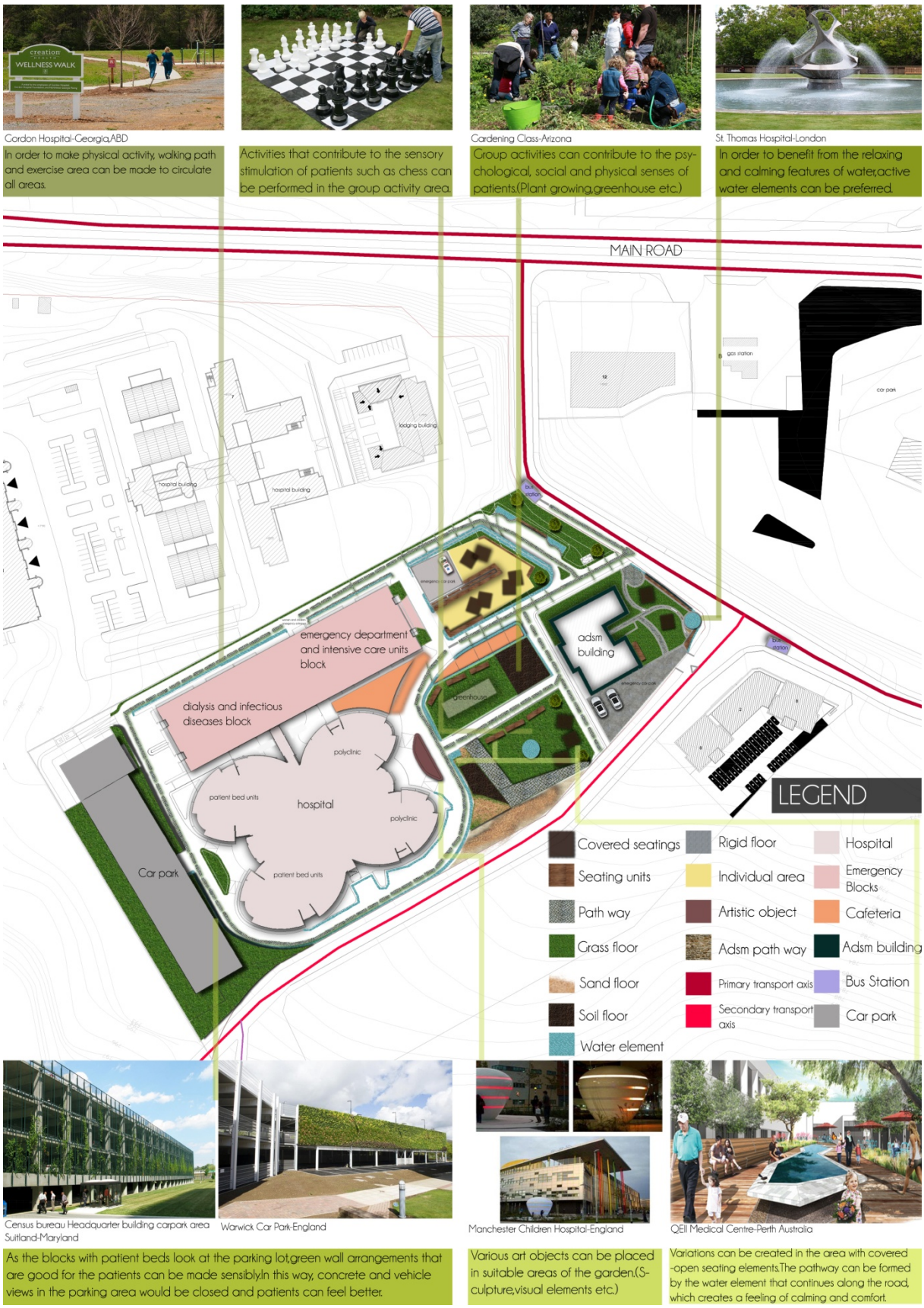

Figure 2: Suggestion stain design for Kastamonu State Hospital Garden.

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