

# Healing Gardens In The Mega Cities; Example Of Tehran

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*Bu çalışmanın amacı, Tahran’daki binaların çatısında iyileştirici bahçeler oluşturmak için gerekli olan bazı faktörlerin ve kriterlerin belirlenmesidir. Bu doğrultuda, çatı bahçeleri ve iyileştirme bahçelerinin entegrasyonu analiz edilip değerlendirilmiştir. Bu çalışma sonucunda, Tahran gibi mega kentlerde, bu tür alanların tasarlanması ileriye dönük bir adım olabilir. Bu alanlar, şehir ve bölge planlamacıları ve peyzaj mimarları için çatı alanlarında iyileştirme bahçelerinin oluşturulmasına yönelik planlama ve tasarım özellikleri sunarak, bir yol gösterici olabilir.*

## Mega Kentlerde iyileştirme bahçeleri; Tahran Örneği

### ÖZ

Yapılan araştırmalar, iyileştirme bahçelerinin sadece hastaneler ve sağlık merkezlerinde değil, kentsel alanlarda da vatandaşlar için özel bir yeri olduğunu göstermektedir. Kentsel alanlardaki araştırmalar, vejetasyona sahip kentsel yerleşim sakinlerinin daha fazla sosyal temasta bulunduğunu vurgulamaktadır. Özellikle Tahran (İran başkenti) gibi mega kentlerde nüfus ve yapıların artmasından dolayı, iyileştirme bahçeleri oluşturmak için açık ve uygun yer belirleme oranı daha düşüktür. Tahran’da genellikle bahçeler şehir merkezlerinden uzakta tasarlandığından, bu alanların kullanılabilirliği ve kullanımı, özellikle yaşlılar ve çocuklar için sınırlıdır. Bu kentte en hızlı büyüyen yapılanmalardan biri, çıplak çatı alanlarında huzurlu mekanlar oluşturmak için yeşil çatılar veya çatı bahçelerinin tasarlanmasıdır. Ayrıca peyzaj tasarımcıları yeşil alanların eksikliğini azaltmak için binanın çatısını yeşilendirmektedir. Çatı ve iyileştirme bahçeleri göz önünde bulundurulursa, bu iki bahçenin binaların çatıları ile birleşmesi halkın iyileşmesi ve sağlık problemlerine yardımcı olmasının yanı sıra çevreye ve ekolojik sisteme katkısı büyüktür. Bu çalışmanın amacı, Tahran’daki binaların çatısında iyileştirici bahçeler oluşturmak için gerekli

olan bazı faktörlerin ve kriterlerin belirlenmesidir. Bu doğrultuda, çatı bahçeleri ve iyileştirme bahçelerinin entegrasyonu analiz edilip değerlendirilmiştir. Bu çalışma sonucunda, Tahran gibi mega kentlerde, bu tür alanların tasarlanması ileriye dönük bir adım olabilir. Bu alanlar, şehir ve bölge planlamacıları ve Peyzaj mimarları için çatı alanlarında iyileştirme bahçelerinin oluşturulmasına yönelik planlama ve tasarım özellikleri sunarak, bir yol gösterici olabilir.

**Anahtar Kelimeler:** İyileştirme bahçeleri, Çatı bahçeleri, Planlama, Peyzaj Mimarı, Tahran.

### **Abstract**

Studies showed about healing gardens have confirmed obligation and specific place of these gardens not only in hospitals and health centers, but in urban spaces for various ages of citizens. Research in urban settings indicates that residents of urban settings with more vegetation have higher social contact too. With growing population and building structures especially in Tehran (capital city of Iran), it is less likely to designate open and suitable place for to create the healing gardens. In most cases, as the gardens are designed far from the city centers, the availability and utilization of the healing gardens are limited specially for elderly people and children. One of the fastest growing tendency in Tehran is the designs of green roofs, or roof gardens, to create peaceful places on otherwise barren rooftop places. Landscape designers used to create the roof of building in order to decrease the lack of green spaces in Tehran. In this research, with regard to benefits and advantages roof garden and healing garden, the integration of these two garden in the rooftop buildings, can contribute to the health problems of the residents as well as providing ecological profits and ecosystem services. The goal of this article is to provide some factors and criteria which are essential to create healing gardens in the roof of the buildings in Tehran. To do so, roof gardens and their integration with healing gardens are analyzed and evaluated. The result of this article can be an initiative step for creating these kinds of spaces in the mega cities such as Tehran. Appropriate characteristics of these spaces planning and designing can be a valuable guide for landscape and urban planners to create roof healing gardens.

**Key words:** Healing gardens, Roof gardens, Planning, Landscape Architect, Tehran

### **1. Introduction**

It goes without saying that being in direct contact with green spaces and being involved in nature significantly influences health (1). The advantages that persons might receive from plants and nature have been examined and argued for several years (Figure 1) (2). However, there has recently been a considerable rise in global interest to the role and importance of the healing environments (3).

Several studies have highlighted the importance of interaction with nature and its role in human health. Different facets of nature including trees, grass, water, visible sky, rocks, flowers and also birds have been named to be effective in humans' health (4; 5; 6; 7 & 8). With regard to hospitals

and other healthcare facilities, there is remarkable evidence contending that gardens effective and beneficial settings to enhance restoration for stressed persons, family members, and personnel (9).

The term *healing garden* is typically used to refer to the gardens in which recuperation from illness is intended. In such a context, 'healing' does not necessarily mean treatment, but it means the general enhancement of health (Figure 2. These gardens mostly deal with spiritual, psychological and physical facets of health improvement (10). "Healing environment" might be explicated as the general context (both physical and non-physical) that helps to the recovery procedure. Unlike curing, healing is a psychological and spiritual concept of health. Because perception is also psychological, it is likely to be a tie between healing and the physical context (3).



Figure 1. Interact with nature has psychological and physical effects on people (11)

Some scholars appear to assert that the gardens belong to hospitals and health care centers (12), while others contend that they are personal spaces that could be successfully located in private houses. Vapaa (2002) stated that, "a healing garden is a place in which the designer pay close attention to the needs and likes of the user(s) or client(s) and is able to provide therapeutic qualities in the space that addresses them" (13). Stark (2004) has a vision of the healing garden as a microcosm of the larger world, where each feature of the garden is to present a larger

characteristic in the landscape. He asserts that through this modelling healing would be able to "stimulate the senses, improve immune response, and promote recuperation from physical and emotional illness .... a healing garden is a keeper of a sacred place. Its users can also experience higher levels of spiritual power by their simple presence in its space" (14). Starks sees the power of the healing garden in its ability to bring the human back to nature. The nostalgic power of nature, embedded in each person's higher cognitive part of the brain, can rest while the old part of the brain is stimulated, which in turn leads to achieving the healing power.

Healing gardens could be divided into different taxonomies as follows: The first type of healing gardens is like a sanctuary or a natural reservoir in which natural and wildlife are preserved. This is presented by the city's green infrastructure encompassing the city's open spaces, green ways, nature parks and greenbelts. The second type is a meditation garden within the premises of a hospital or a health care center. Lastly, the third type is a private garden. Most of healing researchers believe that this type of healing gardens is the best type of meditation garden with highest healing effect as humans are in high contact with nature (15; 13 &5).

Rapid growth of cities as a result of modernization and urbanization has caused populations to choose urban areas as their environment over rural areas which in turn has resulted to denser urban areas. However, the psychological and social aspects of design of public space and buildings has not been properly taken into consideration(16). Additionally, this has led conurbations to have further infrastructure and less nature. On the other hand, modern lifestyle has provided various choices including computers, internet, TV, mobile and all other modern electronic gadgets which renders us to experience pressure to achieve all the demands of a so-called-social life. Accordingly, the rate of stress and stress-related diseases has considerably increased (17).



Figure 2. The Olson Family Garden at St. Louis children's hospital, Legacy Good Samaritan  
Rooftop garden (18 & 19)

Society is now encountering increasing challenges concerning stress-related diseases. Knowing about how different landscapes and landscape factors might affect health improvement could help to provide new design solutions concerning human health. Several studies focusing on stress and human health state that stress should be restored and recovered so that the negative effects of stress on human health would be released. Researches in environmental psychology have also contended that there is a direct relationship between human health and access to nature. They also state that a natural environment could be one of the answers which may be highly helpful to restoration and recovery from mentioned issues (7; 20; 21 & 22). Many have indirectly experienced this feeling of restoration (17).

Moreover, the solutions of these problems, made by the urban life conditions, are in the urban setting. These conditions might be improved by reasonable planning and administration. Due to the lack of enough unoccupied lands by buildings and also increase of building construction, roof green technology has recently become the most effective way for implementing greening in the mega cities including Tehran (23).

In this research, with regard to benefits and advantages of roof garden, It can also be designed as a healing garden, can contribute to the health problems of the residents (all the age groups) as well as providing ecological profits and ecosystem services. Nowadays, the roof gardens are being used on the roof of building in Tehran. Therefore, there is a need of developing some strategies about creating roof gardens in directions of healing and calming effects for various user groups in the big city. Since, not all gardens have healing effects, they should have special characteristics in order to be called a healing garden. The goal of this article is to provide some factors and criteria which are essential to create healing gardens in the roof of the buildings. To do so, roof gardens and their integration with healing gardens are analyzed and evaluated. Considering the small level of the building roofs, some specific activities and functions of healing gardens which need small amount of spaces, should be considered in the planning process.

## **2. Material and Method**

### **2.1. Tehran**

Tehran is a rare capital not found by any sea or river. The city is separated 22 districts with and have 700 km<sup>2</sup> area. There are four full seasons, with about 230 mm rainfall (24). City, of north to east, surrounded by mountains. But there is the semi-arid area in the southern region.

In this geographical situation, Tehran is normally regarded as a non-green city. Also it is one of the most crowded cities in the world. With the development of urbanization and industrialization, this situation is getting worse every day. (Figure 3).



Figure 3. Tehran, capital of Iran (25)

Twenty years ago, about 98.7% of the city's population lived in the Tehran region. However, in recent years this rate has dropped to 67% and about 33% of the population has been moved to the rural areas. This was due to the rapid growth of the population. Therefore, due to population growth and displacement, most of the surrounding areas, fruit gardens, agricultural lands and rural natural resources have been converted into settlements. Because of this transformation, this mega-city was met with an unsustainable environmental problem (Figure 4) (26). And thus air pollution and other environmental problems are gaining importance (24).



Figure 4. Dense construction will result in no vacancies and the construction of tall buildings in Tehran led to the selection of roof green as the effective technology (27).

## 2.2. Why roof garden

Throughout history, green roofs have been used to provide insulation and protection in cold climates, especially in the northern parts of Europe, While it have been used in hot dry climates, to cool the enclosed air and to replenish moisture content through evaporation processes. Green roofs are now being applied not only as thermal insulation features, but also as a way to meet the lack of green areas lost.

Different studies investigating the effects of green roofs have focused on a number of basic utilities. These are; decrease in energy consumption, reduction in greenhouse gas emissions, decrease in heat island effect, improvement in air quality, urban noise reduction, storm water management and various social and recreational opportunities(Figure 5 & 6) (28; 29; 30; 31; 32).





Figure 5. Roof garden in the private building, Karaj, Iran (33)



Figure 6. An extensive green roof, Ekbatan green roof project, Tehran (23).

### 2.3. Healing Garden Design

Whereas the healing garden is used as a method to heal a specific disease or to positively affect the healing process in a therapy. In general, the design of a healing garden makes it possible for individuals to recover from mental illness. Overall, a healing garden must be calming and renew the spirit. The design method provided may vary. The designer healing area can sometimes be created with a simple chair and sometimes with a mixed design it is possible. So it is important that the designed element is the match with the mood and spiritual aspect of individual (34).

As written in the books of Clare Cooper-Marcus and Marni Barnes, Healing gardens provide physical healing for both patients and all people, Alleviation of physical symptoms And the provision of healing in general health. Well-done gardens have the following design principles, diversity of space, promotes the spread of green material, encourages exercise, provides positive distraction, minimize intrusions, minimize ambiguity (35; 34).

In addition, in the topics that will help to achieve the required healing garden design goals:

include the user / visitor throughout the design, to warn users, different and creative use of water elements, ease of understanding and utilization, mobility and sport, interior and exterior views, all kinds of wildlife, using the cycle of life and season, to encourage reflection and self-awareness, private entrances that invite users to the garden, special measures for garden walls, use of water elements, creative use of color and light, utilizing white noises whenever possible, connection points and creative nodes, emphasis on natural features as emphasis points, the integration of art and garden, living areas(36; 37; 14; 13; 5; 12; 38).

### **3. Result and Discussion**

#### **3.1. Design principles of roof garden with the healing effects**

Roof gardens in the mega cities such as Tehran, so that they can have healing and restorative effects on users (residents, staff etc.), it had better be designed with the principles of healing garden design. In this type of designs (design healing gardens on the roof of buildings) it is important designers attention to the principles and guidelines which are listed below;

##### **3.1.1. Feeling of security and safety**

Healing gardens should provide a feeling of security and safety (39). In big cities like Tehran, the issue of safe is a very important issue. In roof gardens, these gardens can be peaceful and calming with the design of safe and quiet areas. The garden is creating the effect of security and peace with its life-giving resources (such as; trees, trees, flowers, water etc.) to visitors (40 & 17). People maybe escape from stressful and crowded environments with their own desires and find peace in the designed roof gardens. Designers may create peace and security in the garden, with special forms or sculptures. They must also avoid sculpture and forms that reflect fear and mystery (Figure 7).



Figure 5. Landscape architect can provide safety in the garden with the appropriate design of the lights (41).

### 3.1.2. Understanding user groups and their needs

The healing gardens must have calming and restorative properties, So before designing of these gardens, designers need to recognize the user segment (family, child, elderly ...). They usually have different demands, the child goes to the roof garden to play with his/her friends and the old aunt goes to plant vegetables in the flowerboxes. So, designers have to understand kind of age profile of the residents who lives in the building and for this it is necessary, analyzing before the design.

### 3. 1. 3. Accessibility and availability

Accessibility it's necessary for residents using wheelchairs, transport vehicles, walking stick or any kinds of movement tools (42). The gardens must have appropriate conditions for all kinds of users to be able to use them equally and to share their experiences. For example, the height of areas where experimental activities are to be designed should be as high as possible for user's vehicles. The width of the roads in the garden and the paving stones used must be suitable for all users.

### 3. 1. 4. Offering different types of activities

Various activities in healing gardens should be given according to different age groups. Sometimes it relates to demanding environment. For example pools or pond can be the least

demanding section or agriculture in garden can be considered as the most demanding. Another hand, there are different sections according to the spiritual capability of the residents (40). According to Ottsson the experiences from the nature rely on ones' life condition. So the healing garden should offer kind of demand for the user group (43).

It is not possible to design various activities in this kind of healing garden because the area of the roofs of settlement buildings is generally small. So the landscape designer should give importance to some activities according to the her/his analysis. Tranquil and peaceful activities and at the same time less space is preferred. Such as; design flowerboxes to horticulture activities of elderly and parents, an area designed for children to deal with soil and water, an area dedicated to contact with small pets, or an area designated for sports and physically activities.

### **3. 1. 5. Privacy and social interaction**

Exercise diminishes stress and depression, another hand actual exercise enhances psychological healing (Cooper Marcus & Barnes 1999). There should be a equality between the agriculture activities and just being passive by experiencing the garden (40). Studies indicate that people who are socially, mostly less stressed and they have better welfare conditions than people who are more socially isolated. Researches also indicate that people prefers natural, spatially open areas for passive activities like as; sitting and thinking, watch the landscape, nature or the other people. Areas with vegetation are more choose over building for the kind of activities (5 & 44). Landscape designers should be created the balance between the social aspect and privacy. Roof gardens, be as a meeting or speech place for building residents and neighbors. So it is necessary, to design some social small areas for sitting and talking comfortably.

Moreover, since Iran is an Islamic country, the issue of privacy is also a very important issue in design (Figure 8). In the culture of this country, families not prefer to be seen from the outside or other people and doesn't like to draw attention in generally. In the design of the roof gardens, natural or artificial elements can provide privacy. In a way not visible from other buildings, as well as creating a peaceful and spacious environment. In a crowded and stressful cities like Tehran, people are looking for a place to stay alone. Natural areas, reduce stress and give the opportunity to think calmly. Designers should design private spaces for visitors to stay alone and feel safe at the same time. Sometimes in family struggles, individuals want to be away from the

home environment and if roof gardens carefully designed by landscape designers, they can be taken away from the home environment and relax.



Figure 8. Culture of Iran, Afif abad garden, Shiraz (Photos by Sima Pouya)

### 3. 1. 6. Children nature interaction

Provide the options to interact with nature through activities for children who will use their feelings and /or hands. From a child's point of view, the essence of a healing garden is to experience the sensual richness and the quality of life of direct nature (5). Diversity and change are key criteria. The natural environment should contain as many plants as possible. These plants should be selected according to their annual performance from the beginning of spring to the end of autumn. Every time of the year, a new nature event must take place in the garden. Flowers, fruits and other plants should be species that can be harvested and used directly by children as play objects .

### 3. 1. 7. Surrounding and views

The geographical situation and environment of the garden affects the garden and its users. It is important to know the buildings and structures are besides the building. The history of the place is also important, because it shows how the area turned into to the now appurtenance (17). The landscape architects should be aware of the historical monuments and structures which maybe in the surroundings of the garden. The landscape architect, after doing some analysis on the area, maybe to close some views of the garden and to open some other special views (Figure 9).



Figure 9. The landscape architects should be aware of the historical monuments and structures which maybe in the surroundings of the garden (45).

### 3. 1. 8. Climate

Providing protective sunshade against the summer sun. Children have sensitive skins and if they stay too high under the burning summer sun, their skin is easily damaged. Children with limited mobility are not vulnerable to sunlight because they cannot move quickly. For this reason, shade areas are needed (46). The light obtained with many latitude filters is the best. Very shadow or dark areas, they are not impressive for people. In addition, in spring, autumn and winter (higher or lower depending on gardens) the children should play outdoors in order to warm up with the sun's rays. Lack of lighting in the garden creates an unfavorable situation during the activities.

Ensuring that the area receives daylight in winter, spring and autumn. At many latitudes, the direct arrival of sunlight makes the open air areas more attractive and comfortable. Areas of activity should be established in the northern hemisphere in the south facade, in the southern hemisphere in the north facade. The tree species should be carefully selected and designed in such a way as to provide sunlight in warm and cold seasons, in conjunction with the activity areas of the shaded buildings.

### 3. 1. 9. Selection of plants

Another issue that needs to be considered in the design of healing gardens in the rooftop is the selection of plants. With regard to the specific circumstance of a place in this kind of garden,

designers usually can't design any desired plant. With despite of these limitations, there are some issues should be taken in plant selection.

Many users calls the healing gardens "green oasis". Plants mostly have very important characteristics and they provide the essence of the "healing" situation in the healing gardens. (46). But the plants need the sun to grow. So designer must pay attention to this subject. The healing gardens should contain as many plants as possible. These plants should be select according to their annual performance from the beginning of spring to the end of autumn. Every time of the year, a new nature event must take place in the garden. Flowers, fruits and other plants should be species that can be harvested and used directly by children as play objects (5).

It is better use of aromatic and medicinal herbs which grow up locally in the city. Using medicinal and aromatic plants by landscape architects and city planners brings some advantages. Since the water needs of local plants are less than of foreign plants, they contribute to water saving and reduce irrigation costs considerably.

People's daily encounters with medicinal and aromatic plants indicate that they are prone to traditional and natural treatments. With regarding to the low cost of such treatments and the low level of side effects, the health level of the population may increase in society. In planting, less attention is paid to the effect of color and light so the created spaces, it cause negative impacts on people, increase stress and uneasiness and concentration and visual impairment. Because the difference in the leaves of the plants causes different reflections (47).

Although the plants are in a composition, they undergo seasonal color changes during the year and they have different color effects at different times. It is important to achieve this color effect with flowers, fruits, leaves, trunk-branches, colors in during the year. In addition, the air pollution of Tehran is an undeniable fact (48). Selected plant species should be standing against to the air pollution as well as contributing to the reduction of pollution.

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