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Functional Features and Benefits of Residential Gardens: The Case of İstanbul (European Side)

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ABSTRACT

This article investigates the extent to which residential gardens affect human welfare in İstanbul (the European side). The developing technology, population growth, and immigration are factors which expose the city of İstanbul to intense construction. Consequently, the gardens in the houses located at the center of İstanbul are decreasing day by day, limiting outdoor activities for the residents, and affecting them physically and mentally. In this study, a questionnaire was applied to 400 people in İstanbul's European side to investigate the extent to which residential gardens affect human well-being. These questionnaires were applied according to five-point Likert scales and the results were analyzed in the SPSS program by applying correlation analysis. The data obtained from the applied questionnaires were analyzed in the SPSS program. As a result of the analysis, it was concluded that residential gardens have a positive influence on the physical and psychological development of people, and also contribute to the protection of nature and biological diversity. Statistically, it has been determined that people mostly use their gardens in the summer months (49.30%) and on the weekends, and spend an average of 0–2 hours (57.50%) in their gardens. In addition, these analyses were associated with participant characteristics such as age (18–25, 26–30, 31–40, 41–50, 51–60, 60 and older), gender (female/male), socioeconomic status (occupation and income) and social demography (change in population). As a result, this study showed that residential gardens in urban areas contribute significantly to people and nature, that more garden areas should be added to the residences to be built in urban areas, and that these areas should be designed in a functional and sustainable way for people to benefit from nature in the best way.

Keywords: Garden, İstanbul (European side), nature and biodiversity, spiritual and psychological development

Introduction

In the struggle for coexistence with nature, human beings have been obliged to protect and shelter themselves, their families, and their vital basic needs from external natural conditions and other living creatures. As a product of human settlement and culture, housing can be perceived as an element that integrates with the environment and social structure of human beings, from the beginning of their existence to the present, provides harmony with the environment, and shapes daily life experiences. Due to their characteristics, residences can also be expressed as spaces with a protected area, special identity, and personal value (Koçhan, 2003; Şahin, 2008). Housing is not only a physical product that meets human needs but also a social and cultural unit contributing to the identity of the people living in that space (Dönmez et al., 2015). According to Erdem (2008), "Housing is a place where the growth and development of human beings are ensured during the process of being an individual, and gives the feeling of controlling the environment that it creates."

Historically, houses have always been shaped according to the climate, opportunities, threats, and cultural characteristics of their surroundings. The closest area to the house in the physical environment of the house is the garden. If this outdoor area is the property of the homeowners, it is called the residential garden. These spaces can only belong to the users of a house or they can be shared with other residential users. In this context, the garden is an extension of the house where socialization and prioritized productive work take place. It has become an important and indispensable venue where family members can fulfill their recreational needs with different activities (Altınçekiç & Şentürk, 2017).

Cite this article as:

Bozkurt, S. G., Doğanay Yener, Ş., & Akdeniz, N. S. (2022). Functional features and benefits of residential gardens: The case of İstanbul (European side). *Forestist*, 72(3), 251-258.

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Received: July 5, 2021

Accepted: September 15, 2021

Available Online Date: November 26, 2021



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The garden, in prehistoric times, was an area where people tried to recreate their perception of heaven outdoors. The perception of the garden of paradise that spreads from Mesopotamia to Iraq and the whole Near East, then from Rome to North Africa, and the Iberian and Indian peninsulas where Islam spread, is that it was square and divided into four main divisions. It had four main streams that divided the garden into four. Roads with trees on both sides, groups of trees, and pergolas created shade, while canals, pools and fountains provided coolness. The gardens of Eden, as in the paradise myth, were surrounded by protective walls separating the garden from the outside (Sanrkowicz, 2003). According to Lundquist (2000), gardens in world legends are described as safe places that people in pain and grief chose as a refuge to rest, protect, and heal themselves (Stigsdotter, 2005). In summary, the garden is a place that allows people to integrate with nature, relax, have a pleasant time, and grow various items such as vegetables, fruits, trees, or flowers (Ertin, 2011).

Gardens have been associated with human settlements throughout history. As a restful place and an area of activity, the garden carries aesthetic, spiritual, and psychological values for people, beyond simple plant growth. Residential gardens are the most used outdoor space and they are the areas where the most contact with nature can be achieved. These areas are valuable as they support natural life, and also contribute significantly to biodiversity in urban areas. In addition, being in touch with nature offers psychological and physical relief to people living in the city. A study, considered as one of the first such studies, investigated the psychological benefits people obtain from their home gardens (Kaplan, 1973). The study identified three different psychological effects: active participation, such as working or walking in the garden; passive participation, such as watching the garden from the window; and intellectual participation, such as planning various activities in the garden. It emphasized that people gain an opportunity to express themselves while working in their gardens. Lewis (1992) also touched upon the emotional bonds people establish with their gardens and the psychological benefits of having their gardens watched and admired by hundreds of people passing by when their gardens come in season and flowers bloom. Urban natural areas provide psychological, emotional, cognitive, developmental, behavioral, and social benefits to people. It has been suggested that there may also be relationships between these psychological conditions and physical health (Kendle & Rohde, 1995). Ulrich (1991), in his study measuring the physiological and psychophysiological responses of individuals watching natural landscapes, concluded that watching natural landscapes has a positive effect on individuals, and reduces tension and stress. Milligan et al. (2004), in their studies investigating the effects of natural landscapes to improve the health of the elderly in Northern England, stated that gardening activities pleased the elderly and also improved their social communication. Jonveaux et al. (2013) stated that the use of healing gardens in the treatment of Alzheimer's patients has a relaxing and therapeutic effect as it reminds patients of their previous lives. Cervinka et al. (2014) stated that the design of hospital gardens is important to ensure that patients, visitors, and hospital staff are able to avoid stress. Righetto et al. (2016) stated that neuro-rehabilitation development and design criteria should be applied to garden designs, to provide easy access for patients with disabilities and support walking, and also explained that the gardens have healing properties with their color, odor, and tactile experiences that aid during the recovery period of paralyzed patients. Siriphanich et al. (2016), in their study where they explained the importance of home gardens for physical therapy exercises, stated that self-exercise in home gardens plays an important role in improving the quality of life of patients. As stated by Gagliardi and Piccinini (2019), who investigated the benefits of implementing

nature-based activities for the elderly, gardening and gardening activities have positive contributions for the elderly in nursing homes. Many studies in this field have shown that watching nature and spending time in nature positively affect people's physical and mental health. It has also been stated that such areas have important functions such as providing more play opportunities for children, creating a higher level of social cohesion, and creating a safer environment among neighbors.

Today, despite the importance attributed to residential gardens for urban areas and for people, they have been forgotten as elements of urban design and planning proposals, compared to parks, public gardens, and forest areas. Especially in those cities where structural density is very high, although the majority of the residents and tenants favor private garden space when deciding on their housing preferences, this aspiration cannot be realized due to the scarcity of space. It is especially stated by the people living in these houses that the dissatisfaction with mass housing projects arises from the lack of control over their space along with the lack of garden areas and privacy (Kellet, 1982). In Turkey, green spaces are governed by Zoning Law No. 3194. The standard, which was specified as a minimum requirement of 7.0 m² (75.34 ft²) per person in 1985, was raised to a minimum of 10.0 m² (107.63 ft²) per person with the amendment of the regulation in 1999 (Öztürk & Özdemir, 2013). In Istanbul, which is the area covered in this study, the amount of green space per person is 6.05 m² (65.12 ft²) on average, according to the Istanbul Metropolitan Municipality (IMM) data. This rate includes total park areas and the public garden areas, and all green areas such as forests. However, according to the data from the World Cities Culture Forum, this rate is 2.2 m² (23.68 ft²) for Istanbul (URL-1).

Although residential gardens have great importance for urban areas and people, unfortunately, residential garden areas in Istanbul are limited, according to the population density. Loram et al. (2008) specified that in spite of the fact that gardens in the private zones cover little space within the urban region, their plant diversity plays an important role in the plant diversity of the cities. Çoban et al. (2021), stated that residential areas of Istanbul were shown to be important in terms of plant diversity. For this reason, within the scope of this study, the European side of Istanbul, which has a limited number of residential gardens, was chosen as the sample area in which the role of residential gardens in ensuring environmental sustainability in urban areas was investigated. In addition, the contributions of these gardens to both people and households in terms of their health and well-being, and the social contributions to the wider society, were also examined.

Material and Methods

Study Area

The study area covers the European side of Istanbul, the province of Turkey with the highest population density. The surface area is approximately 3,562.71 km² (3,834,869,128,175.01 ft²) (URL-2). Istanbul is located in an extremely strategic position, at the junction between the Asian and the European continents. The city comprises two peninsulas, called the Kocaeli and the Çatalca peninsulas. The Bosphorus is located in the middle of these peninsulas. The fact that the Bosphorus separates the city into two led to the emergence of the concept of the European Side and the Anatolian Side. The Black Sea is in the north of Istanbul and the Marmara Sea in the south. Istanbul neighbors the provinces of Kocaeli to the east and Tekirdağ and Kırklareli to the west.

Thus, Istanbul is the geographical center of the cities in the Marmara Region. It is located between 41°4'45.75" North latitudes and 29°5'23.48" East longitudes. The land structure of Istanbul generally comprises a

low altitude and a plateau feature. The elevation features of the city show hills that are not very high. Considering the entire province, the climate of Istanbul does not fit into a certain climate type. It is rather a transitional climate. Generally, however, it can be described as a transitional climate between the Black Sea and the Mediterranean (IMM, Geographical Location, and Strategic Importance; Gürel & Gündüz, 2011). According to the data of the General Directorate of Meteorology (2021), the average annual temperature of Istanbul between 1929 and 2020 was 16.2°C, the average highest temperature was 20.8°C, and the lowest temperature was 12.7°C. The average sunshine duration is 6.3 hours and the average number of rainy days is 125.1 days. The average precipitation amount is 393.2 mm (1ft 3.47) and the daily wind speed is 20.8 m/s (40 ft/s) Depending on these temperatures, the time spent outdoors in Istanbul starts in May and ends in October. The average air temperature during these months is 18.7°C to 17.4°C. July and August are the hottest months of the year and the average temperatures in these months range between 25.8°C and 26°C. According to 2018 data, the population of Istanbul's European side is 9 726 373 people (URL-3).

Participants and Data Collection

The main material for this study is based on the opinions and thoughts of the residents with gardens located on the European side of Istanbul, and in this area, the residential gardens of the people living in these dwellings (Figure 1).

The questionnaire was applied to the residents who participated in this study. According to the random sampling method, the questionnaire was administered to people in residences with a garden, in randomly selected neighborhoods of the European side of Istanbul. It was conducted as face-to-face interviews, with a total of 400 participants. The survey was conducted with the parents of the home. It had a total of 35 open and closed-ended questions, and was divided into three parts. The first part comprised questions about the general profile of the users of residential gardens, while the second part included questions about the general characteristics and usage of residential gardens. The third part comprised questions about the functional features and benefits of residential gardens. The questions about the functional features and benefits of residential gardens were prepared according to the five-point Likert scale, as follows: 1 = Strongly disagree; 2 = Disagree; 3 = No idea; 4 = Agree; and 5 = Strongly agree. Then, the usage status was associated with the user profile, the functional features of the gardens, environmental benefits of the gardens, and the effects of a well-designed and well-maintained garden. (Akdeniz & Çelik, 2017; Altınçekiç & Şentürk, 2017; Batman et al., 2019; Sağlık & Kelkit, 2019; Turan et al., 2015). The sample size was calculated according to the following formula, considering the 2018 population of Istanbul (Vural, 2012).

A total of 400 questionnaires were applied according to the formula.

$$n = N t^2 pq/d^2 (N - 1) + t^2 pq \quad (1)$$

N = Number of individuals in the target audience [Istanbul European side 2018 population 9,726,373 people (TUIK, 2018)]

n = Number of individuals to be included in the sample

p = Incidence of the study item under examination (probability of occurrence)

q = Non-incidence of the study item under examination (probability of non-occurrence)

t = Theoretical value found according to the t table at a certain level of significance

d = Sampling error accepted according to the incidence of the case

p = .50

q = 0.50 (1-.50)

t = 1.96 (t table critical value according to the degree of freedom).

Data Analysis

The data obtained from the questionnaires were evaluated in the SPSS 23 program. Frequency analysis was used to evaluate the questions about user profiles and the general features and usage of residential gardens. Questions regarding the functional properties and benefits of residential gardens were evaluated by factor analysis and the reliability of the factor groups obtained was determined by Cronbach's alpha analysis. Correlation analysis was used to relate the questions regarding the usage conditions, functional features, and benefits of residential gardens with the user profiles. Correlation confidence intervals were evaluated at $p \leq .05$ and $p \leq .01$ error levels. Correlation confidence intervals are shown as Correlation is significant at the .05 level (two-tailed) and Correlation is significant at the .01 level (two-tailed) (Özdamar, 2002).

Results and Discussion

Demographics of the Participants

Among the survey group, 61.8% of the participants were female and 38.30% were male; 22% of the participants were between the ages of 41 and 50 years and 20% were between the ages of 31 and 40 years. Only 7.8% of the participants were between the ages of 26 and 30 years. Of the participants, 23.5% were masters/doctorate graduates, 48.50% were college graduates, and 16.8% were high school graduates. The majority of the participants worked for the federal government or in the industry (23% and 21.3% respectively). The minimum rate was that of workers, at 5.8%. Thirty percent of the participants had a moderate income while 11.3% of the participants had high income (Table 1).

General Features of Residential Gardens

According to the survey study, the area order of the residential gardens is as follows: 40% of participants reported that their garden measured between 50 (538.19 ft²) and 100 m² (1076.39 ft²); 21% of the participants reported that their garden measured between 100 and 200 m² (2152.78 ft²); and 20.5% of participants reported that their garden was 500 m² (5381.95 ft²) or larger (Figure 2). The gardens had been designed with professional assistance for 28.8% of the participants, while 71.3% of the participants did not receive such assistance.

The survey revealed that 24.58% of the participants had lighting armatures in their garden and 21.6% had seating groups. Only 8.58% of the participants had plastic objects in their garden. While 19.2% of the participants had a garbage can in their garden, 13.4% had fountains in their garden (Figure 3).

The Use of Residential Gardens

With regard to the time spent in the garden, 57.5% of participants reported spending zero to two hours while only 4.8% spent six to ten hours. Some participants used their garden during summer (49.30%), followed by spring-summer (24.3%), and spring (20.3%). Fifty-two percent of the participants stated that they used their garden on the

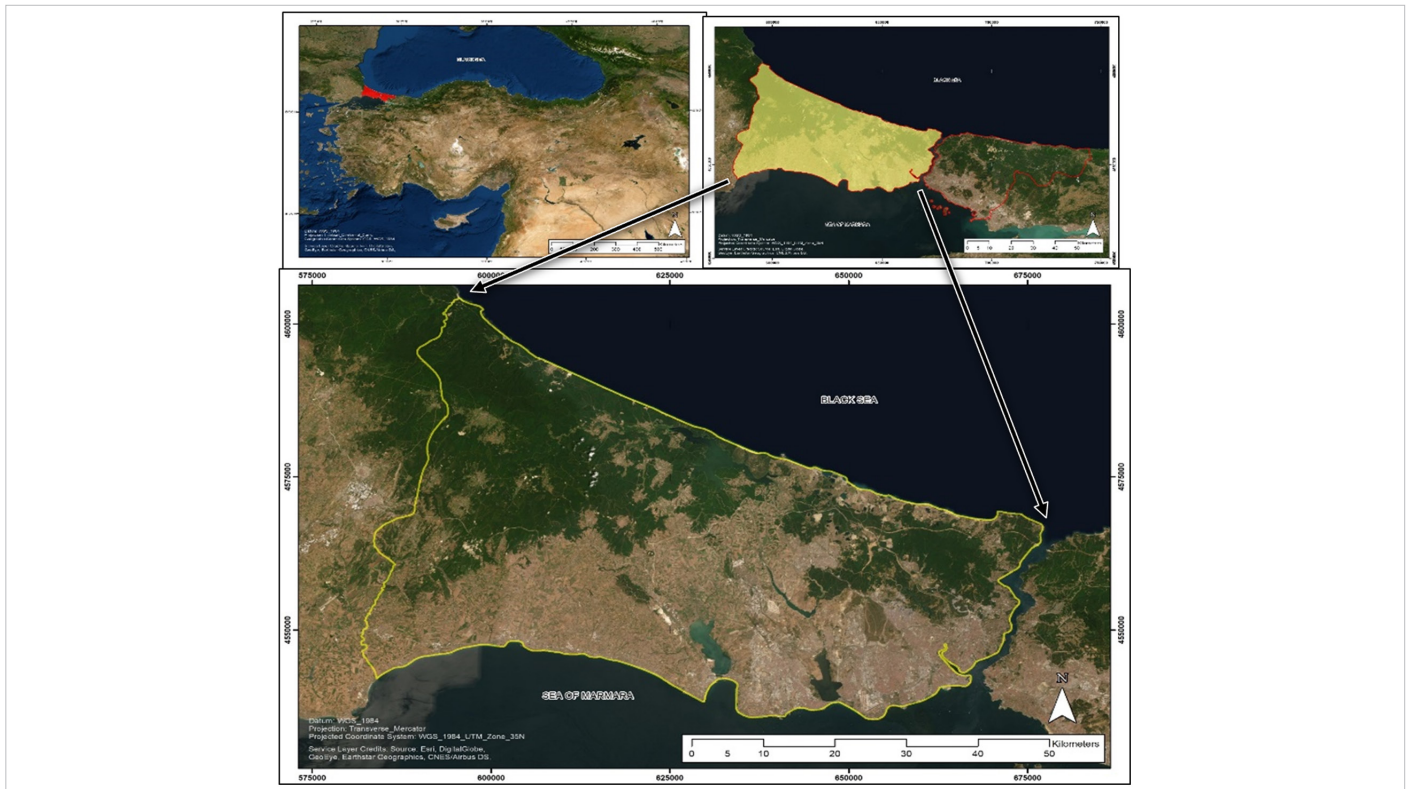


Figure 1.
 The Location of Istanbul Province and Its European Side on the Map of Turkey.

weekends, while 43.3% used it during weekdays or on the weekends (Table 2). Furthermore, 64.8% of the participants stated that they wanted to grow plants in their gardens as a hobby. The majority of the participants who wanted to grow plants as a hobby stated that they would like to grow ornamental plants, fruits, and vegetables.

The Relationship Between Participant Demographics and the Use of Residential Gardens

The results of the correlation analysis conducted for an assessment of how the participants used their gardens are given in Table 3.

When the usage of residential gardens was evaluated according to Table 3, the participants' age was related to all factors. The days when the garden was used were found to be related to education. It was found that the value of the correlation coefficient (r) for the age range was positive (+) and linearly related, and that the users between the ages of 31 and 40 years preferred to use their gardens during the summer months and spent from zero to two hours. There was a positive correlation between the age of the participants and their use of the garden. Participants aged 60 years and over spent 2–4 hours, usually in the spring and summer and on weekdays and weekends. However, there was a negative correlation between participants' education level and the number of days they used their garden. College graduates mostly used their garden on the weekends, whereas high school graduates used it on the weekdays and weekends. On the other hand, while the time spent in the garden and the season of use were related to one's occupation, the income level was found to be related only to the time spent. There was a negative correlation between the time spent in the garden and the season used and occupation. Data analysis suggested that working people used their garden less, while those who do not work spent more time in their garden. Government employees and

those in the industry used the garden in summer and spent 0–2 hours, while retirees used the garden in spring and summer and spent 2–4 hours. There was a positive correlation between the income level and the time spent. The middle-income group spent 0–2 hours in their garden. It has been determined that the participants who live in residential, spend an average of 4–6 hours in their home gardens.

Features and Benefits of Residential Gardens

The features and benefits of the residential gardens in Istanbul's European side were evaluated by using three factors. Factor 1 was that the survey questions on the features of gardens were reliable, with a Cronbach's alpha of .770. This value is highly reliable, since it ranged from .60 to .80. Most of the participants reported that their gardens created a natural environment, reduced stress, and had a comforting and relaxing effect. Factor 2 concerned the environmental benefit of residential gardens, and Cronbach's alpha was .873. This value is highly reliable, since it was between .80 and .90. The participants agreed that residential gardens positively affected human health and were a source of oxygen.

Factor 3 concerned the effects of a well-designed and well-maintained garden, and Cronbach's alpha was .839. This value was between .80 and .90 and therefore highly reliable. The participants stated that a well-designed and well-maintained garden increased the comfort and image of the area, and gave people a sense of orderliness, and also that the development of plant materials would be supported (Table 4).

The Relationship Between the Functional Features and Benefits of Residential Gardens and User Profiles

The results of the correlation analysis conducted for an assessment of the relationship between residential garden users and the benefits and possibilities offered by a garden are shown in Table 5.

Table 1.
General Profile of the Participants

Profile of the Participants	Percentage (%)
Gender	
Female	61.8
Male	38.3
Age (Years)	
18–25	16
26–30	7.8
31–40	20
41–50	22
51–60	16
60 and over	18.3
Education	
Non-literate	0.3
Primary school	11
High school	16.8
University	48.5
Masters/doctorate	23.5
Job	
Worker	5.8
Officer	23
Retired	18.5
Civil servant	11.3
Housewife	9.3
Student	11
Private sector	21.3
Average monthly income	
1000–3000 TL	26.8
3001–5000 TL	30
5001–7000 TL	17.5
7001–10000 TL	11.3
10000 TL and more	14.5

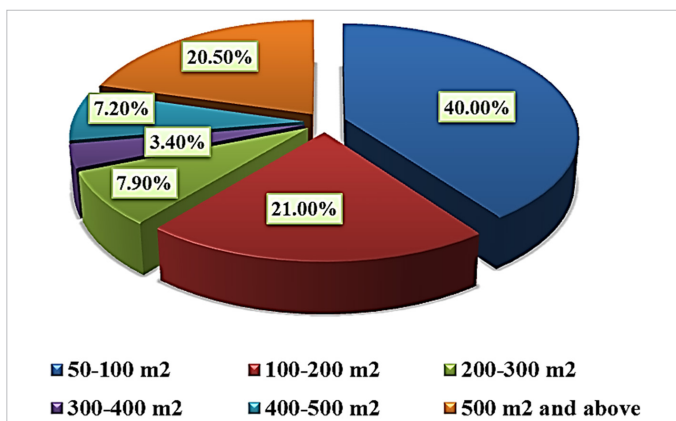


Figure 2.
Surface Areas (m²) of the Gardens Studied.

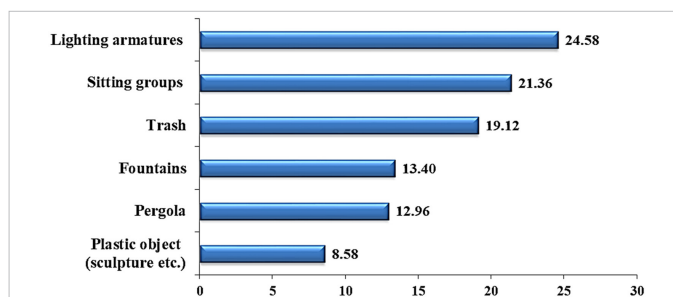


Figure 3.
Pieces of Equipment in the Gardens Studied.

According to Table 5, the age and occupation of the users were related to the factor of the garden's environmental benefits, while the income level was found to relate to the factor of the effects of a well-designed and well-maintained garden. To explain, the value of the correlation coefficient (r) in terms of age and occupation was positive (+) and had a linear relationship, and civil servants and users between the ages of 26 and 40 years strongly agreed that the gardens had many environmental benefits. The value of the correlation coefficient (r) for income level and the factor relating to the effects of a well-designed and well-maintained garden was found to be positive (+) and linearly related. Those users having a moderate income strongly agreed that a well-designed and well-maintained garden was effective. It was determined that the effect of this factor increased as the income level increased.

Today, people want to meet their recreational needs in their residential gardens as well as in parks. This stems from the positive effects of nature on human health and psychology. The relationship between humans and nature is quite complex. Although the reasons why nature has stress [SS1]-relieving and positive effects on human health are not precisely known, these are generally associated with the spiritual

Table 2.
The Study Group's Garden Usage Rate

Usage Status of the Gardens	Percentage (%)
Time spent in the garden (Hours)	
0–2	57.5
2–4	28.7
4–6	9
6–10	4.8
Days of garden use	
Weekdays	4.9
Weekends	52
Weekdays or weekends	43.3
Seasons of garden use	
Spring	20.3
Summer	49.3
Autumn	2.3
Winter	1
Spring–summer	24.3
Spring–autumn	3

Table 3.
The Relationship Between User Profiles and the Use of Residential Gardens

Usage Status		Gender	Age	Education	Job	Income
Time spent in the garden	<i>r</i> = Correlation coefficient	.033	.212	-.026	-.159	.141
	Significance	.514	.000**	.605	.001**	.005**
Days of garden use	<i>r</i> = Correlation coefficient	-.071	.209	-.177	-.082	.030
	Significance	.159	.000**	.000**	.102	.544
Seasons of garden use	<i>r</i> = Correlation coefficient	.022	.201	.017	-.154	.055
	Significance	0.656	0.000**	0.728	0.002**	0.275

Note: **Correlation is significant at the .01 level (two-tailed). *Correlation is significant at the .05 level (two-tailed).

Table 4.
Reliability Analysis of the Functional Features and Benefits of Residential Gardens

Factors	Mean	Variance	Cronbach's Alpha
The functional features of the gardens			
Creates a natural environment	4.40	.99	.770
Has a comforting and relaxing effect	4.39	.97	
Reduces stress	4.45	1.00	
Enables children to play safely	4.24	1.09	
Provides hobby activities related to garden	3.07	1.47	
Provides opportunity to exercise	4.07	.69	
Provides opportunity for BBQ etc.	3.46	1.18	
Provides opportunity for swimming	3.14	1.19	
Environmental benefits of the gardens			
Being a source of oxygen	4.54	.88	.873
Prevents noise pollution	3.89	1.00	
Contributes to the protection of nature and biodiversity	4.10	.95	
Strengthens social relations	4.07	1.07	
Positively affects human health	4.58	.88	
The effects of a well-designed and well-maintained garden			
Increases the comfort and image of the area	4.15	1.12	.839
Gives people a sense of orderliness	4.35	.91	
Supports the development of plant materials	4.31	1.07	

Table 5.
The Relationship Between Residential Garden Features and User Profiles

Factors		Gender	Age	Education	Job	Income
The functional features of the gardens	<i>r</i> = Correlation coefficient	-.098	.094	.007	-.097	.039
	Significance	.435	.062	.888	.052	.435
Environmental benefits of the gardens	<i>r</i> = Correlation coefficient	-.017	.098	.078	-.165	.055
	Significance	.729	.050*	.120	.001**	.272
The effects of a well-designed and well-maintained garden	<i>r</i> = Correlation coefficient	.057	.074	.036	-.043	.133
	Significance	.255	.141	.476	.394	.008**

Note: **Correlation is significant at the .01 level (two-tailed). *Correlation is significant.

dimension of human development (Kendle & Rohde, 1995). Although the behavior of a large part of the society reveals that the natural environment is very important for people and can contribute to the psychological well-being of people in many ways (Parry-Jones, 1990), research on the subject is still ongoing.

Studies that provide information about the relaxing and healing effects of residential gardens are briefly summarized below. Of these studies, Meneghello et al. (2016) noted the significance of caring for the natural beauty of a garden in improving the emotional state of patients with stroke, traumatic brain injury, and multiple sclerosis. Cervinka et al. (2014) stated that hospital gardens are important for staff, visitors, and patients and that they developed suggestions for the design of hospital gardens. Jonveaux et al. (2013) stated that green spaces and gardens in French care units are important for Alzheimer's patients and should be adapted to their needs. Gagliardi and Piccinini (2019) investigated the healing power of nature for the health and well-being of the elderly. Siriphanich et al. (2016) focused on therapeutic garden designs, suggesting that a garden provides a link between patients' mind, body, and personal preferences and improves their quality of life. Milligan et al. (2004) also stated that gardening contributes to protecting the health and well-being of elderly people. Kiyota and Selfridge (2004), on the other hand, stated that the interactions between people in nursing homes and plants or other living beings contribute positively to their wellbeing. As a result, in this study, it has been revealed that residential gardens make an important contribution to environmental sustainability, in addition to contribution toward people's health and well-being.

The results of our survey show that many people have regular contact with plants and nature in their gardens. Gardens play a central role in the life of a significant number of urban residents and were found to have positive effects on the well-being of the survey participants. It is clear that gardens have important emotional, psychological, healing, and even spiritual values for people. As a result of their contact with plants and their upbringing, the participants in our survey have attributed a number of values to their urban gardens. These values that the participants identified in the questionnaire are closely related to those suggested in the literature (Herzog, 1989; Kaplan & Kaplan, 1989). However, the obtained benefits show some differences. Some people enjoy working in their garden, while others simply enjoy rest; still others enjoy sporting activities or establishing social relationships with their neighbors. Although the preferences and perceived benefits vary depending on age, gender, type of residence, and occupation, it is concluded that even the smallest gardens are important for people. In addition, the relationship between humans and nature was examined in connection with cultural, social, and economic variables, especially in Istanbul, and the similarities and differences were revealed by comparing them with other available information.

Conclusion and Recommendations

The outcome of this study was a survey of usage, functionality, and benefits of some of the residential gardens in the European side of Istanbul. It was observed that the participants were mostly female users (61.80%), the middle-aged group (31 to 40 years and 41 to 50 years), university graduates, and civil servants (21.30%). Residential gardens were mostly 50 to 100 m² in size and no professional assistance had been received in designing them. The gardens usually had lighting armatures, seating units, and garbage cans, while plastic objects were used in very small amounts. The users mostly used their gardens in the summer (49.30%) and during weekends, and they spent zero to two hours (57.50%) in their gardens. It was observed that age group and

occupation had an effect on the time spent in the garden, and that as the age increased, the time spent in the garden also increased, and that retired people spent more time in the garden (two to four hours). The results in the current area of this study are similar to those in all countries of the world. Another result is that there are users who want to cultivate plants as a hobby, especially ornamental plants, in residential gardens. This is due to the fact that people in the research group had migrated from rural areas and had an agricultural background.

Consistent with other studies in the literature, when the functional features and benefits of residential gardens were questioned, the users stated that their gardens provided a natural environment and reduced stress, and that plants had relaxing properties, positively affected human health, and were sources of oxygen. Especially the civil servants between the ages of 26 and 40 said that they were aware of the environmental benefits of gardens, while the users with moderate income level emphasized that a well-designed garden would have a high image and comfort and give people a sense of orderliness. Our findings suggest that the rate of aspiration for a well-designed garden increased as the income level of participants increased. Although the preferences and perceived benefits vary by age, gender, housing type, and occupation, it is concluded that even gardens with the smallest area (50–100 m²) (538.19–1076.39 ft²) are important for humans.

The results obtained in this study on Istanbul (European side) prove that residential gardens are important for urban areas (increased biodiversity and sustainability of living habitats) and people (psychological development and social communication). This shows that residential gardens are important areas for people to relax mentally and psychologically, get rid of daily stress, and breathe in a natural environment. For this, the requests and demands of those who use residential gardens should be taken into consideration, and the designs should be guided in consideration of garden usage. More garden areas should be added to the residences to be built in urban areas and these areas should be regularly maintained for their sustainability. It is important to plan and implement effective designs for residential gardens to appeal to users of all ages, so that they can spend long and quality time there. In the gardens, hobby areas should be separated, different interests should be involved, and safe environments should also be created for children.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept – S.G.B.; Design – S.G.B.; Supervision – S.G.B.; Materials – S.G.B., Ş.D.Y., N.S.A.; Data Collection and/or Processing – S.G.B., Ş.D.Y., N.S.A.; Analysis and/or Interpretation – N.S.A.; Literature Search – S.G.B., Ş.D.Y.; Writing Manuscript – S.G.B.

Conflict of Interest: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

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