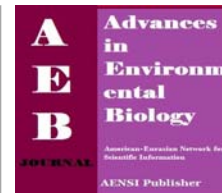




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The Qualitative and Quantitative Evaluation of Urban Parks and Green spaces in City of Tehran

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ABSTRACT

Considering the importance of urban parks and green spaces and their role in urban life, this study undertook evaluation of parks and urban green spaces in District 8, Tehran. It is a descriptive-comparative research. Based on theories and concepts, as well as on the world and national cases, evaluation of the parks in District 8 was conducted. Accordingly, major parks were evaluated at different scales such as zone, neighborhood, and neighborhood unit. A researcher-designed survey whose validity was approved by experts, and whose reliability was determined at 95% was carried out. The results were categorized into two groups, i.e. qualitative and quantitative. Per capita green space in District 8 is estimated to be 4.2 m² which is minute in comparison with Tehran's per capita green space, estimated at 28.9 m². Furthermore, inappropriate distribution and low ecological function, especially in spring and summer, are among the weaknesses of the district green spaces. The district parks do not have favorable condition in terms of safety and security. This leads to fewer visits and less use by different age groups. Inadequate number and diversity of facilities and installations of the parks, and also lack of public participation with respect to park management are among the negative points. As far as superstructure is considered, the parks comply with the existing standards.

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INTRODUCTION

Increasing expansion of cities in all countries of the world and exceptionally Iran is one of the unavoidable effects of technology and science age. Today expansion of cities exceptionally large cities in third world has resulted in negative effects of city development, which one of these negative effects is environmental pollution intensification. Increasing development and growth of urbanization has direct relation with skeletal expansion of cities. Physical development of cities has resulted in inaccessibility of nature and nature and human disturbance .irregular and unsustainable extension of cities has caused living in suburban areas and also destruction of urban green areas and resulted in increasing demand for land. High demand for land will effect on green space destruction and land use change [1] .green space is a part of city landscape and as one of real phenomenon which human being has contacted from very beginning .This subject has different aspects like environmental, social, cultural, economical and skeletal. Importance of green space is that much high that is known as one the indices of sustainability [2]. The most important benefits of green space are as fallow:

- Carbon dioxide attraction and attraction of other toxic gases and oxygen production [14, 15, 16]
- Regulation and improvement of cities weather [3, 10]
- Noise pollution abatement and improvement of people spirits [3, 4]
- Prevention of water and wind erosion [7, 12]
- Hazard abatement of probable floods [2,12]
- Prevention of unsuitable urban development and creation of beautiful landscape

Suitable green space in cities, is one of the effective factors in reduction of negative impacts of cities development [2, 13]

An important in site selection of green space is concerning social necessities. That's why urban designers and architects believe that "parks should be a place full of life and energy, a place which working and cultural, commercial and residential activities are under progress. Some urban parts have such valuable focal points. Such points look perfect for creating sectional parks and public spaces [9].

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Sweden studies suggest that visiting green spaces and public parks makes people fresher than doing physical exercise by 24% [5, 17]

Municipal parks at regional scale are characterized as parks which are located within residential areas, and whose area are two to four times as big as parks at neighborhood scale (1 to 4 ha), and whose access time from the farthest start point does not exceed half an hour on foot [6].

Location and characteristics of the study area:

Tehran's municipal district 22 has an area of 63 m², bordered by Central Alborz Mountain northward, the Kan River eastward, Tehran-Karaj Highway southward, and Vard'avard tree plantation westward. It also neighbors districts 5 and 21 (figure 1). According to the 2010 census of the district, there are 64,057 males and 51,034 females. Table 1 shows population, density, and area of fourfold regions comprising district 22 [8].

Table 1: Population, density, and area of fourfold regions comprising district 22.

		Region 1	Region 2	Region 3	Region 4	total
population	number	40911	27274	8182	32307	108674
area	hectare	608	1452	1958	2185	6203
density	N/H	64	19	4	15	18

Source: municipality of Tehran, 2010

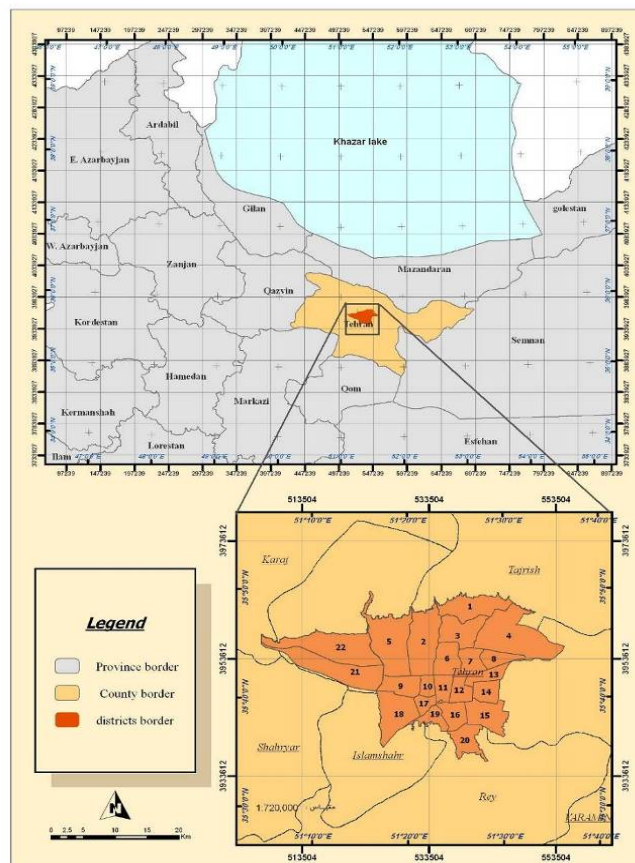


Fig. 1: The location of the under studied area in the country (Iran).

Sepidar Park's features:

This park was established in 2004 on an 11,500-sq² land within region 1, district 22, Tehran. It enjoys facilities such as lighting system, park furniture like fountains, statues, gazebos, as well as security kiosk and sports facilities. The dominant trees include cypress, spruce pine, buttonwood, ash, silver acacia, Lawson cypress, Cupressus Cypress, redbark cypress, and poplar. The existing bushes are Judas tree, Japan quince, mare's tail, jasmine, oleander, and berbery.

METHODS AND MATERIALS

This study is of applied type through which criteria such safety, security, park facilities, accessibility, compatibility and harmony, dynamic administration, as well as ecological, social functions and park design were taken into consideration. To do so, a checklist designed based on national standards and regulations as well as international ones was employed. Along with that, a researcher-designed survey whose validity was approved by experts, and whose reliability was determined by Cronbach's alpha was carried out. The significance was considered $P > 0.05$. Criterion scores were regulated based on a twofold scale. Field studies and surveys were conducted during a summer season on a daily basis between 16 and 22. The data were analyzed by using descriptive statistical methods and SPSS. Finally, Delphi technique was utilized to make conclusions and recommend management approaches.

Results:

Visitors by gender involve 55% males and 45% females, which complies with gender rate within the district. The survey revealed that 85% of the visitors came from district 22, 14% from other districts, and 1% from outside Tehran. Also, pertaining to visit frequency the results showed that 58% visited the park on a regular daily basis, 16% once a week, 18% twice a week, 5% once monthly, and 3% a few times a month.

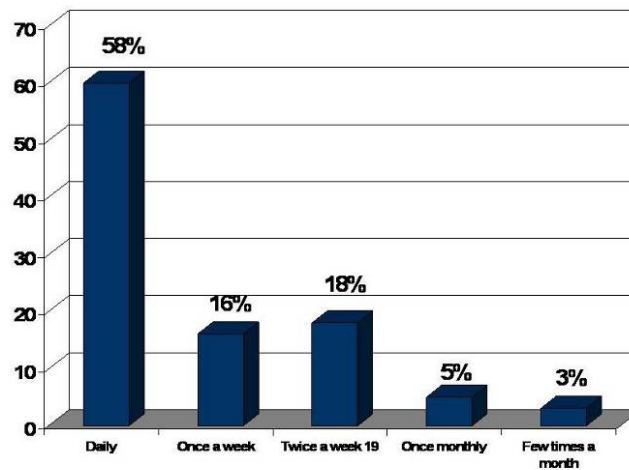


Fig. 2: Rate of visit.

Also, 76% preferred cobblestone-covered paths, 15% asphalted, 4% dirt, and 5% concrete (figure 3).

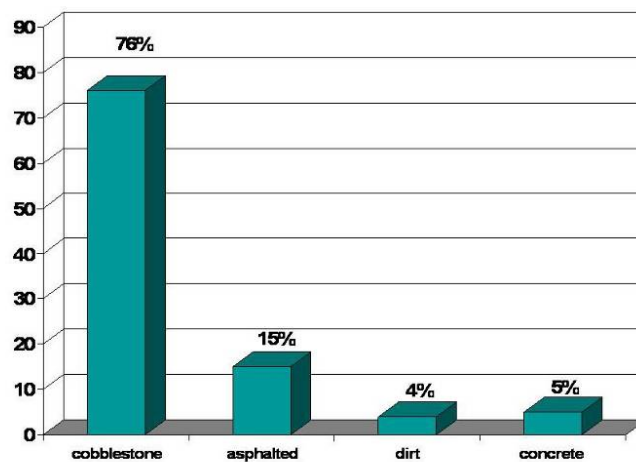


Fig. 3: Rate of preferred path.

In terms of tree size, 72% of visitors would rather small-sized trees, while the other 28% big trees (figure 4).

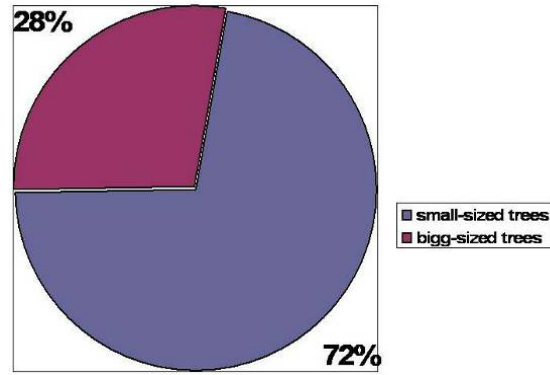


Fig. 4: Size of trees view of users.

The investigations showed that deciduous trees grabbed the attention of 22% of the visitors, while evergreen ones at 78% (figure 5).

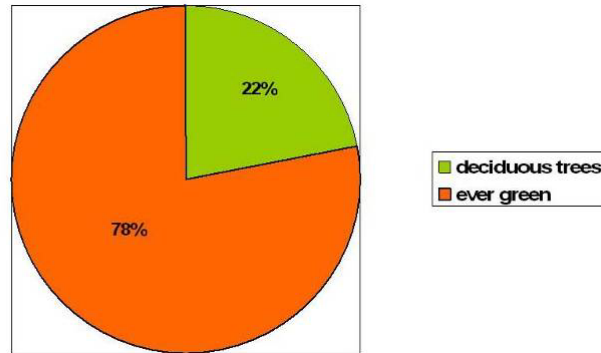


Fig. 5: View of users due to type of trees.

Also, it was stated that 72% of the users favored a combination of tree species; however, the others mono-species diversity. The survey suggested that 76% of the visitors did not see the number of trash cans enough. On the other hand, 24% saw them enough.

In the case of the quality of the trash cans, 15% of them perceived it very good, 35% good, 40% average, 10% very bad (figure 6). 30% of the visitors considered benches suitable in terms of number, while others – 70% - unsuitable. Furthermore, it was revealed that 9% considered them very good, 40% good, 32% average, 12% bad, and 7% very bad in terms of quality (figure 7).

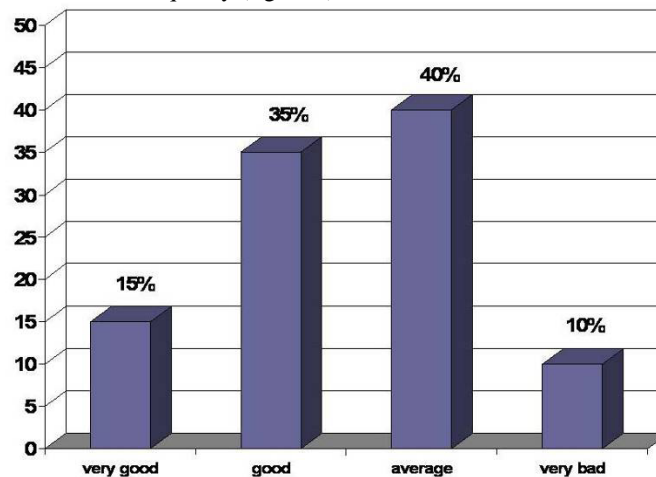


Fig. 6: View of users due to quality of the trash cans.

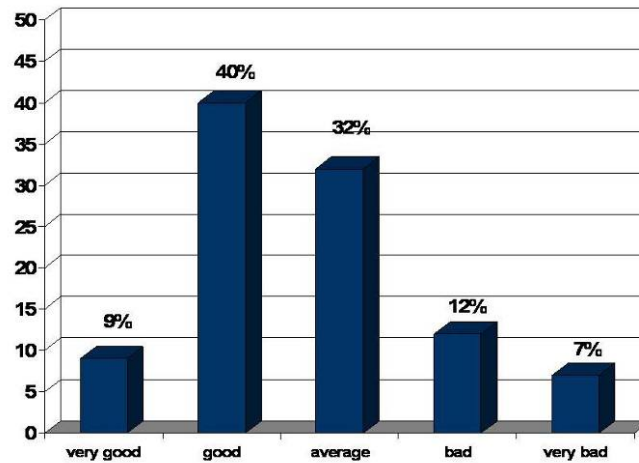


Fig. 7: View of users due to benches suitable.

The survey showed that 32% of the users thought that security of the park was acceptable, but 68% unacceptable. Although 81% of the people perceived the safety as appropriate, 91% perceived the otherwise. 94% of the visitors stated that cultural facilities were appropriate, and the rest inappropriate. To 78% of the visitors fountains were alright in terms of number, but to the other 22% they were not.

Anthropogenic components of the survey demonstrated that 39% of the visitors were adults, 23% young, and 32% teenagers, and 6% children (figure 8).

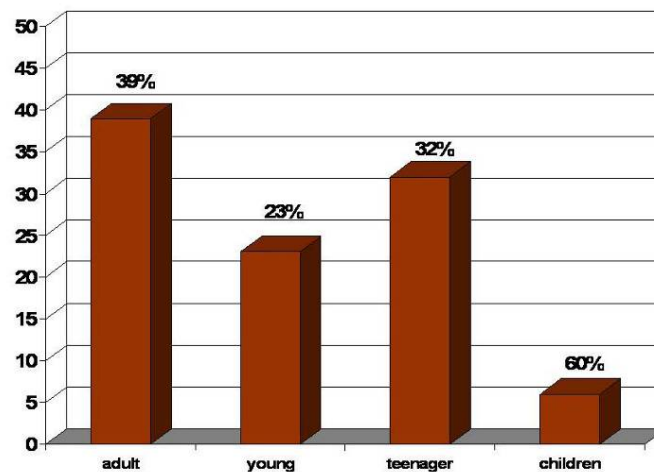


Fig. 8: Range of user's age.

Conclusions:

Based on the results it can be argued that the majority of the visitors belong to district 22. This adjunct to the park may hold many advantages, including:

- Saving energy in terms of commuting to the park;
- Saving travel cost to the park;
- Saving travel time to the park;
- Higher possibility of individual participation in the park management.

Also, the fact that 60% of the visitors visited the park on a regular daily basis may imply that the park enjoys enough capabilities and functions that can attract high percentage of visitors. 76% of the park visitors did not approve of big-sized trees because they are trimmed by municipal staff in a way that does not provide good scenery. In addition, small trees contribute to a better visibility and view. The park users prefer evergreen trees since evergreens dominate deciduous ones across Tehran's parks, so in the fall and winter the city suffers low per capita green space. The other reasons follow:

1. The deciduous trees' losing their leaves leads to a carpet of fallen leaves which is not welcomed by the visitors.
2. The evergreen could be seen throughout the year.

3. Associated canopy and cooling in the summer allows for bird nesting, hence higher ecological efficiency.

The 62-percent acceptability response in the survey in terms of security can be attributed to existing cultural facilities. It should be noted in the case of safety that the playground has several flaws such as:

- Wasteland surrounding the playground;
- Lack of drinking fountains within it;
- Lack of benches next to this area where parents can watch their children;
- No trash cans around it;
- Use of stone in building drinking fountains as well as their highness which is not safe for children.

79% of the users think there are enough trash cans in the park. 14 trash cans exist does not seem to be enough for a park of 333,000 sq2. Additionally, they are not distributed evenly – approximately one trash can per 2,400 sq2. The result showed that 72% of the visitors perceived the number of the benches unsuitable. There are 35 park benches across the park – one per 953 sq2.

Discussion:

Accordingly, parks and green space across District 8 have several weaknesses, including per-capita green space shortage, inappropriate park distribution, improper vegetation being mainly deciduous – especially with regard to not very good environmental condition of Tehran in fall and winter. The unequal distribution of large-scale parks in the district also means that social needs are not fulfilled; hence more travel across the district is necessary. Most of the parks in this district lack basic and vital functions as well as enough facilities and equipment. Furthermore, worrying security and safety aspects undermine user visit to the park, especially women and children, which along with lack of citizens' participation in park management leads to city-citizen separation.

A vital point is that because of the above reasons, most of the visitors of the parks in the district belong to the elderly. This contrast findings in the Scottish study in which most of the park visitors ranged between 35 and 44.

From a structural point of view, however, findings of this study comply with that of Simon Bell, except for urban furniture [11, 18]. Concepts and recommendation provided within the present study in terms of park and green space design are based on the status quo. From users' viewpoint, the applicable and feasible management recommendations are as follows:

Park police patrol, providing enough lighting, establishment of facilities and equipment with regard to age groups, making modifications in terms of park furniture, site selection at district level according to scientific concepts, selection and plantation of plants adaptive to the climate in Tehran.

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