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Improving the Landscape of Urban Parks Based on the Needs of Citizens (Case Study: Gorgan Parks)

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Abstract

Urban parks and green spaces, like other urban spaces, are subject to erosion and need repair to sustain their environmental and social services. Citizens' priorities should be studied when improving urban green spaces. This study aims to identify the priorities and needs of citizens regarding the improvement of parks and public green spaces in Gorgan, Iran. The documentary and analytical survey in which data were mostly collected by distributing questionnaires among the residents of Gorgan. The results showed that the preferences of citizens varied with demographic variables and their socio-economic characteristics in some areas so that each group had its own needs. However, according to the citizens, the plant species of the parks and green spaces in Gorgan generally need to be diversified and this should be achieved by using all types of plants (broadleaf, coniferous, cover, and seasonal plants). Most people prioritized improving sanitation, supplying drinking water, and providing children's play equipment. Also, considering the needs of the disabled in the improvement of parks was the highest priority, and stone sidewalks were the most popular.

Keywords: Citizens needs, Citizens priorities, Gorgan, Park improvement, Urban green spaces.

INTRODUCTION

Nowadays, the concept of cities is not conceivable without having effective green spaces in various forms. The consequences of urban development and the complexity of their environmental problems have made the existence of green spaces and their expansion inevitable. Urban areas, as centers of human activity and life, must have a natural structure and function in order to be sustainable. Meanwhile, green spaces, which are an essential component of cities, play a key role so that their lack can cause serious disruptions in urban life. It is not an exaggeration to compare the function of green spaces with the breathing lungs, as this analogy expresses its minimal function in the ecological concept of cities. Today, even the quantity of green space is less discussed. Because there is no doubt about their existential importance in the biological desirability of metropolises (Madjnoonian, 1995).

Green spaces and parks are usually considered the last part of urban planning and a low priority is attached to them yet. In urban planning, the first factor that is considered is the construction of streets and buildings. Finally, any space that remains (the so-called flakes) is assigned to green spaces or the so-called green spots.

Hadavi and Kamo Shalmani (2008) points out that more attention has recently been paid to the functional aspects of cities in Iran and the parks are on the edge and have been unknowingly copied from the park patterns of modern nations without adapting to the conditions prevailing in Iran. As a result, many factors that can directly or indirectly improve their qualitative and quantitative performance have been overlooked, or the performance of the parks has inevitably changed over time without changing their vegetation, leading to their non-compliance with the needs of users, which has also confused users.

When it comes to urban planning, the "principle of the existence of green space" does not adequately consider the angles of human needs. Designers should know that it does not suffice just to be green, but they should consider the needs at the emotional, physical, mental, and intellectual levels and meet them through green spaces, but unfortunately, the user needs are not considered in some of the current green spaces (Marouf *et al*., 2008).

What is certain is that parks and green spaces, like other urban spaces, have been eroded over time since their construction, so they need restoration to keep providing their environmental and social services because burnout is one of the most important issues related to urban spaces and causes their disorganization, imbalance, incompatibility, and impotence. Aminzadeh (2007) says that the strategies to protect the identity and integrity of urban landscapes are to create criteria to protect the environment from destruction and to prioritize the improvement and organization over renovation. Studies show that environmental improvement is associated with societal judgments and cultural perspectives and social perspectives should be considered in planning and determining environmental improvement strategies (Trigger *et al*., 2008). On the other hand, social issues and needs, as well as public attitudes, affect the quality and quantity of green spaces so that the improvement of green spaces and urban parks requires a specific program to discover public needs and attitudes as a prerequisite for the development of a comprehensive program.

Accordingly, the present study focused on the priorities and demands of the citizens in improving the parks in Gorgan city in order to provide a more favorable environment for enhancing people in accordance with these priorities. The main purpose of the study was to determine the effect of demographic characteristics (age, sex, education, etc.) on determining park improvement priorities and to reach a summary of priorities for the improvement of Gorgan parks.

MATERIALS AND METHODS

Study site

The study site is the city of Gorgan (the capital of Golestan province in Iran) (Fig. 1). Gor-

gan is located between longitudes 54°10' and 54°45' E and latitudes 36°44' and 36°58' N. The area of this city is about 1316 km^2 with an altitude of 160 m above sea level. Its climate is temperate and humid and the average annual rainfall amounts to about 650 mm. The population of the city was 350,676 according to the census of 2016. Gorgan has many urban parks, sometimes with a high potential to grow suitable plant species. Some parks do not have a suitable planting design and are mostly planted by rain fed species based on the experience of the gardeners. This has created visual disturbances and has sometimes made them a good place for addicts and thugs to gather, which has destroyed the sense of security among the users. However, some parks and green spaces in this city are older than fifty years and during this period, little changes have been made in these areas in accordance with the social and cultural changes of the city. Many old parks do not have attractions to attract visitors. Therefore, it is necessary to study the people's priorities for improving parks and urban green spaces. It is important to note that due to the role of green spaces in the health of citizens and the sustainability of cities, few studies have been conducted to determine the qualitative and quantitative factors affecting the improvement of these areas. It can be said that after the construction of several public parks in the last two decades, the citizens' priorities regarding the improvement of these spaces have not been evaluated.

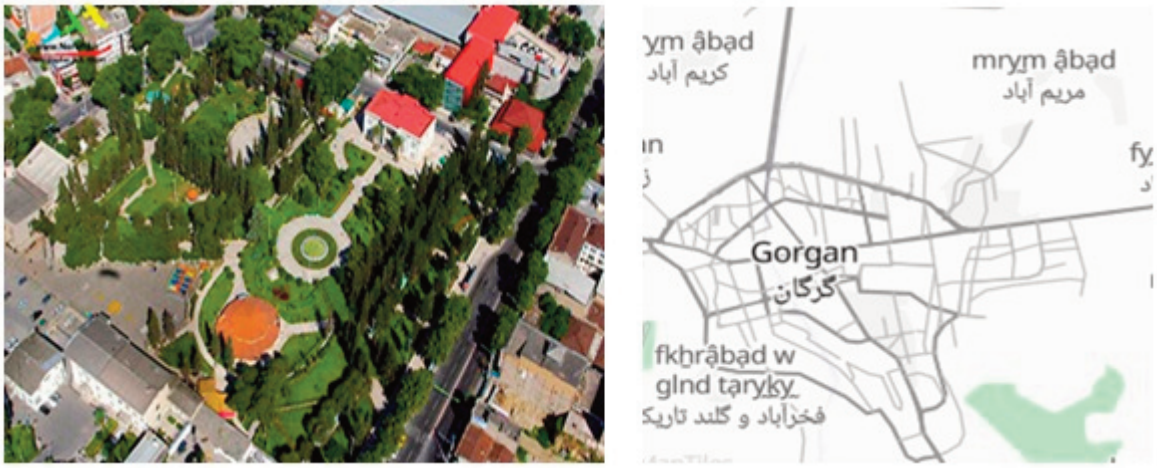

Fig. 1. Map of the study area and aerial photo of Shahr Park (the oldest park in Gorgan).

Research method

According to the research topic, the field of study, and its issues, a combination of documentary-analytical and survey methods was used to complete the information required for the present study. The required data in the library section were collected from codified and valid sources. The opinions of the residents in different areas of Gorgan were collected with a questionnaire.

Cronbach's alpha was used to determine the reliability of the measurement tool for which some questionnaires were distributed among the statistical population and they were used to estimated Cronbach's alpha to be 0.812. Considering that the scale of the study is the whole city of Gorgan and the aim is to adopt the citizens' views on the priorities of improving the parks and green spaces of this city, the statistical population was the whole city of Gorgan. The sample size was calculated by Cochran's formula to be equal to 380.

On the other hand, due to the fact that determining future plans for improving urban parks and optimizing citizens' use of green spaces depends on the socio-economic situation of society and demographic characteristics of citizens, the statistical community was classified based on such criteria as age, sex, education, income, employment, and residence to establish a relationship be-

tween socioeconomic variables and priorities of each group (Korpela *et al*., 2008). Out of the total respondents, 55% were women and the rest are men. Tables 1-4 show the demographic characteristics of the respondents.

Accordingly, respondents were selected with different demographic structures from four urban areas by the situational sampling method, and finally, a homogeneous level formula was used to measure citizens' priorities in which different levels of satisfaction were identified.

Table 1. Age and gender structure of the respondents.

	Under 15 years		**15 to 30 years**		**30 to 50 years**		**Over 50 years**	
Age	Female	6	Female	75	Female	98	Female	30
	Male	7	Male	59	Male	83	Male	22
Total	13		134		181		52	

Table 2. Educational level of the respondents (in percent).

Education	**Master's and higher**	**Associate and bachelor**	**Diploma**	**Under diploma**
	12	37	30	21

Table 3. Job status of the respondents (in percent).

Job	**Employed**	**Housewife**	**Unemployed and looking for work**	**Retired**
	44	27	22	7

Table 4. Monthly income of the respondents (in percent).

Monthly income (one thousand tomans)	**Above 3,000**	**Between 2000-3000**	**Between 1000-2000**	**Under 1000**
	14	42	33	11

New York Central Park, the world's oldest park, was first rehabilitated in 1975. Also, Belleville Parc de in Paris, Disneyland in Paris and London, Luna Park in Melbourne, Hastings Park in Vancouver, Mountfield Park in London, and Norfolk Heritage in Sheffield are among the parks for which comprehensive programs and necessary measures were taken to rehabilitate them following their destruction, erosion, and facility deficiency. In Iran, in theoretical plans and studies, the rehabilitation of Daneshjoo Park, Besat Park, and Tehran City Park has been considered, among which we can refer to the rehabilitation studies of Besat Park, which was conducted in 1996 (Mirzaei, 2008).

Combining the field survey and field observations with the results of the questionnaire distributed among the visitors and citizens is one of the most common research methods in the field of park and landscape planning and management. The questionnaire is the most common tool used by a planner to identify people's needs. Spearn (2008) considers people as part of the landscape.

Therefore, the study of public views and opinions in accordance with their demographic characteristics is important in the research background of this field (Cohen *et al*., 2010; Lo and Jim, 2010; Westerberg *et al*., 2010; Mosquera and Sánchez, 2011; White and Gatersleben, 2011; Clement and Cheng, 2011).

Improvements include a series of measures that are taken in the short term to improve the body, which is the result of erosion of activity. In fact, the improvement occurs when the relative wear and tear of the space has occurred functionally. It is a process during which the undesirable spaces, complexes, and buildings can be improved, and a desirable spatial organization can be created by performance change and modernization (Habibi and Maghsoudi, 2009).

Improving urban parks and green spaces to improve the quality of the environment for the use and presence of all age and sex groups, reducing the cost of complete renovation, optimizing citizens' use of parks and green spaces, maintaining elements and indicators of interest, increasing use time for visitors, preservation of vegetation, and prevention of changing green spaces and parks into undesirable and harmful lad-uses are some measures (Mirzaei, 2008). Conservation, modernization, and restoration of aesthetic features to improve the visual and spatial quality are other goals of urban park improvement based on such principles as the profitability of proposed functions, performance change for improving the quality of the soul and nature of the complex, and maintaining social values (Habibi and Maghsoudi, 2009).

Since the proper performance of activities in parks has a lot to do with how citizens use these spaces, the study of public priorities in the improvement of parks will play an important role in the proper performance of activities in these urban spaces. The quantity and quality of citizens' use and activity in the improved parks and green spaces show how successful the improvement process is, and this largely depends on the preferences and priorities of the people. Accordingly, it is necessary to examine the factors affecting the demand for recreation and its results to be used in the improvement of parks. For this purpose, the behavioral study of users is conducted through a questionnaire. The questionnaire allows collected data on knowledge of different visitors, the range of needs, their tendencies and process of use, and the retention of the parks (Goshtasb, 2008).

RESULTS

The social data were analyzed in the framework of groupings by residence, age, gender, education, employment, and income, based on which the results of the questionnaire on urban green space variables (priorities and needs) were analyzed. This method, which is presented by the American Recreation Resources Commission, evaluates the role of these places in the city based on socio-economic relations and factors and the existing conditions of parks and public green spaces (Mohammadi *et al*., 2007). In this method, which is based on interviews, various socio-economic factors (income, education, employment, place of residence, age, gender) and the relationship between these variables and the type of recreational activities are measured. Based on the results, future recreational demand is predicted according to the possible changes in these variables (Madjnoonian, 1995). The general findings of the study are presented in table 5.

According to Fig. 2, most respondents (61 %) chose stone sidewalks over other types. In terms of age, people aged 30-50 years were most interested in stone sidewalks, those aged 15-30 years were most interested in brick sidewalks, and those aged over 50 years were most interested in concrete and asphalt sidewalks. In terms of the level of education, the priority of all groups was stone sidewalks. In terms of the job, the top priority of the group with a monthly income of more than 30 million IRR was brick sidewalks. However, the priority of the other income groups was found to be stone sidewalks.

Table 5. General results about citizens' priorities in improving urban parks and green spaces in Gorgan.

Priority of review	Distribution of responsiveness in the sample as a percentage			
Flooring material	**Stone**	**Concrete**	**Asphalt**	**Brick**
	61	8	10	21
Plant diversity available	**Medium diversity and need for sectoral diversity**	**Lack of variety and has a uniform landscape in different seasons**	**Diverse and has a beautiful view in different seasons**	**In some areas; Diverse and in most areas; Lots of variety**
	33	21	18	28
Favorite plant type	**Ornamental coniferous**	**Flowers and cover plants**	**Ornamental leaflets**	**All items**
	9	9	3	79
Lighting quality	**Variety and usefulness are moderate**	**Diverse, ugly and undesirable**	**Diverse, beautiful and desirable**	**Less of variety but beautiful**
	37	25	6	32
Review park requirements	**Sidewalks and paths**	**Toys**	**Benches and trash cans**	**Toilets and drinking fountains**
	15	24	9	52
Paying attention to the needs of certain groups in improvement	**Youth and students**	**Children**	**Female**	**Disabled people**
	11	28	17	44
Use of park booths	**Cultural and press**	**Ornamental and apartment plants**	**Handicrafts**	**Sale of food**
	15	53	6	26

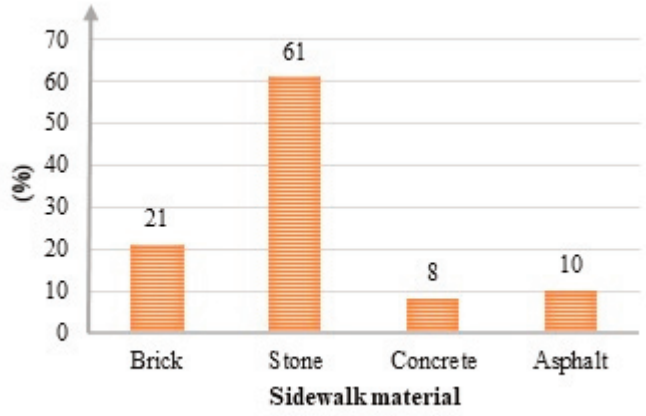

Fig. 2. Citizens' priority in choosing the material of sidewalks (in percent).

It was found that 33 % of the respondents believed that plant diversity was at a moderate level in parks and urban green spaces and stated that urban vegetation still needed diversification (Fig. 3).

Most opinions about the lack of diversity in plant species and the existence of a uniform landscape were expressed by people with master's or Ph.D. degrees and housewives, while the least by those with diplomas and retirees. The highest vote was given to the need for diversification of plant species by people with a monthly income of more than 20 million IRR and the lowest by people with a monthly income of less than 10 million IRR.

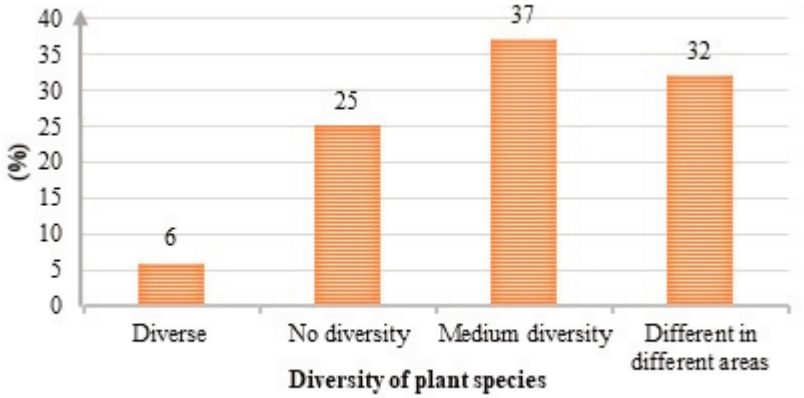

Fig. 3. The diversity of plant species in parks and urban green spaces from the perspective of citizens (in percent).

Fig. 4 shows that most citizens in Gorgan (79 %) chose the option of all items as their favorite plant among ornamental broadleafs, ornamental conifers, seasonal flowers, and cover plants, as well as all cases. The citizens of all urban areas, both genders, all ages, all educational levels, occupations, and income groups are least interested in the broadleaf option and showed that they were equally interested in flowers and cover plants, as well as ornamental conifer leaves.

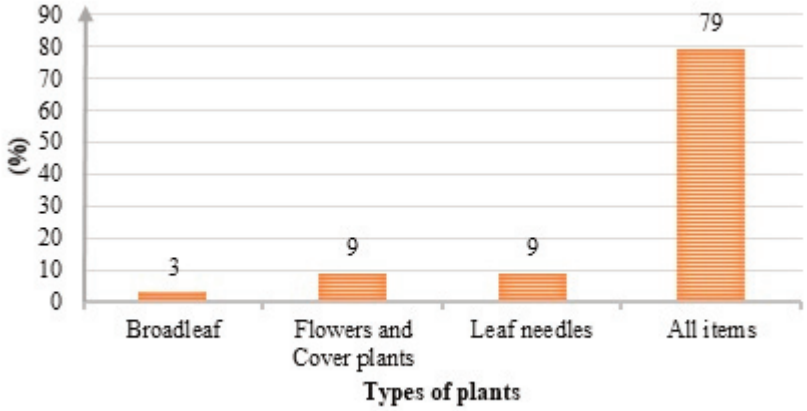

Fig. 4. The types of plant preferred by citizens in urban green spaces (in percent).

From the citizens' point of view, the priority is to review the needs of the parks related to toilets and drinking water (52 %) and children's play equipment (24 %) (Fig. 5). The lowest priority in this area in all urban areas was suggested to check benches and trash cans in parks. The need to review children's play equipment was emphasized by married participants more than single ones, by the participants aged 30-50 years more than other age groups, by employed citizens more than other occupational groups, and by people with a monthly income of over 30 million IRR more than other income groups. Strong emphasis was placed on the need to review health services and drinking water by the unemployed people and the people looking for work.

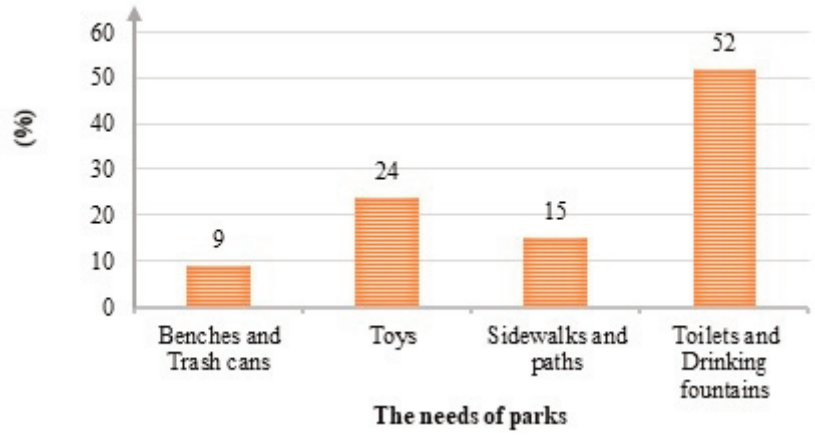

Fig. 5. Citizens' priority in reviewing the needs of parks (in percent).

Most respondents (44 %) stated that when improving the existing parks, attention should be paid to the needs of the disabled people as a priority for environmental and landscape planners. Children (28 %) and women (17 %) were also included in the priority groups in this section. Women responded more than men to prioritizing the needs of children and women, and men more than women responded to prioritizing the needs of the disabled, youth, and students (Fig. 6).

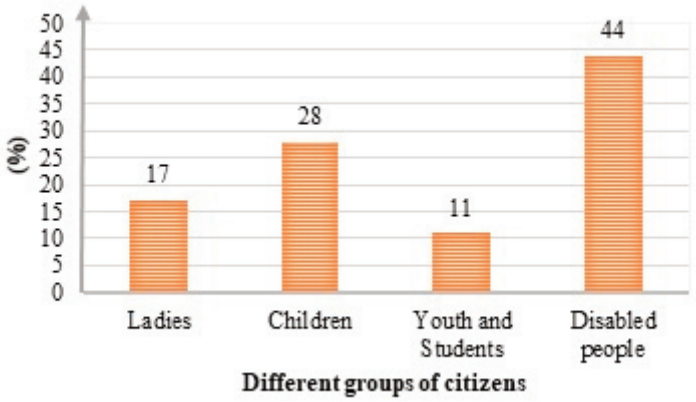

Fig. 6. Citizens' priority in meeting the needs of different groups in the improvement of parks (in percent).

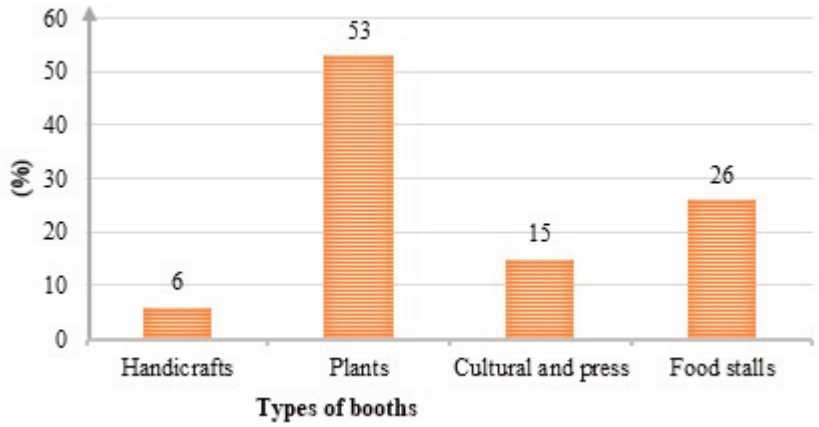

Fig. 7. Citizens' interest in different types of booths in parks (in percentage).

Most citizens gave the highest priority to booths for the supply and sale of ornamental and apartment plants (53 %), followed by food stalls (26 %) and cultural and press products (15 %) (Fig. 7). Interestingly, women expressed more interest than men in cultural and press booths and booths selling ornamental and apartment plants. Men were most interested in food stalls.

DISCUSSION

The present study aimed to investigate the opinions of citizens regarding the prioritization of urban parks in Gorgan. The results showed that diversifying plant species in urban green space, improving the quality of lighting, and exploring park requirements were the main priorities of the people. Also, in terms of demographic variables, different citizens had different needs and priorities regarding the improvement of urban parks:

With increasing the educational level and the monthly income of the citizens, their expectations from the improvement of parks and green spaces increased and they requested a more favorable urban environment. However, most respondents stated that urban vegetation needed diversity. But, the most emphasis in this section was expressed by people with bachelor's, master's, and Ph.D. degrees, as well as people with a monthly income of more than 30 million IRR. In the case of sidewalk floor materials, while the top priority of other income groups was stone sidewalks, the group with a monthly income of more than 30 million IRR preferred brick sidewalks. Regarding the use of the park, all respondents preferred the establishment of supply booths and ornamental and apartment plant booths. Also, people whose monthly income was more than 30 million IRR emphasized the need to check children's play equipment more than other income groups.

The results of this study showed that single and married people had different priorities about parks and green spaces. According to the results, married people emphasized the need to check children's play equipment more than single people. Also, while most single citizens prioritize the needs of young people and students, married citizens prioritize paying attention to the needs of children.

Men and women had different priorities for improving parks and urban green spaces. The results revealed that more men than women chose broadleaves and more women than men chose flowers and cover plants as their favorite plants. Also, women voted more than men for the variety, beauty, and desirability of park lighting. Women outnumbered men in prioritizing the needs of children. Interestingly, women were more interested in cultural and press booths than men, and men were more interested in food stalls than women.

In terms of age segregation of respondents, priorities varied regarding the needs. In this study, people in the age group of 30-50 years emphasized the need to examine children's play equipment more than other age groups, implying that when people at this age range go to the parks and green spaces with their children, meeting the needs of their children is the most important priority for them. People younger than 15 and people aged 15-30 years were more likely to prioritize the needs of young people and students, and people in their 30s and 50s and retirees were more likely to prioritize the needs of people with disabilities and children. Respondents younger than 15 years were most interested in food stalls, those aged 30-50 years were most interested in handicraft stalls and sales, and those aged over 50 years were most interested in cultural and press stalls.

In addition to the above results that can be considered by urban green space planners and designers, other results can be derived from the research and recommendations can be put forth for improving parks and urban green spaces in Gorgan based on the citizens' opinions, which are summarized in table 6. They are as follows:

To further improve sidewalks as the most important communication levels in parks, it is recommended to design sidewalks before implementation, pay close attention and monitor the correct implementation of plans to beautify the environment and comfort of users, and not use concrete and asphalt as far as possible as a floor for park sidewalks, and pay attention to the special needs

of special groups such as children, the disabled, and the elderly.

Gorgan parks should be planted in accordance with scientific criteria and popular preferences with diverse and mixed-use of different plant species (broadleaf, conifers, flowers, and cover plants). In addition to discussing the sustainability of urban green space, this is also important to promote social efficiency and diversification in the environment.

The lighting of the green spaces of Gorgan was evaluated to be at a moderate level in terms of diversity and usefulness. The main strategy to improve this should be to upgrade it to diverse, beautiful, and desirable lighting. This should be done with the help of relevant experts and artists, but imitation should be avoided.

The main strategy of the municipality and Green Space Organization of Gorgan in improving the needs of parks should be aligned with improving toilets, drinking fountains, and children's play equipment.

The people of Gorgan prioritized improving the parks according to the needs of the disabled and, to a lesser extent, the needs of children and women. Accordingly, park improvement measures should be aimed at meeting the needs of the disabled, children, and women, and of course, youth and students. Also, by allocating some of the existing parks to each of these groups and trying to improve and equip them, a part of this important request can be accomplished.

Granting the use of booths should be organized and implemented in accordance with the needs and public preferences in different urban areas.

Table 6. Proposed plans for the improvement of parks and urban green spaces in Gorgan based on citizens' opinions.

Proposal	Design details
Improving sidewalks	Improving sidewalks with emphasis on the use of stone materials and the exact manner of its implementation to facilitate the commute of all age and gender groups of citizens
Diversifying plant species	Plant diversification of urban green spaces in Gorgan based on the use of native plant species with emphasis on the use of all types of plants (broadleaves, conifers, flowers, cover plants, and climbing plants)
Improving the quality of lighting	Enhancing lighting with high and low light techniques, surface processing, accent lighting, dark profile, shading, moonlight, and diffused lighting
Reviewing park requirements	Examining park requirements with emphasis on improving toilets, drinking fountains, and children's playground based on criteria and standards and according to the needs of special people such as the disabled and considerations related to the design and selection of play equipment
Paying attention to the needs of certain strata	Paying attention to the needs of the disabled, children, women and youth, students in improving parks and creating cultural, artistic, and sports attractions
Granting suitable use to park booths	Prioritizing the supply and sale of ornamental plants in park stands

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