Research Paper

An investigation of Urban Green Spaces and Health Benefits considering the Influence of Specific Features of Green Spaces

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Abstract
Urban green spaces provide a context where constant association with these spaces can result in reducing the incidence or diminishing the effect of many diseases. Different studies assessed the relationship between using urban green spaces and health benefits considering influential quantitative aspects. This research tries to look differently at this issue by connecting the urban green spaces qualitative aspects and their influence on encouraging individuals to use green spaces more frequently. For this purpose, the present study employs questionnaire-based interviews (no. 336) in two city parks in Urmia, Iran (The City Park and the Coastal Park) to collect the required information for assessing the interviewees' physical and psychological health levels. The relationships between the hypotheses are later studied using SPSS analytical software. The results showed that relationships were found between using the parks and having better psychological health conditions, but no relationship was found between the duration of physical activity in the park and having better physiological health. The assessment of the obtained data emphasizes the importance of the park characters and features that lead people to engage with specific activities which cause certain health benefits as a result of that activity. The results highlight the importance of developing green infrastructures in today's urban areas.

Keywords: Urban green space, Public health, Psychological health, Physiological health, Green space characters.

1. INTRODUCTION

Considering the United Nations' report, more than half of the world's population lives in cities (UN report 2014), that is why urban life and its related challenges have great importance. One of the features that can be proposed based on the urban life, is the public health of the citizens, which can be divided into two categories of physiological and psychological health. Based on the fact that urban structure produces an active ecosystem, different aspects of this topic can be studied as ecosystem services. As Pataki et al. (2011) in a study quoted from The Millennium Ecosystem Assessment (MA 2004), ecosystem services offered by the cities can be divided into three categories of Provisioning Services (providing food and required materials), Cultural Services (according to aesthetics and psychological health), and

Regulating Services (related to those services which optimize the environmental conditions and quality). The topics discussed in this paper are from sub-categories of cultural and regulating services which are related to qualitative conditions and public health in the society, and can actually be referred to as acquiring health from the ecosystem. In this regard, Tzoulas et al. believe that the key concept in public health includes a variety of biological, social, economic, environmental, cultural, and political factors (Tzoulas et al. 2007). They identify health benefits from ecosystem services as the 'health ecosystem', and argued that the relationship between health ecosystem and public health is a result of a number of ecosystem services offered by green structures. As van den Berg et al. mentioned in a review study, green space provides an opportunity for outdoor physical activity, social contact, and an

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environment for relaxation (van den Berg et al., 2015). In fact, the results of many studies in this field reveal that the existence of green space nearby people's residence is in relation to public health, including psychological and physiological wellbeing (van den Berg et al. 2015, 2017; Fan, Das, & Chen 2011; Javadi & Nasrollahi 2021; Maas, Jolanda; Verheij, Robert A; Groenewegen, Peter P; de Vries, Sjerp; Spreeuwenberg 2006; Sugiyama et al. 2018; Twohig-Bennett & Jones 2018; de Vries et al. 2003). Undoubtedly, the health beneficial type can vary based on the context and environment and is dependent on various parameters (Mitchell & Popham, 2007). In relation to psychological health, green spaces can affect stress and anxiety level (Annerstedt et al. 2010; Mennis et al. 2018; Roe et al. 2013; Stigsdotter et al. 2010; Ward Thompson et al. 2016), and make people feel calm in their daily life. Green spaces cause people to feel less lonely and can benefit from social support by providing an environment for social interactions, (Dadvand et al. 2016; Maas et al. 2009; Rugel et al. 2019; Seeland et al. 2009). Also, Liu et al. (2017) state that it is very likely for the park users to be very active. These researchers' quote imply that parks increase the people's physiological health by creating an environment for physical activity. Ultimately, the impact of green space ecosystem services can be seen on people's health and longevity during their long-term living in the urban environment (Takano et al. 2002; Villeneuve et al. 2012). It should be noted that using health benefits of the green ecosystem can occur when the people living in urban areas are in constant contact with the green space. The influencing factors in this relationship can be discussed as the 'quantity (accessibility)' and 'quality (characters)' (Ekkel and de Vries, 2017; Kabisch et al., 2016; Nielsen and Hansen, 2007; van Dillen et al., 2012; Wheeler et al., 2015; Zhang et al., 2017). Discussing quantity is about the availability of green spaces for the individuals from the quantitative point of view, and the quality addresses specific features of green space. By reviewing quantitative studies such as Van den Berg et al. (2010), J Maas et al. (2009), Jolanda Maas et al. (2009), and Nutsford et al. (2013), which are performed in different contexts and environments, no agreement could be seen between the park distance from the people's residence or the adequate number of nearby green spaces and the health benefits because the results vary based on the different contexts. Qualitative factors can be among the reasons for this disagreement, as they can be the reason that people choose a green space far from their residence, and affect the long-term use of green spaces. That is why qualitative studies have employed the park's features and characteristics as a mechanism for examining psychological and physiological health (Akpinar 2016; Akpinar & Cankurt 2016; Peschardt & Stigsdotter 2013). The present study investigates the relationship between green space usage (and its health benefits) and the green space's qualitative aspects (characteristics and special features related to green space). To achieve this goal, two parks in Urmia city (the City Park and the Coastal Park) were selected. These parks were selected because they had the required characteristics in accordance with our research method. The required data were collected through questionnaire interviews surveyed in the study area.

2. LITERATURE REVIEW

Considering the quality of green space, the satisfaction level of the space is rated by the users. Satisfaction from the green space is influenced by the distinctive features and characteristics that are offered to the users. However, studies in this area have employed different methods to assess people's influences on green space's distinctive features and characteristics. Different techniques were also used to analyze the collected data depending on the intended purpose of their study. It is worth mentioning that the characteristics are being studied because they create a different understanding of the space, leading to specific behaviors that ultimately result in some kinds of health benefits. In this regard, Giles-Corti et al. (2005) reviewed three studies conducted in Perth megacity located in western Australia by employing different methods and found that free access to large public spaces, which have two features of attractiveness and size, including an urban park, is related to the high level of walking. Rasidi et al. (2012) found that the diversity of subspaces such as spaces with vegetation density, undulating landforms, or water bodies can facilitate social communication. Peschardt and Stigsdotter (2013) defined eight features based on the Perceived Sensory Dimension (PSD) expression and described the park's different characteristics using them. They assessed nine small-scale parks in the compact city of Copenhagen, using on-site questionnaires, and found that 'social' and 'serene' PSDs are psychologically related to 'restorativeness'. They also found nature to be important for people with high levels of stress. Carter and Horwitz (2014) selected 'personal health perception' and 'the importance of usability of the green space' as the investigation factors and found a relationship between the quality of green space (in terms of cleanliness) and the better state of personal

health perception. Akpinar (2016) investigated the relationship between green space quality, physiological activity, and people's health. He found that the approximate distance from the urban green space is in relation to increasing the frequency of physiological activity. He also found a relation between the quality of green space (such as proper maintenance and cleanliness) and the persistence of physiological activity. In this regard, physiological activity is constantly associated with low-stress levels and better psychological health, and the duration of physiological activity is associated with long-term physical health. In another study, Akpinar and Cankurt (2016) investigated the relationship between physiological activity and urban green space's features and characteristics and found that the proximity to an urban green space with many trees, exercise equipment, and picnic areas is positively related to constant physiological activities. In a study conducted by Wood et al. (2017), the relationship between psychological health and green space was evaluated. The green space characteristics were categorized into three groups of 'recreation spaces', 'sports spaces', and 'nature spaces', each has its own features and characteristics. They concluded that access to all these three types of spaces from the

people's residence is positively related to their psychological health and green spaces are important to have different sizes and various functional characteristics. From the literature review in this section, as shown in (Figure. 1), it can be concluded that users perceive the quality of green spaces through its features and characteristics; these characteristics encourage people to engage in activities that increase health and ultimately lead to a better life quality for those people who interact with green spaces.

3. RESEARCH METHOD

As mentioned before, the main purpose of this research is to investigate the relationship between the specific architectural characteristics of specific urban green spaces and their role in encouraging urban residents to choose a green space and engage with specific activities leading to types of health benefits. In this regard, the current research uses field analysis with on-site questionnaire interviews in two city parks in Urmia city.
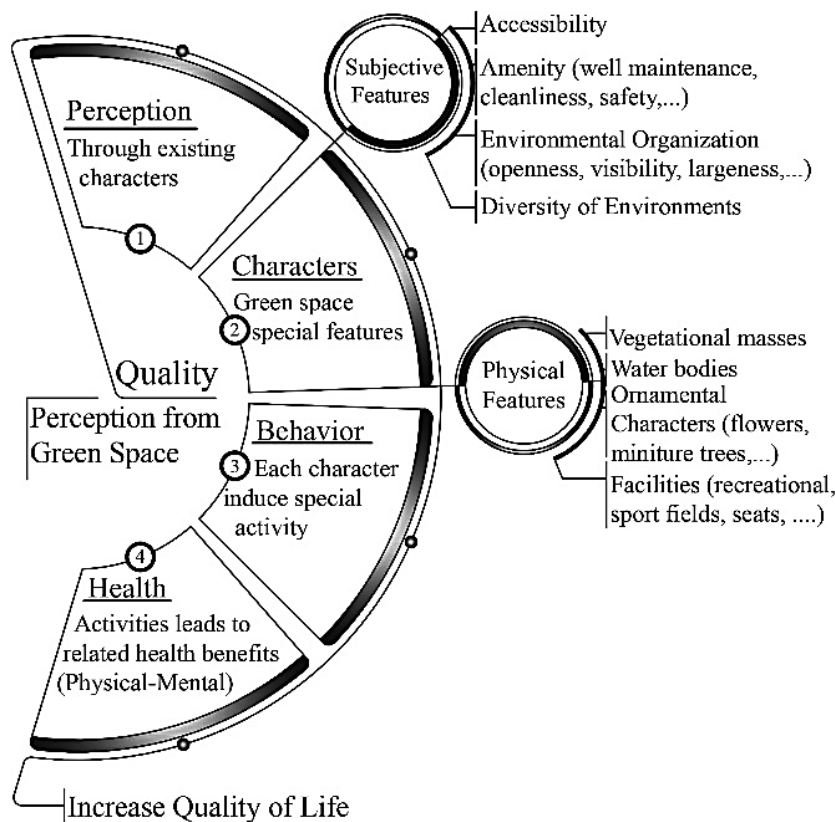

Fig 1. The relationship between perception of the green space quality and health outcomes

3.1. Selecting the Urban Parks

Urban green spaces had to be selected based on the criteria required for this research. Therefore, all the parks with the largest area and the greatest number of annual visitors in the city of Urmia were listed, and the case studies were selected based on the required features.

Therefore, the selected parks should have characteristics in accordance with the requirements of this research. Firstly, they should be located nearby each other so that both of them have the same accessibility for the visitors within the same distance from their residence. Secondly, these parks should have different features and characteristics in order to be sure that the people chose that park not just because of its proximity to their residence, but based on its different features' characteristic qualities. The factor that distinguished the selected parks (Figure. 2), the Coastal Park (Figure. 3) with an approximate area of (94517 square meters), and the City Park (Figure. 4) with an approximate area of (49485 square meters), from similar ones in Urmia was the extent and size of both parks and their popularity among the people. Explaining their differences, one of the selected parks had a centralized design, with the greatest emphasis on cultural/social communication and sports on which the design and layout of the park's elements were organized, and the other in the adjacent, separated just by a street, which had a linear and longitudinal design, with the greatest emphasis on its axis, encouraging people to walk in its longitudinal axis than sitting, resting, or having social activities.

View of the studied parks. The studied parks are located in djacent to each other
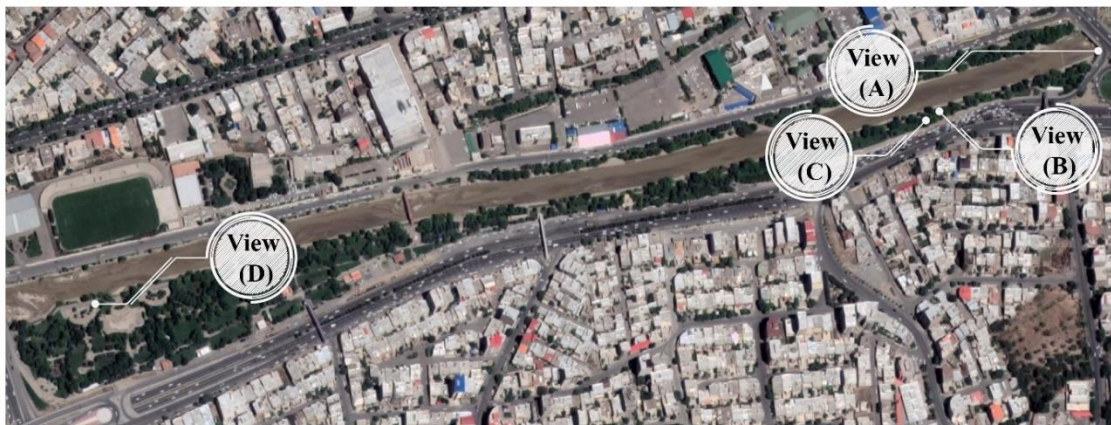
View of the coastal park
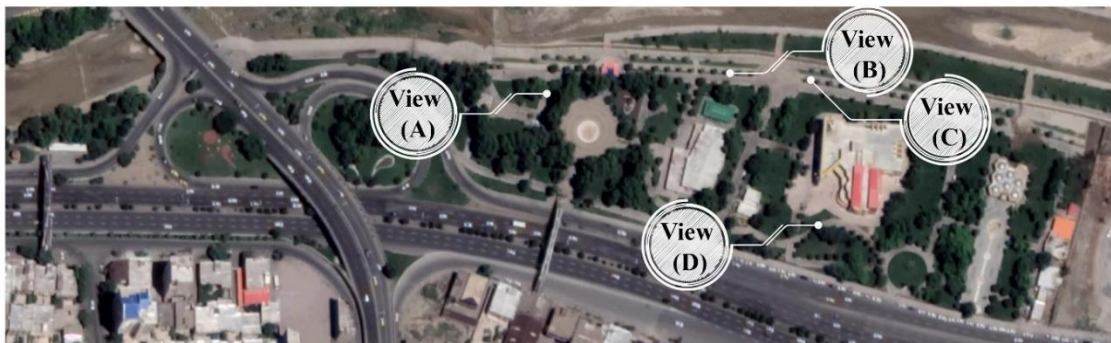
View of the City park

Fig 2. An Overview of the Case Studied Parks

Fig 3. Views from Coastal Park

Fig 4. Views from City Park

3.2. Field Survey

Field surveys were conducted for three months and a half from June 5, 2020 to September 22, 2020. It is worth mentioning that field surveys were performed separately in each of the selected green spaces. To achieve the maximum variety of data types, data collection was performed once every few days and at different times of the day. The reason for choosing this period of time for data collection was because in this season these parks had the highest number of visitors due to the mild weather conditions.

3.3. Questionnaire

Before designing the questionnaire (Appendix 1), the research background in this field was reviewed. Studies such as Akpinar (2017), Akpinar and Cankurt (2016), Peschardt and Stigsdotter (2013) were considered while designing the questionnaire.

The questionnaire used in this study was designed in three main parts. The first part of the questionnaire asked for the visitor's demographic information. The second part of the questionnaire defined a mechanism for assessing physiological health and its effect on 'physiological problems', and also for 'psychological health', by defining activity types and their effects on symptoms of psychological health. The third part of the questionnaire asked about the green space's features and characteristics in order to extract the most important qualitative features which affect choosing that particular green space. Also, information about the perception of self general health and the frequency of the visit were collected as well.

3.4. Statistical Analyses

Statistical analysis in this research included a descriptive analysis of qualitative aspects and assessing the correlation between research hypotheses and surveyed data. Before running an analysis to assess the presence or absence of relationships based on assumption, the normality of the collected data had been checked by the Komogorov-Smirnov test. As the data did not have a normal distribution, the appropriate statistical tests were selected to test the null hypothesis. Descriptive analysis was also used in this study to compare the qualitative results of equal samples from other studies. Four basic hypotheses were proposed in the present study and different statistical tests were employed to analyze each of them.

The first hypothesis evaluated the relationship between people's physiological health and other variables such as 'duration of physical activities'. To test this hypothesis, the absence of 'diseases caused by physical inactivities' had been used as an indicator for physiological health, and its correlation with the ordinal variable of 'duration of physical activities' was assessed using the Contingency coefficient test.

The second hypothesis sought the factors affecting park users' psychological health. As it was mentioned before, the people's self-reported psychological health status was collected using four questions with specific "yes" or "no" answers. The negative answer to the questions was considered desirable (without psychological problems). The normality test revealed that the distribution of the collected data was not normal, so the nonparametric "sign" test was employed. It is worth mentioning that Cronbach's alpha was used to measure of internal consistency of the questions wherein the value of 0.604 is obtained which is a little lower than the average acceptable value of 0.7 (Nunnally 1978; Nunnally and Bernstein 1994). Because the number of questions asking about people's psychological health was low (4 questions in the whole questionnaire), based on Nunnally (1967) even reliability levels of 0.5 and 0.6 were considered acceptable in the early stages of research. In this regard, the 0.604 value can reveal reasonable internal consistency (reliability) between these questions. The validity (accuracy) of these questions was also validated by consulting experts in the field of psychology, to make sure that these questions have covered the dimensions needed to measure psychological health concerning green space.

The third and fourth hypotheses evaluated the variations between psychological and physiological health in each of the cases studied parks. Again, the normality test showed that the collected data were not distributed normally, and the samples were not related, so the non-parametric Mann-Whitney U test was employed to test the null hypotheses in this part. A p-value lower than 0.05 was considered acceptable. IBM SPSS® 20 statistical package was used to analyze the collected data.

4. RESULTS

4.1. Demographic Information

Demographic information of the interviewees are shown in Table 1. This information is given separately for each of the case studied parks as well as for general data.

According to Table 1, in general, the largest number of park users were single low-income bachelor male students aged between 18 and 29 years. It should be mentioned that the income level of the interviewees was separated based on the Iranian averaged general income and household spending using the information given in the Statistical Center of Iran (2020), then converted to US dollars based on the Iranian national currency exchange data (Melli Iran Exchange Center 2020).

4.2. Activity Type in the Park

The type and duration of the interviewees' activities in the parks as well as their self-reported physiological and psychological health status are demonstrated in Table 2. The results showed that a total of 13.7% of the interviewees used the parks just for physical activity, 59.5% just for non-physical activities, and finally 26.8% of the interviewees used the parks for both physical and non-physical activities.

The results also showed that 11.9% of people had at least one of the diseases affecting their physiological health. Also, 79.8% of the interviewees admitted that they suffer from at least one of the psychological disorders mentioned in the questionnaire (see table 2 for more details). However, 85.7% of the interviewees were generally satisfied with their general health status and considered themselves to be healthy.

4.3. Characteristics of the Parks

Although both cases studied parks are located next to each other, they have differences in terms of design and qualitative characteristics. In the process of selecting the case study parks, the design features and characteristics that might affect the users to choose a specific park were analyzed and used in the questionnaire.

As can be seen in Chart 1, 'being suitable for walking' (60.3%), 'accessibility' (59.6%), and 'availability of quiet spaces for rest' (49.3%) were the main reasons for choosing the City Park; while the Coastal Park was chosen because of its 'accessibility' (59.5%), 'availability of spaces with proper shading' (49.5%), and 'suitability for walking' (48.5%).

Table 1. Study Population's Socio-demographic Information

Items		Study results (%)		
		All data	City Park	Coastal Park
Gender	Male	60.7	60.0	61.8
	Female	39.3	40.0	38.2
Age	18-29	73.8	71.0	77.9
	30-39	14.0	14.5	13.2
	40-49	3.3	4.5	1.5
	50-59	3.6	4.0	2.9
	60-69	5.4	6.0	4.4
Education level	High school or less	5.7	6.0	5.1
	College	30.7	29.5	32.4
	Baccalaureate	49.7	48.5	51.5
	Masters	11.9	12.5	11.0
	Doctorate	2.1	3.5	0
Marital status	Single	75.9	73.0	80.1
	Married	24.1	27.0	19.9
Occupation	Employed	30.7	34.0	29.7
	Retired	6.5	5.5	8.1
	Student	43.2	42.0	44.9
	Unemployed	19.3	18.0	21.3
Income level (per month)	$100 or less	62.5	60.0	66.2
	$100 to less than $500	29.2	29.5	28.7
	$500 to less than $850	6.3	7.0	5.1
	$850 or more	2.1	3.5	0

Table 2. Activity Types in the Park and Health Status

| Items		Percentage (%)		
		All data	City Park	Coastal Park
Physical activity (duration)	Physical activity	13.7	11	17.6
	15-30	18.8	31	32
	30-45	7.4	10	15
	45-60	7.1	14	10
	60-90	6.8	18	5
Nonphysical activity (type)	Nonphysical activity	59.5	64	52.9
	Seating and relaxing	35.4	39	30.1
	Watching other people	7.7	8.5	6.6
	Watching nature	25	25	25
	Meeting friend	49.1	48.5	50
	Meeting other people	11.3	11	11.2
	Social/cultural activities	6	7	4.4
Physical health	Cardiovascular disease	4.8	5.5	3.7
	Diabetes	18	2.5	0.7
	High cholesterol level	3.3	4.5	1.5
	obesity	45	4	5.1
Mental health	Stressed in daily life	69.9	70	69.9
	Feeling anxiety	41.1	39.5	43.4
	Low self-confidence	23.8	23	25
	Feeling loneliness	33.6	33	31
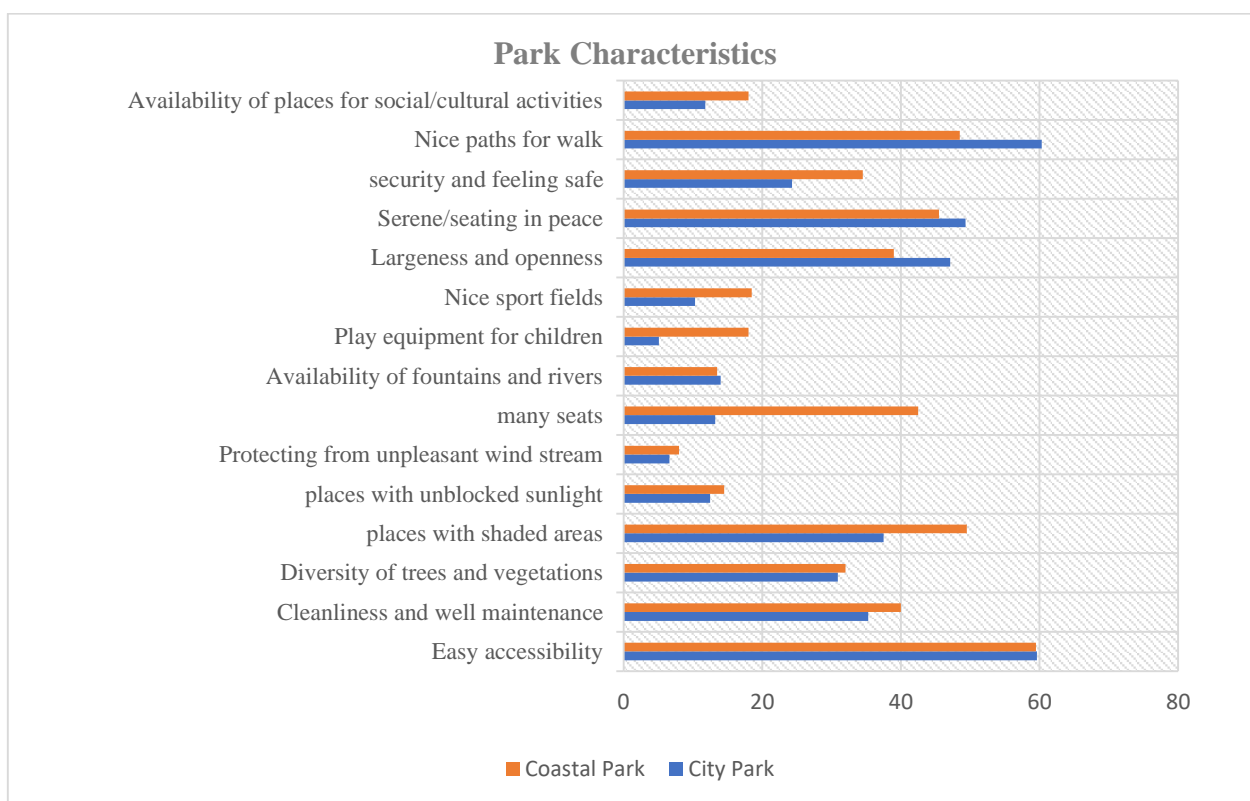
Chart 1. The parks characteristics and relative abundance of choosing by the users

4.4. Hypotheses, Correlation of Health, and Studies Parameters

As it was mentioned in Section 3.4, four hypotheses were proposed in the analysis process. These hypotheses were derived from theoretical and experimental studies in this field, and are adjusted to the case study sample. The results of the statistical analysis of these hypotheses are given in Table 3. The first hypothesis dealt with the relationship between the interviewees' types and duration of physical activities and their self-reported diseases. As the variables were ordinal (duration of Physical Activities (PA)) and nominal (disease types), the Contingency Coefficient was employed to test the correlation between these two variables. As can be seen in Table 3, the correlation between duration of physical activities and self-reported diseases in any cases was not statistically significant because the p-value was higher than 0.05. The second hypothesis dealt with the relationship between people's psychological health and park use. In this section, it is assumed that people using the parks more often have higher levels of psychological health. Because the collected data were not distributed normally, the non-parametric Sign test was employed to assess the null hypothesis. The result shows the rejection of the null hypothesis (p-value<0.0001) and we can see that the psychological health of the 'people using the parks more often' are in better condition (Table 3). The third and fourth study hypotheses dealt with the difference between physiological and psychological health in the two case studied parks. The non-parametric Mann-Whitney U test was used to assess both hypotheses. The third hypothesis dealt with the question of whether the psychological health of people using the City Park is significantly different from those who use the coastal park. As the p-value was higher than 0.05 (0.759), it can be concluded that the null hypothesis was accepted and the difference between these two groups was not statistically significant. The fourth hypothesis also raises the question of whether the physiological health of people using the City Park is significantly different from those who use the Coastal Park. As the p-value was higher than 0.05, the difference between these two parks was not statistically significant either (Table 3).

5. DISCUSSION

The present study was divided into two stages. In the first stage, this study dealt with whether people using the park more often were physiologically and psychologically healthier. In the second stage, by assessing the characteristics of the parks, the results obtained from first stage were analyzed. Since public health can be divided into two categories of 'physiological health' and 'psychological health', these two aspects were considered separately.

That's because the parks provide suitable environments for users to engage in physical activities, many studies dealings with the people's physiological health associated with green space, used physical activity as a mechanism to assess the possibility of preventing getting infected by various diseases (Benton et al. 2018; Hunter et al. 2015; Mytton et al. 2012; Pietilä et al. 2015). The World Health Organization (WHO) states that non-communicable diseases cause 41 million deaths per year, which is 71% of the total world's deaths. These non-communicable diseases include cardiovascular disease, diabetes, obesity, and overweight (with its side effects). WHO states various causes for these types of diseases, one of which is the lack of physical activity (WHO 2016). This issue was not ignored by studies dealing with the green space. Richardson et al. (2013), for example, in a study concerning a relationship between green space accessibility and physical activity in New Zealand, found that accessibility to the green space in the neighborhood is correlated to lower cardiovascular diseases. Similar results were also found by Paquet et al. (2013). In another study, Coombes et al. (2010) found that residence adjacent to some types of green spaces motivates physical activity and prevents overweight and obesity. There are also other studies revealing that people who have a continuous connection with green spaces are less prone to diabetes, probably because of the physical activities they do in the green space (Astell-Burt et al. 2014; Bodicoat et al. 2014; Dendup et al. 2018; Müller et al. 2018)

The results of the present study showed interviewees relatively are in good physiological health conditions, as just 11.9% of the participants in the questionnaire interview stated having at least one of the physical diseases mentioned in the questionnaire. That's because assessing qualitative features was important in the present study. This study did not seek for a relationship between having non-communicable diseases and interviewees' physical activity, but searched for a relationship between the 'duration' of physical activities in the park and these diseases. The relationship between the duration of physical activity and physiological health was examined to determine whether park features provide a context for a long-term activity that as a result of that people to healthier. Since only 13.7% of park users had chosen parks for physical activity and more for relaxing and being in comfortable condition, it wasn't unexpected that there wasn't any

correlation between physiological health. Another aspect of public health is the people's psychological health which has also been assessed in relation to green space. According to the World Health Organization (WHO), having accessibility to green spaces is very important for psychological health, because green space provides an environment for full relaxation. Green space's natural environment can also help in the treatment of mild depression and reduction of physiological stress indicators (WHO 2017). Studies in the field of green space in relation to mental health indicate that green space is associated with reduction of stress and anxiety levels that can affect mental health (van den Berg et al. 2015; Ulrich et al. 1991; Ward Thompson et al. 2012). In fact, the questions employed to assess interviewees' psychological health in this study were also used in previous studies as a mechanism for assessing psychological health too. These questions aimed to assess psychological health by asking about the interviewees' stress levels in their daily activities, anxiety, self-esteem, and loneliness. The results showed a correlation between using the parks and having better psychological health conditions. This result was anticipated due to the fact that 26.8% of the participants chose the parks for both physical and non-physical activities, while 59.5% of the interviewees used the park for non-physical activities. Studies that have examined the relationship between mental health and the use of green space, in general, have identified three important factors for this association. Among them we can refer to the previous studies (Dadvand et al. 2016; Jolanda Maas et al. 2009) that highlight the importance of parks for providing a context for social interaction. They reported subjects who can meet and talk to their friends and have less feelings of loneliness and perceive more social support. Also, the result of the study by Chiesura (2004) assessed people's motivations for using the parks and found "to relax" as the most frequent answer given by the participants. Parks also create a natural space within the contemporary mega-cities and make it easier for the citizens to face natural space, which has positive effects on people's psychological health. As reported by Tyrväinen et al. (2014), even a short visit to the natural space has a positive effect on 'stress relief' compared to the built environments. In short, the three factors including 1) social interactions in these spaces that eliminates the isolation of individuals, 2) availability of peaceful environments for relaxation, and finally, and 3) facing and watching nature that reduces the factors lead to endangering mental health, such as stress, anxiety, etc., through the different fleeing that comes with being in nature. These factors are summarized in Figure. 6, which describes the relationship between mental health and green space. They were also the first choice of the interviewees in this study.

Table 3. Statistical Tests' Results of Study's Hypotheses

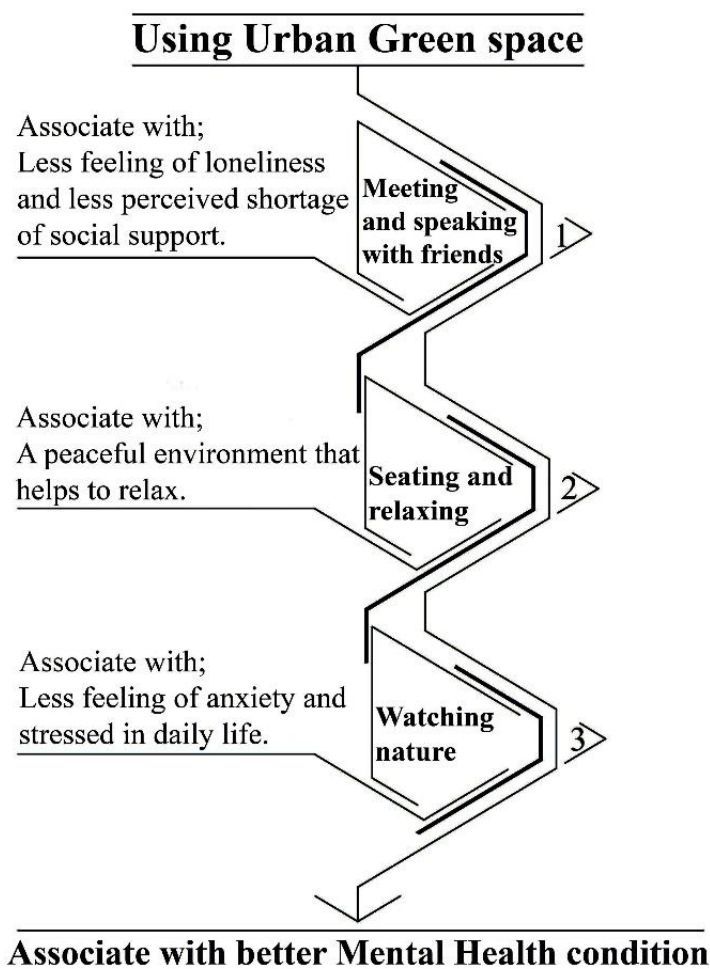| Study Hypothesis	Statistical analysis	Subject		P-Value	
1	Contingency Coefficient	Duration of PA	Cardiovascular disease	.819	×
		Duration of PA	Diabetes	.615	×
		Duration of PA	High cholesterol level	.538	×
		Duration of PA	obesity	.654	×
2	Sign Test	Differentiation of people using the parks and people who are not (Psychological health)		0.000	√
3	Mann-Whitney U	Differentiation of two parks (Psychological health)		0.759	×
4	Mann-Whitney U	Differentiation of two parks (Physiological health)		0.650	×

Using Urban Green space

Associate with;
Less feeling of loneliness
and less perceived shortage
of social support.

Meeting and speaking with friends 1

Associate with;
A peaceful environment that
helps to relax.

Seating and relaxing 2

Associate with;
Less feeling of anxiety and
stressed in daily life.

Watching nature 3

Associate with better Mental Health condition

Fig 6. The relationship between green space use and psychological health based on the study results

It should be noted that using the parks for both physical and non-physical activities can improve users' psychological health. In this regard, Mitchell and Astell-Burt found that physical activity in green spaces is beneficial not only physiologically but also psychologically (Astell-Burt et al. 2013; Mitchell 2013).

Based on the findings of the present study (and similar studies mentioned earlier), it is obvious that being in constant connection with urban green spaces has some undeniable health benefits. Encouraging people to use green spaces is affected by some quantitative as well as qualitative factors. One of the quantitative factors affecting public health is the number of green spaces within certain distances from an individual's residence (J Maas et al. 2009; Jolanda Maas et al. 2009; Nutsford et al. 2013). However, there are other factors influencing people's preference for green spaces. Reviewing quantitative studies with objective measures shows some differences between findings in the relationship between public health and the distance to the green space. Different studies mentioned numbers between '300-400 meters' and ' 1-3 kilometers' as the optimum distance between the

individual's residence and the nearest green space. An important factor that can be effective in creating these differences is 'the quality of green space', which can be considered the specific features and characteristics in terms of green space quality. The next step in this study was to assess the impacts of green space quality on people's self-reported physiological and psychological health. As the quantitative measures (the green space's distance from the people's residence was not considered in this study), two parks in the same neighborhood but with different characteristics were selected as case studies, the specifications of each were already described. It was assumed that people visiting these two parks have different self-reported health conditions caused by the differentiation of design and environmental organization in these parks. So, the variations in interviewees' physiological and psychological health and their relationship with the park type were examined. However, no significant differences were found between interviewees' physical and psychological health in the two case-studied parks. The reason for this indifference can be understood

based on the most common features and characteristics chosen by the users.

In general, based on the participants' self-reported health status and their preferred qualitative characteristics, and considering the fact that 81% of the interviewees were using the parks continuously (36% of them used the parks at least three times per week), it can be concluded that easy accessibility could be a determining factor for being in better health condition; therefore, it was not unexpected to see 85.7% of the respondents were generally satisfied with their health conditions when they were asked to describe their perceived self-rated health status. Also, other aspects like 'nice paths for walking' and 'serene/seating in peace' for City park and 'places with shaded areas', probably for seating and resting and 'nice paths for walking' for Coastal Park, that has been chosen more by the participants in the interview, indicate that people use the park to be able to walk or sit and relax in a quiet space away from the hustle and bustle of the city, which ultimately leads to increase mental health of the users, which could explain the relationship between park use and the mental health in the present study.

6. CONCLUSION

In relation to the public health of the citizens, urban spaces could provide health requirements both physiologically and psychologically. According to the results of the present study, one of the spaces that can meet both aspects of these requirements is urban green spaces. This study examined the role of green spaces in improving public health using two urban parks in Urmia city as case studies (the City Park and the Coastal Park).

This analysis of the results did not show a significant correlation between interviewees' self-reported physiological health and the duration of their physical activities, while the correlation between participants' self-reported psychological health and green space usage was statistically significant. In conclusion, the results of the present study showed that people using the green spaces regularly had better physiological and psychological health conditions, which is in line with the results obtained by previous studies. Finally, this study highlights the importance of considering characteristics like 'easy accessibility', 'having nice paths for walking', and 'serene spaces for seating in peace', and 'places with shaded areas' while designing urban parks. Also, the role of urban green infrastructures and providing per capita green space needed by people living in the urban environments in improving public health was highlighted. The results

of this study can help landscape architects to design better and healthier urban parks.

COMPLIANCE WITH ETHICAL STANDARDS

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APPENDIX 1. sample questionnaire used in the interview

Park:...... / Number ....

Gender: Male ☐   Female ☐

Age: 18-29 ☐   30-39 ☐   40-49 ☐   50-59 ☐   60-69 ☐

Education Level: College ☐   Baccalaureate ☐   Master ☐ Doctorate ☐

Marital Status: Single ☐   Married ☐

Occupation: Employed ☐   Retired ☐   Student ☐   Unemployed ☐

Income Level   100$ or less ☐   100$ to less than 500$ ☐   500$ to less than 850$ ☐   850$ or more ☐
(per month):

State the main reason for using the park now?

☐ Physical activity (such as: walking, cycling, using the sport facilities in the park, etc.)

-If the reason for using the park is physical activity, how many minutes of physical activity do you usually have?

15-30 minutes ☐   30-45 minutes ☐   45-60 minutes ☐   60-90 minutes ☐

☐ Other than physical activity(such as: siting and relaxing, studying, meeting friends and acquaintances, etc.)

-If the reason for using the park is other than physical activity, state the main reason?

siting and relaxing ☐   watching other people in the park ☐   watching nature ☐   speaking to friends ☐

meeting other people ☐   Cultural and social activities ☐

Which of the following is one of the main reasons for choosing this park to use (you can select multiple options at once)?

☐ Easy accessibility   ☐ Cleanliness and well maintenance ☐ Diversity of trees and vegetations ☐ places with shaded areas

☐ places with unblocked   ☐ Protecting from unpleasant wind   ☐ many seats   ☐ Availability of fountains
   sunlight   stream   and rivers

☐ Play equipment for   ☐ Nice sport fields   ☐ Largeness and openness   ☐ Serene/seating in peace
   children

☐ security and feeling safe ☐ Nice paths for walk   ☐ Availability of places for social/cultural activities

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Do you have any of the following diseases (you can select multiple options at once)?

☐ Cardiovascular disease   ☐ Diabetes   ☐ High cholesterol   ☐ Obesity and overweight

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Do you experience stress in your daily life?   Yes ☐   No ☐

Do you get anxious on daily basis?   Yes ☐   No ☐

Do you consider yourself a person with low self-esteem?   Yes ☐   No ☐

Do you feel lonely and consider yourself a lonely person?   Yes ☐   No ☐

Have you used the park regularly in the last four months?

Once a week ☐ Twice a week ☐ Three time a week ☐ No, I didn't use it ☐

Are you generally satisfied with your health condition   Yes ☐   No ☐

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