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UTILIZATION AND PHYSICAL FEATURES OF PUBLIC OPEN SPACES IN BANDAR ABBAS, IRAN

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ABSTRACT

Public green spaces in the cities are one of the important urban spaces that increase the chance of physical and mental health of residents. Such spaces in terms of social, economic, and environmental functions enhance the quality life of people hence, these days investigation of urban green spaces seems essential to increase resident's health. This study explored all the physical factors that affect the chance of people to visit public open spaces in the city. After reviewing previous researches all the items that can be contributed to park utilization have been introduced, then a questionnaire was designed based on these factors to find out the items that associate with each factor and introduce the physical features of the public open spaces. The data was gathered by using questionnaire survey that distributed randomly in different public open spaces of the city. Finally 60 questionnaire was collected as pilot study to do correlation analysis. The findings of this paper showed the final items used to physical factors in determining the level of park utilization.

INTRODUCTION

Green spaces, especially parks, play an important role in improving the citizens' health and quality of life. Such spaces in a city can serve as a place where people can do various recreational activities. Fredric Olmstead introduces parks as an urban place where the residents can experience beauty of nature. It is also a place for relaxation, spending time, doing various sports activities, and playing various games far from the urban commotion [27].

Parks can also be introduced as a place for interaction between friends and neighbors. In addition, parks play a very beneficial role in increasing physical and sports activities among citizens. These places can provide a pleasant place for people to walk in and do other physical and recreational activities. Familiarity with people who use the park and kinds of activities they do can be helpful in increasing the quality and utilization of parks [19],[20]. Furthermore, a large number of studies have shown the effect of the physical environment on physical activities. Previous researches have also revealed that regular park users possess the required standards of doing physical activities as compared to those who do not use parks very often [8]. Furthermore, studies have pointed out the significant effect of the physical environment on the amount of the residents' physical activities. In this regard, physical characteristics of parks and other green spaces such as safety, comfortability, accessibility, and facilities play an important role in physical quality of parks [32]. Various physical characteristics and facilities of parks can influence various physical activities differently [8].

[3] introduced some factors related to the extent of utilization of parks by users. These factors include qualitative and quantitative characteristics, users' personal characteristics (social and economic status, age, gender, and race), psychological factors (individual barriers) effective on personal decisions, accessibility of local facilities, the extent to which the park can meet needs of the local users, parks' qualitative status, and safety. On the other hand, these factors can be categorized into three groups: individual characteristics, social characteristics, and physical characteristics of the environment.

The present study intends to introduce various physical factors that can influence utilization of parks and physical activities in parks reviewing the previous studies. As the case study, this paper studies parks in Bandar Abbas, Iran. The present paper is based on the results of pre-test of a comprehensive study of Bandar Abbas parks. It attempts to introduce the items associated with the measurement of physical characteristics of parks that influence park utilization in the city. The results of the reliability of these items proved using SPSS software shows that they can be used as reliable items to measure physical characteristics of parks.

Number of Parks

Number of parks and playgrounds in neighborhoods is associated with the amount of physical activities. For example, a survey conducted on 500 citizens living in 56 neighborhoods in Portland revealed that the citizens who lived in neighborhoods with more parks walked more than the citizens who lived in neighborhoods with fewer parks (Li et al., 2005). As reported by some studies and surveys, the larger the number of public places and green spaces is in a neighborhood, the higher the rate of the residents' physical activities is. Furthermore, a study conducted on female citizens of 6 different cities in Australia manifested that the citizens who accessed parks within the radius of 1 mile from their living place had more physical activities compared to other citizens. For each park within the radius of 0.5 mile from a household, 17 minutes of walking has been reported [5].

KEY WORDS

physical features, public open space, size of park, number of parks, Bandar Abbas traditional medicine, *Mus musculus*, *Toxoplasmosis*.

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Size of Parks

Previous studies showed that size of parks and green spaces was associated with utilization of parks and amount of physical activities. In this respect, an Australian study manifested that the total percentage of parks' space in neighborhoods had direct relationship with children's physical activities (Roemmich et al., 2006). According to the results, if park space increases 1%, children's physical activities will increase 1.4% showing that the size of the space allocated to parks in neighborhoods has positive effect on physical activities.

Some studies have also reported the role of park size in neighborhoods. For example, results of a study showed that bigger parks are less probable than small parks to be selected by users (Kaczynski et al., 2008). On the other hand, studies have revealed that bigger parks are of higher interest for users to walk in (Giles-corti et al., 2005).

Accessibility

Physical and visual accessibility to green spaces and parks are primary concepts in planning and such places and they are considered the essential parts of urban planning in many countries. Parks must be planned and located where they are clearly visible. Parks can provide various accessible facilities and opportunities for people and play an important role in enhancing urban life quality (Goodmann, 1968). In a city or neighborhood, sparsely located parks are utilized more than densely located parks. Accessibility and spatial distribution are two factors required to measure parks (Talen, 2000). According to Whyte (2000), the accessibility of a place can be evaluated based on its physical and visual connection in residential neighborhoods. An accessible and successful park is a place where people can easily reach and is visible even from a far distance.

Accessibility is defined as "individuals' ability or freedom to meet their needs for the purpose of maintaining their life quality" (Lau & Chiu, 2003). A public place is considered accessible if it can be reached by different individuals and provides various opportunities for different individuals. In this way, it can be regarded not only as an accessible point, but also as an accessible place. It is worth noting that accessibility should not be just based on an idealized healthy adult. Rather, it should be based on different individuals such as a senile person with a cane or walking stick, a mother pushing a stroller or an eight-year-old kid riding a bicycle (Harnik, 2003). Most of the studies conducted on accessibility and park use have been associated with green spaces ([19],[20] et al., 2008). Results of a study in Chicago revealed that the citizens who lived closer to a park utilized the park more than those who lived far from the park (Tinsley et al., 2002).

Generally, the larger the number of parks within the radius of 200 meters in residential neighborhoods, the more the parks are utilized since it is less required to use a vehicle or car. Another study conducted on different Australian neighborhoods showed that people prefer to use or visit the parks with the shortest distance from their living place (Gilles-Corti et al., 2005). Out of thirteen studies associated with physical activities and parks, eight studies manifested the direct relationship between proximity of parks and increase of physical activities. On the other hand, results of a study manifested that American adults who could access or reach parks easily did physical activities two times as much as those who lived within farther distances from parks (Kaczynski & Henderson, 2000). It has also been noticed that sidewalk green spaces are utilized more than parks or other green spaces in the neighborhood (Ferre´ et al., 2006).

Facilities and amenities

The quality and condition of sports and play equipment in parks can effectively increase or decrease park use. These facilities are of variable importance based on the characteristics of the environment ([19],[20] et al., 2008). A large number of studies have illustrated that presence of various sports and play facilities and equipment for children plays a significant role in encouraging people to attend and utilize parks. Some studies on parks in residential neighborhoods reported that even the nearby parks were not utilized by the residents due to the absence of appropriate play facilities and equipment for children (Veitch et al., 2006).

The activities based on which various sections and parts of a park are planned and built must be motivating enough to attract people to parks. The larger the number of activities in a place, the more the opportunities people can have to contribute (Whyte, 2000). Furthermore, one of the key advantages of public places is to be all-inclusive and appropriate for all individuals. In this respect, these places should cover all residents in a neighborhood and provide opportunities and services for various activities of different groups of people (Duffy, 2003). The presence of walking routes and paths in parks has been known important for park users (Lloyd et al., 2008). In addition, park facilities including appropriate seating place, drinking fountain, pergola, and rest room can positively affect the amount of users' utilization of a park ([19],[20] et al., 2008). Awnings or any place appropriate to cast shadow can also influence users' utilization, especially during the day (Tucker et al., 2007).

Another study investigated the role of facilities and amenities in thirty three parks in Ontario, Canada, the results showed that parks with more sports and recreational facilities and equipment were utilized for physical and sports activities more than the parks which were poor in this regard. In this respect, it was

revealed that parks with walking routes and paths were utilized twenty six times as much as the parks which did not have this path (Kaczynski et al., 2008). Also, a study conducted on four different parks manifested that parks which included play facilities, sports grounds, and walking paths were utilized for sports activities more than the other parks (Giles-Corti et al., 1996).

Attractiveness

The beauty of parks and green spaces plays an important role in the rate of park use by all age groups. Findings of a study revealed that if parts of a park become visually beautiful by planting trees, they will be utilized more than the other empty parts (Giles-Corti et al., 1996). In this regard, graffiti on the walls reduces park use. In addition, physical status of parks such as cleanness can encourage people to visit and utilize a park ([19],[20] et al., 2008). Also, green spaces in parks such as various trees, lawn, flowers, and fountains are effective factors in attracting people to parks. Green spaces in parks can increase fresh air in the environment leading to the individuals' willingness to attend and utilize a park (Lloyd et al., 2008).

Safety

A large number of studies associated with safety and utilization of local parks revealed that fear of crime was the most important barrier to the presence of people in parks and green spaces (Mowen et al., 2005). According to the results, the respondents pointed out that they would be willing to utilize parks if safety increased. In this regard, a study investigated the role of safety of neighborhoods in park use, the study reported that parents who perceived their neighborhood to be unsafe due to some anarchy and incivilities such as graffiti on the walls, litter, and unsafe nights, did not permit and encourage their children to attend and use local green spaces (Miles, 2008). The respondents who perceived safety and security in their neighborhood encouraged their children to play in the local parks and green spaces 6% more than the other ones. On the other hand, a qualitative study of 26 local parks in Montreal, Canada, revealed that parks which had less physical incivilities such as graffiti on the walls, were utilized more by the local residents (Coen & Ross, 2006).

Lighting, watchmen, high safety, and surveillance have been reported to important factors in increasing feeling of safety in parks and green spaces. On the other hand, the presence of the homeless, addicts and evidence of substance abuse such as syringe, harmful things such as broken glass, and bikers on the walking paths in parks can reduce safety in local parks ([19],[20] et al., 2008).

Chapman believed that physical characteristics are highly probable to influence our behaviors. Spaces are most effective when they are clearly defined and possess features such as sequence, variety, surprise, abstraction, and enclosure to establish safety and feeling of safety (Chapman, 2010).

Lynch believed that each space proposes and restricts the activities, therefore; the environment should be optimal and physically safe. According to Lynch, legibility is the most primary concept in an urban space. In his opinion, eligibility is helpful in easily knowing and understanding the urban elements so that we can imagine their relationship in an integrated framework. This helps us understand the space better and find ourselves in a safe space (Lynch, 1960). In this regard, Newman introduces defensible spaces that include real borders, symbolic borders, and surveillance opportunities. He believes that what is required in the unfamiliar space of neighborhoods in metropolises is a defensible space with a fairly average population density where the residents can control the neighborhood and prevent criminal behaviors [23]. It can be concluded that the experts and authorities believe that maintaining safety in urban green spaces is the basic duty. In this regard, it is essential to make efforts to achieve the optimal safety in urban green spaces since urban green spaces play an important role in the society and its safety.

Comfortability

Feeling of comfortability in parks is among the components associated with the presence of people in parks and green spaces. Comfortability in parks deals with issues such as seating place, relaxing atmosphere, shadow of trees, and well-paved paths for walkers (Pasaogullari & Doratli, 2004). Unfortunately, these issues have been ignored in many studies. According to the findings of previous researches, shadow of trees and awnings can positively influence park use in cities with hot and humid climate [14].

MATERIALS AND METHODS

The present survey studied different parks of various neighborhoods in Bandar Abbas, Iran. Bandar Abbas is located on northern coast of Persian Gulf in south of Iran. It is among the important southern cities of Iran and capital of Hormozgan Province. To collect the required data for this study, 60 questionnaires were randomly distributed in parks and green spaces of various neighborhoods in Bandar Abbas.

Each questionnaire consisted of 22 questions arranged in two parts and investigated the local residents' park use and physical quality of parks and green spaces. The first part of the questionnaires consisted of 17 questions and investigated factors related to the physical status of parks including comfortability,

safety, attractiveness, accessibility, amenity and facilities. The second part of the questionnaires intended to collect information about the participant's age, gender, and education. These 60 questionnaire were distributed as pilot study to test Cronbach's alpha of each physical factors of public open spaces.

The questions or items which investigated the relationship between physical quality of parks and users' satisfaction were on five-point Likert scale, from a little (1) to a lot (5). The respondents were asked to rate the physical quality of the park they had visited and utilized most frequently from 1 to 5. Then, the responses were categorized based on their association with one of the park characteristics for the purpose of testing and analyzing the reliability of items using SPSS software. According to Palant (2007), testing and analyzing the reliability of items reveals if the items are reliable enough to measure a factor. Using and calculating Cronbach's alpha coefficient is the most widespread way to test reliability as used in this study.

Results of Cronbach's alpha of each variables (physical factors) show how the items are in relationship with each other to be used to measure the physical characteristics of parks. They can also be used in future studies. The result of Cronbach's alpha coefficient varies between 0 and 1 for each item and the whole questionnaire. The closer the result is to 1, the more reliable the item is.

RESULTS AND DISCUSSION

In order to prove the reliability of the questionnaire items, a pilot study was conducted. In the pilot study, 60 questionnaires were distributed among the users of different parks in Bandar Abbas. The participants of the pilot study were 27 male and 34 female users aging from 18 to 68.

The data collected through the questionnaires were analyzed using SPSS software for the purpose of testing reliability. According to the results shown in Table 1, Cronbach's alpha of all items were reported to be above 0.6. Hence, they are reliable enough to be used to measure the physical characteristics of parks in the city.

Table 1: Results of Cronbach's Coefficient Alpha for Physical Variables of Park

Physical Characteristics	Items	Mean	Cronbach's coefficient alpha
Comfortability	Appropriate seating place Shadow of trees Type of carpeting	2.75	0.63
Amenity and Facilities	Sports equipment Children's playground Buffet or coffee shop	2.7	0.71
Accessibility	Easy accessibility to park by walking Easy accessibility to park from the street Easy accessibility to park using car	3.5	0.77
Safety	Park's lighting at night Presence of hooligans or annoying people Good visibility in park	2.6	0.70
Attractiveness	Beauty of trees Beauty of park's green space Beauty of pavements Beautiful lighting in park Park cleanness	2.6	0.63

According to the results of the present study, comfortability of a park deals with issues such as appropriate seating place, shadow of trees, and type of carpeting that provides an appropriate path for users to walk in the park. Facilities and amenities of park deals with providing facilities for sports activities and children play as well as a good place such as a buffet or coffee shop for eating and drinking. From the viewpoint of users, beauty of a park depends on cleanness of park, beauty of green space and trees, park's lighting at night, and pavements of park. Accessibility, introduced by a large number of studies as the most important factor associated with park use, is influenced by accessibility to park by walking, accessibility to park from the street, and accessibility to park using car. And safety is associated with factors such as park's lighting at night, presence of hooligans or other annoying people such as addicts, and good visibility in park. These factors are also introduced as important issues for defensible spaces.

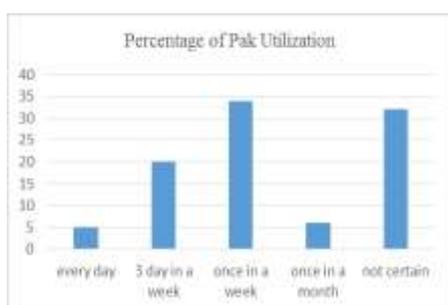


Fig. 1: Result of Park Utilization.

Based on the findings, the rate of people's satisfaction with physical quality of parks is shown to be at an average level or below. On the other hand, the results of the pilot study showed that only 20% of the respondents go to parks regularly and frequently (three time a week) and more than 50% of participants stated that they visit parks less than once in a month. The low utilization of parks by users and respondents can be inferred to be in relationship with the physical quality and status of parks as well as the small number of local parks in Bandar Abbas in some neighborhoods. Furthermore, 34% of the respondents pointed out that they mostly utilized local large parks in Bandar Abbas rather than neighborhood parks, hence, it can be concluded that in addition to the physical status of parks and number of parks, size and dimensions of a park can influence the users' selection and utilization of that park.

CONCLUSION

If parks are planned and designed based on the needs, they can be regarded as important facilities for doing recreational activities and spending leisure time. Furthermore, they will provide opportunities for physical activities which are helpful in improving the citizens' mental and physical health. Accessibility, safety, size of parks, number of parks, beauty, and facilities have been regarded by many researchers as the factors that influence utilization of parks and green spaces.

In this regard, accessibility has a direct relationship with park use. An accessible and frequently-visited park is a place located in the center of a neighborhood to be close to the households living in the neighborhood. In addition to accessibility, physical characteristics of parks can significantly increase park use as investigated and shown in this study.

Local parks should be devoid of strangers, addicts, and vandalisms such as graffiti on the walls and litter. Indefensible spaces can be adjusted by shortening and lowering the trees and hedging plants to prevent delinquency in parks. As a result, surveillance and safety increase and more users will attend and utilize the parks. On the other hand, developing green spaces in parks, fountains, and colorful carpeting can make parks visually beautiful. Seating places, shadow of trees, and facilities for various sports activities and children play can attract people of various ages to parks. If people of various age groups attend and use a park, vandalism reduces to a large extent. Increasing the number of trees, developing green space, appropriate lighting, and cleanness of a park provide a visually beautiful view of the park for the users. Finally, it can be claimed that high success and utilization of a park are achieved if all of the characteristics investigated in this study and not just one or some of them are considered. A local park is considered successful if it is planned and designed based on all of the factors mentioned and investigated in the present study.

CONFLICT OF INTEREST

There is no conflict of interest.

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None

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