EXAMINING AND ANALYSIS OF ROLE OF SUBURBAN PARKS IN REGIONAL COMMUNICATIONS (CASE STUDY: YAZD KUHESTAN PARK)

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ABSTRACT

Nowadays the notion of cities without green space in its different forms is imaginable. Cities' rapid development entailed undesirable effects on mind and feeling of Twenty-first century human and detaches its inherent and old correlation of human with the nature , thus the only link between human and the nature is seeking shelter in parks and urban green spaces. Since parks are element of space organization that play their spatial convergence role properly, therefore understandings penetration area of parks and landscapes can be effective in realistic evaluation and prediction of necessity, supply and allocation of recreational required spaces. The objective of this research is determining penetration area of Kuhestan Park at regional level and examining effective factors on it. This research is practical-development type and using descriptive-survey and questionnaire tools that its validity and rialiabality is confirmed through pretest ,and it has gathered required information from visitors of the park, then by entering the data to SPSS software and using statistical model such as Chi-square, Spearman, T-test the final analysis on the data is carried out. The research result shows that the highest population of visitors to Kuhestan Park is from Yazd, Taft, Bafq, Abarkouh and Rastaaq with 88.5,5, 3.7, 1.9 and 0.9 percent respectively. Therefore one can conclude that the influence domain of Kuhestan Park is at level of Yazd, Taft, Bafq, Avarkouh and Rastaaq where with increase of distance the penetration of Kuhestan Park decreased. And this suggests the

relative effect of Kuhestan Park in bringing about convergence in the region. Also it is worthy to mention that factors such as gender, marital status, and city of residence, visit duration, income level and reason of visit have pivotal influence on penetration area of Kuhestan Park.

Key word: Regional Convergence, Penetrability, Kuhestan Park, Yazd

INTRODUCTION

A city with current features is product of industrial era and urbanization life is the most knotty form of human life throughout of the history for the reason of certain and comprehensive problems and features [1]. Most of people experience the feeling that an urban region is no longer desirable for life and activity [2]. Cities population growth in its turn engendered problems such as heavy traffic, noise, emission of lead in the air, increase of industrial workshop an urban molestation in addition to space pollution, increase of garbage amount and emerging disease and various microbes in a such manner that these challenges forced officials and city planner to find a solution. One of solution for solving environmental problem and turning the urban environment into viable environment for citizen is developing urban landscape [3]. Green space that forms a part of city air as a real phenomenon is one of the first issues that human always has touched it [4].

Importance of urban landscape is to such extent that nowadays it is considered as one of the determinant of society developments [5]. And it is reckoned as one of five important urban utility [6]. In nineteenth century the huge urban parks have emerged for preventing sever density and some inconsistencies are dubbed as "sanitary landscape". These parks not only have had recreational value and were opportune place for passing leisure time by people of city but also often prevent ill-shaped and unconsidered urban extension. But in twentieth century parks was not regarded as urban environments complementary but are considered as a shelter where twentieth century man breathe there clean air, wander freely, smell grasses and followers and trees [7]. Since small parks have low number of visitors during day and in other word just insignificant number go sometimes there out of necessity therefore large parks have begun to emerge for the reason that they influence more extensively on cities air and other special conditions rather than smaller parks [8]. Thus these parks can have more penetrability. Therefore regarding Iran's territorial condition and ever-increasing importance of park and green spaces in human life, in recent years the issue of penetrability of these utilities have attracted

serious attention of this country urban planner and researches.

Yazd city is among desert cities of Iran that urbanization turns back to long ago. Physical growths of this city in inorganic stage has been highly rapider than growth of population and realistic requirements of the city, thus the city is sustained to rebellious horizontal extension [9]. With extension of Yazd city and need of life in modern houses and apartments it is no longer possible to create garden in old-fashion way [10]. Therefore one experience the need of creating urban landscapes such as urban parks, local arcs and so on. Since any citizen for accessing to clean air with its all desirable environmental features should travel some distance, therefore identifying performance range (penetration area) of parks can play an importance role in city planning. Kuhestan Park is among Yazd city parks that for the reason of extensiveness and placement situation plays pivotal role in addressing recreational and mental needs of region people and by creating convergence in the region it has managed to provide the setting for people of surrounding cities to enjoy facilities of this park. In this paper in order to examining the people of surrounding cities who use this park and identifying effective factors on usage level of this park one engaged in determining and examining penetration area of Yazd Kuhestan park.

Basic theories of research

The term green space is used by some experts for the concept of urban plant coverage. G. Moll used the term green space for urban green coverage [1]. In general urban green space is a type of urban land utility with man-made plant coverage that has social and ecological output [11].

Performance of urban green space

Urban green space and existing parks in the city not only have recreational value and is an appropriate place for leas retime of people, but also these spaces in many cases prevent ill-shaped and unconsidered development of city. Nowadays regarding carcinogenicity of urban environment the credit and importance of urban landscapes and parks is enhanced. Speaking of importance of existence of some types of trees in the land, the researches recommended some trees such as spruce, pine, walnut, oak, hazelnut, eucalyptus, maple, willow, ash tree and European nettle tree emit a substance into air called phytoncide that results in eliminating many bacteria and unicellular fungus and some harmful insects in the air [12]. In general one can say since using plants as visionary limits, using tree planting as protective limits, and using green space for creating guidance paths can have appropriate

applications [13]. Therefore urban green space performances can be divided into three major category:

Green space performances in city physical construct

Regarding to urban physical divisions the urban green space performance would sustain some variations too and physically can be divided into various level of neighborhood, locality quarter, district and region and some service supply appropriate to them is included in this classification. Services in neighborhood unit includes kindergarten and commercial units. In locality level primitive school, commercial units and local park are established and in quarter level secondary school, commercial units, and in district level sport utilities and district parks are established. And in regional level cultural, sportive, healthcare centers and regional park can be established [14].

Ecological performance

Important performances of urban green space ecology includes: Biodiversity and environment protection, reducing air pollution, moderating air, shadowing and microclimate adjustment, slowing down flood flows, water quality, producing penetration surface for water absorption and providing opportunities for history and environmental study [15].

Social and mental performance

Parks and urban green spaces are confirmed in most of discussion as an important solution for enhancing social life quality [16]. Green space can offer a lot of social and mental services and functions as an important role in empowering modern cities and their inhabitants [17].

Parks classification in terms of size

Parks are classified in terms of size as follows:

Table 1: parks classification in terms of size

Park type	Specification
Small park	They are constructed in urban districts and in commercial and residential densely populated places and their size varies between 1 to 4 hectares.
Medium park	It provides services to urban residential quarters and has active and inactive recreational facilities.
Large park	Provides services to whole of city or several districts, it has active and inactive recreational facility in diverse types.
Urban and regional park	It is located out of the cities and keep their natural air to great extent

Penetration area

In fact the penetration area is the range radius and coverage extent of products and services and can be determined by intensity and weakness of city role and demand whether for consumption in cities domain or in other regions [18]. From systemic viewpoint, the city and its penetration area is a social, economic, political and cultural system that is crystalized in spatial and physical body of the region. In other word the set of relations and dependencies that an utilities establishes with all small and large, far or near settlements around it is termed as penetration area.

Region

The region is a space with specified content with identified form. In fact a space with common content and form in a geographical territory is termed as region [19], Where some kind of functional integration and correlation is observed among its components, in this paper the purpose of region is the Province.

Convergence

The first studies associated to convergence was carried out by [20]. The objective of convergence theory in regional planning is to creating balance in urban services at region in such manner that application of this theory for parks and urban green spaces can have important role in decreasing inequalities emanating from shortage of green space and in addressing recreational and mental needs of users of these spaces at region level.

Research review

A lot of researches have been carried out in the area of green space and convergence that suggest the importance of this issue. Among those in the world one can point out these items:

[21] Studied people insight about green space and their behavior when they visit these parks and green spaces in Bari city of Italy. Their results have demonstrated that people regarded the green space as a factor for fostering life space and this opinion varies by age, gender and marital status.

[22] Studied accessibility to green space in different parts of society in Sheffield city. Based on their findings, accessibility to public green space is different for different social groups. But most users are consisted by deprived and old age people.

[23] Examined green space changes in Porto state. Research results shows that through planning one can keep permanently the structure of green space and achieving to this requires some infrastructures in huge and appropriate planning for modern urban regions

In Iran some researches about the issue have been carried out such as:

[24] Have examined economic growth and regional convergence in Iran. Research

results leads in presenting a test for convergence of various regions of Iran.

[25] Evaluated social and economic aspects of Pardissan and Lavizan parks using Clawson method and distance and access cost. Research results leads in evaluate economic and social values for Pardissan and Lavizan parks.

[26] Engaged in qualitative evaluation of role of parks and urban green spaces and optimizing citizen usage capabilities in Shahrekord. Their Research results show that parks and urban green spaces are one of the most important effective factor in formation of social sustainability and urban integrtation but safety factors and inappropriateness of facilities for certain age groups and genders lead in decrease of citizen tendency to use them.

[27] Analyzed space-place distribution of green space in region three of Zahedan city. Its research results show that in addition to shortage of green space in this region, the placement of proposed green space was inappropriate in detailed plan in terms of space-place distribution.

METHODOLOGY

The research type is practical-development and examining method is descriptive survey. In this reseach information is collected through field observation, questionnaire and library method.

The current research is carried out in three overall stage:

- Collecting required information through books, articles and visiting organs and field studies and providing questionnaire
- Data analysis using software
- Conclusion from obtained information

Statistical society is population visiting the Kuhestan Park. The sample is consisted of 322 persons of visitors of park in holiday and work days and in morning and afternoon times in different age and gender structures that is obtained through Cochran's theorem. Then field studies is conducted on the park using situational sampling method and questionnaire tool that its validity and reliability is confirmed through pretest regarding some factors such as distance, access time and so on which has influenced on park penetration area. Finally data in inserted to SPSS software and the offered hypothesis is analyzed final data by statistical tests such as Chi-square, Spearman and so on.

Hypothesis

- There is a relation between inhibition place of users and number of times of their visits to Kuhestan Park.

- There is a relation between user's inhibition location and their time duration of visit to Kuhestan Park.
- There is a relation between marital status of users and the number of their visits to Kuhestan Park.
- There is a relation between the reason of users' visit to Kuhestan Park and number of their visits to this park.
- There is correlation between income level of users and number of their visits to Kuhestan Park.
- There is a difference between users' gender and number of their visits to Kuhestan Park.

Research territory

Yazd province with area of 130458 square kilometer is located at center of Iran at the edge of Dasht-E-Kavir. This province is limited to Isfahan at north, to Kerman province at south, to Khorasan at east and to Isfahan and Fars at west and is stretched between geographic latitude of 29 degree and 52 minute and 32 degree and 27 minute of north and longitude of 52 degree and 55 minute and 56 degree and 37 degree of east from Greenwich meridian. Yazd province have 11 counties (including Yazd, Abarkouh, Ardakan, Bafq, Taft, Khatam, Saduq, Tabass, Behabad, Mehriz and Meibod) and have 24 cities and 22 districts and 51 rural districts. Yazd city is the center of Yazd County and has 99.5 square kilometers area and is located at longitude of 54 degree and 22 minute of east and 31 degree and 53 minute and 49 second of north. Yazd county population according to last census is 526276 that 433194 persons inhabit in Yazd city. Yazd Green space and city park per capita in 2005 is 3.75 square meters. Area of green space in 2006 was 460 hectares and in 2007 with increase of 60 Hectares reached to 520 Hectares and regarding to population increase and need to urban green space increase in three regions, in 2009 it reached to 580 hectares and 12.09 meter square per capita. But this per capita differs from standard per capita ranging from 15 to 25 square meters. Kuhestan Park is considered among large and regional park of Yazd city that its area with Mountain slope is 40 hectares and is located at distance of 5 kilometer from Yazd city (Yazd municipality 2002).
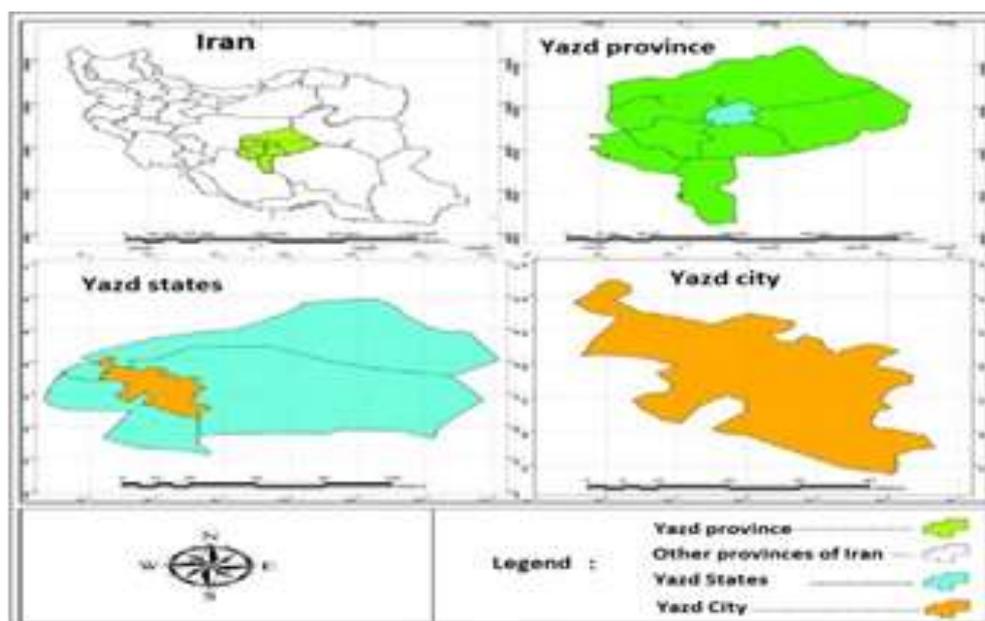
Figure 1: Location of Yazd province and city in the region 2014

RESULTS AND DISCUSSION

In urban planning the users' characteristic traits is very important in terms of type of product and services and this sensitiveness about park and green spaces is more than other services. The **Table 2** shows some traits of visitor of Kuhestan park.

In this article regarding deferent hypothesis about effective factors on penetration area of Kuhestan park, various testes is conducted regarding the data types. In such manner that chi-square test is carried out in order to examining relation between variables that is one of nonparametric test and is used for examining statistic differences between data. Also for examining intensity and direction of relationship this test could be used, regarding the variables type we examining extracted results **(Table 3, 4)**.

Regrinding test results, the value of Chi-square is 99.405 and obtained significance level is (sig=0.000) suggesting that there is a significant relation between inhibition place and numbers of visits to Kuhestan park and calculated Eta suggest that there is a direct relationship with positive intensity. Therefore one can conclude that inhibition place of visitors' influences on the number of visits to the park **(Table 5, 6)**.

The test results shows the Chi-square equal to 103.885 and significance level as sig=0.000 and since the significance level of test is less than 0.05 , it suggest that there is a significant relation between two variables and Phi test value (90.571) with significance level of (sig=0.000) shows that visitors' inhibition place influences on required duration time for reaching to Kuhestan park. It means that with increase of distance from Kuhestan park visitors spend more time for

arriving to the park and it influences on decrease of number of visits to the park as well.

Regarding the fact that research results shows that 67.1 % of visitors of Kuhestan Park are married and 27.6 % are single. The following test shows the relation between marital status and number of visits to the Kuhestan Park (**Table 7, 8**).

The test results shows the Chi-square equal to 40.358 and significance level as sig=0.000 and it suggest that there is a significant relation between two variables and the Phi statistical value (0.378) with significance level of (sig=0.000) confirms the relation with average intensity (**Table 9, 10**).

Test result shows the Chi-square equal to 102.058 and significance level (sig=0.000), suggesting that there is a relation between cause of visit and number of visits to Kuhestan park. In such manner that 78.8 % of visitors considered closeness to the realistic nature as their reason to visit the park and the Eta test confirms the direct relation with positive intensity.

In this paper in order to evaluate the correlation between income level and number of visits to Kuhestan Park the Spearman correlation test is applied. The Spearman test is nonparametric synonym of Pearson correlation coefficient and when we intend to examine the statistical relation between two variables of ordinal data, this test is appropriate (**Table 11**).

The obtained results of Spearman's test show than there is a significant relation between two variable of income level and number of visits to the park. In this regard the correlation coefficient is 0.168 and significance level is desirable. Though the correlation is weak. But one can conclude that as the income level increases the number of visits to the park should increase too.

Also regarding to the fact that obtained results from questionnaire suggests that 70.8 % of visitors to the Kuhestan Park is consisted from men and 29.2% from women. For evaluating the relation between gender and number of visits to Kuhestan park, the t-test is used that is a parametric test for comparing means (**Table 12, 13**).

Regarding the fact that the assumption of variance equality is confirmed, we use from first line of t test. Significance level of test first line is (sig=0.000) and regarding the fact that it is less than standard limit of 0.05, this suggests that there is a significant difference between gender and number of visits to Kuhestan park. This takes place because of distance and the fact that the park is out of the city.

Table 2: Characteristic traits of visitors of Kuhestan park

index	variable	frequency	percentage	index	variable	frequency	percentage
age	Under 15	9	2.8	Cause of visit	Closeness to nature	246	76.4
	15-25	113	35.1		Others' recommendation	10	3.1
	25-50	174	54		Vicinity to home	23	7.1
	More than 50	16	5		Distance from other parks	7	2.2
	unknown	10	3.1		Escape from noise	3	0.9
gender	Male	228	70.8		Traffic facilities	23	7.1
	female	94	29.2	profession	Free	121	37.6
Marital stated	Married	216	67.1		Clerk	107	33.2
	Single	89	27.6		Retired	24	7.5
	unknown	17	5.3		Unemployed	54	16.8
income	Less than 400 thousand Tuman	122	32		Unknown	16	5
	400-800 thousand Tuman	103	10.6	Type of visit	Single	34	10.6
	800-1200 thousand Tuman	34	.9		By group	128	39.8
	1200 thousand Tuman and more	3	81.4		By family	160	49.7
	unknown	60	18.6	Inhibition place	Yazd		
Number of visit	1-2 times	22	8.6		Taft	258	88.5
	2-4 times	34	10.6		Abarkuh	16	5
	4-6 times	46	14.3		Bafq	6	1.9
	6 times and more	217	67.4		Rastaq	12	3.7
	Unknown	3	.9			3	0.9

Table 3: Chi-square test evaluating relation between inhabitation place and number of visit to the Park

Asymp. Sig. (2-sided)	df	Value	
0.000	24	99.405	Pearson Chi-Square

Table 4: Eta test, evaluation of type and relationship direction between inhibition place and number of visits to the Park

		Value
Nominal by interval	Eta dependent for city of inhibition	0.325
	Dependent of number of visits	0.279

Table 5: Chi-square test, evaluation of relation between inhibition place and visit duration

Asymp. Sig. (2-sided)	df	Value	
0.000	12	103.885	Pearson Chi-Square

Table 6: Phi test the type and direction of relationship between inhibition place and visit duration

Approx. Sig	Value	
0.000	0.571	Nominal by Nominal Phi
0.000	0.329	Cramer's V
	319	N of Valid Cases

Table 7: Chi-square test evaluating relation between marital status and number of visits to Kuhestan Park

Asymp. Sig. (2-sided)	df	Value	
0.000	12	40.358	Pearson Chi-Square
0.000	12	39.026	Likelihood Ratio
		283	N of Valid Cases

Table 8: Phi test the type and direction of relation between marital status and number of visits to Kuhestan Park

Approx. Sig	Value		
0.000	0.378	Phi	Normaled by
0.000	0.267	Cramer's V	Nominal
	283	N of Valid Cases	

Table 9: Chi-square test evaluating relation between cause of visit and number of visits to Kuhestan Park

Asymp. Sig. (2-sided)	df	Value	
0.000	30	102.058^n	Pearson Chi-Square

Table 10: Eta test, evaluation and direction of relation between cause of visit and number of visits to Kuhestan Park

Value		
0.240	Eta dependent for cause of visit to the park	Nominal by interval
0.269	Dependent of number of visits	Eta

Table 11: Spearman test correlation evaluation between income level and number of visits to the Kuhestan Park

income level	Number of visits		
0.168	1.000	Correlation coefficient	Spearman's Rho number of
0.010	0	Sig. (2-tailed)	Visits to the park
234	283	N	
1.000	0.168	Correlation Coefficient	Income level
0	0.010	Sig. (2-tailed)	
262	234	N	

Table 12: t-test, evaluating difference between genders and number of visits

	Levene's Test for equality of Variances						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal	0.880	0.349	4.555	281	0.000	1.00969	0.22166
Variances Assumed Number of visits Equal variances not assumed			4.575	157.716	0.000	1.00969	0.22070

Table 13: The number and mean of men and women visiting the Kuhestan Park

Gender	N	Mean	Std. Deviation	Std. Error Mean
Men	228	6.3668	1.70889	0.12114
Women	94	5.3571	1.69082	0.18448

CONCLUSION

The research results shows that socioeconomic variables as one of most important factors for identifying individuals' needs for benefiting from parks and green spaces can play a pivotal role in penetrability and convergence of Kuhestan Park. In such manner that research results show that gender, marital status, inhibition city, visiting duration, income level and

cause of visit influence drastically on penetrability of this park. In such manner that 78.8 % of visitors reckoned the closeness to real nature as the reason for visiting the Kuhestan Park and it reveals the significant relation between cause of visit and number of visits and implies that the cause of visit can have significant role in penetrability of Kuhestan Park. One should keep in mind that the most population of visitors from Kuhestan Park is from Yazd, Taft, Bafq, Abarkuh and Rastaq with 88.5, 5, 3.7, 1.9 and 0.9 % respectively. The fore one can conclude that Kuhestan Park through locating in certain place has managed to supply services to inhabitants of Yazd, Taft, Bafq, Aarkuh and Rastaq. But one should pay attention that increase of distance leads in decrease of penetration area of Kuhestan Park. However Kuhestan park leads in convergence in the region due to its natural attraction such as mountain, waterfall, ski resort and so on and can increase its penetration area with supplying more appropriate access facilities.

SUGGESTIONS

After examining and evaluating current situation of Yazd Kuhestan Park and presenting an image form role and penetration area of Kuhestan park at regional level, executive and practical solution and suggestions with the aim of extension and development of penetration area of Kuhestan park is presented in order to supply better services to inhabitants of surrounding cities and taking advantages from opportunities and potentials of this park as follows:

5-1- providing public transportation lines from surrounding cities to the park as the only regional park

5-2- fostering recreational and leisure facilities for different age and gender groups

5-3- Kuhestan though has facilities such as artificial lake, cycling track an racing car track need more advertisement.

5-4- Providing appropriate access routes from different places regarding the place of this park on the exit path of Yazd to Kerman and Tehran

5-5- improvement of dangerous and long U-turns

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