

Evaluation of Allocated Areas for Parks and their Attributes: Hail City

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Abstract—Accessibility to parks and open spaces plays an important role in the urban quality of life. Public parks play a vital role that affects all members of society regardless of their social ranking. Accessibility (visitation) to parks and recreational areas has increased significantly all over the world. This scenario to some extent is the same in Hail city, where the area allocated for parks and open spaces is very small. Parks in Hail are still suffering from many planning and design aspects that discourage people from frequent visitations. This study, therefore, aims to address this phenomenon by examining the area allocated for parks and park attributes. The study's data are collected from the relevant literature regarding parks and their attributes. An assessment tool is designed and utilized to evaluate parks in Hail. Google maps software was used to measure the areas of neighborhoods and parks in addition to park distribution. This study shows that the areas allocated for parks are far below WHO requirements, and park attributes do not fully meet all visitors' requirements.

Keywords- park evaluation; park attributes; assessment tool

I. INTRODUCTION

In line with the Kingdom's Vision 2030 lifestyle improvement program, the Ministry of Municipal and Rural Affairs launched the Humanization of Cities initiative, with the aims of improving the quality of life in cities, improving urban landscape, and applying universal access standards in municipal facilities and pedestrian walkways. Considering this issue, parks and open spaces are considered very important to the daily life routine [1-3]. The benefits of being in parks and recreational activities have long been well known [4, 5]. Providing suitable environment for people to interact with each other will be reflected in their behavior [6, 7]. In addition, providing places for people to sit, gather and talk may encourage them to visit parks more frequently and it can contribute to a sense of a strong bonding with the community [8-10]. It has been found that workers with workstation views that include green elements were more satisfied at work and had more patience, less frustration, increased enthusiasm for work, and fewer health problems [11, 12]. Parks and green areas in Hail city are contributing in improving many aspects of life such as socialization and leisure, health, economy, and education [1, 13, 14]. It has been noted that nearby parks are an important part of places with a high quality of life [15, 16].

Gardens, parks, and trees in cities lead to satisfaction and a positive outlook [11]. On the other hand, outdoor activities can help alleviate symptoms of Alzheimer, dementia, stress, and depression, and improve cognitive function in those recently diagnosed with breast cancer [17-20]. Areas adjacent to naturalistic parks and open spaces are valued 8-20% higher. Consumer ratings increase steadily in proportion to the presence of trees, as getting in contact with nature helps children to develop cognitive, emotional, and behavioral connections with their nearby social and biophysical environments. Nature experiences are important for encouraging imagination and creativity, cognitive and intellectual development, and social relationships [21-24]. Having quality landscaping and vegetation in and around the places where people work and study is a good investment. Visual access and being within green space help restoring the mind's ability to focus, which can improve job and school performance, and help alleviate mental stress and illness. A basic and important point is that a park should be designed and managed to meet user requirements [25, 26]. It should be accessible to all age groups and allow visitors to do their activities freely, without contradicting with others, allowing people to make interrelation between the place and the world as a whole. Numerous reasons have been raised as constraints to people's use of public parks, including unavailable mobility, isolation, lack of services, constrained emotions such as fear, responsibility such as a social norm [27]. Authors in [15, 28] found that the pleasantness factor includes enough space for children to play, room for a young adult to socialize, and a variety of activities to engage in.

The quality of trees, plants, and landscape, and the presence of facilities such as toilets and shelters in the park will encourage frequent visitations. Greater attention should be given to the location of park spaces, providing that the location of these facilities supports environmental functions and serves a different age group of users rather than merely stem from uses of vacant land [29]. The location of these facilities should be formative rather than merely residual. The park has to be spatially distributed [30, 31]. The European Environment Agency (EEA) recommends that people should have access to green space within 15min walking distance, which is roughly 900-1000m [32, 33]. People visit recreational areas if they are well equipped with facilities and amenities [34, 35]. Authors in

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TABLE II. HAIL NEIGHBORHOODS, PARKS AND PLAYGROUNDS

No.	Name	Area X (m ²)	No. of Parks	Park area Y (m ²)	Y/X Ratio	Remarks
1	Az Zahra	26300000	2	21891+49,686	0.08%	
2	Al Khuzama	6000000	1	123000	2.05%	
3	An Nafl	1110000000	0	0	0	
4	Alyasmeen	3090000	1	123000	3.98	Common park with AlKhuzama
5	As Suwayfilah	13510000	0	0	0	
6	As Suwayfilah	542000	0	0	0	
7	Almumlakah	750000	0	0	0	
8	Aja	4200000	1	6,522	0.15	
9	Al Masyaf	11060000	0	0	0	
10	Durat Mishar	549000	0	0	0	
11	Al Muntazah Al Gharbi	5420000	5	290000+200000+90000+33391+10,052	11.60%	
12	Al Muntazah Ashargi	5610000	3	19391+12048+14522	0.80%	
13	Al Aziziyah	2010000	0	0	0	
14	Al-Wurud	984438	1	160000	16.25%	
15	Salah Al-Din Al Gharbi	987236	0	0	0	
16	Salah Al-Din Al-Shargi	542462	0	0	0	
17	Sababah	2080000	1	45000	2.16%	One garden at the edge
18	Al Wusayta	5060000	1	6000	11.8	A playing field, many vacant places
19	Al Mahattah	2010000	0	0	0	
20	Samah	568213	2	3721+8353	2.12%	
21	Labdah	1070000	0	0	0	
22	Barzan	405104	0	0	0	
23	Al Muzaabar	1940000	0	0	0	
24	Azubarah	2920000	2	61000+9577	2.41%	Off center
25	Aljamaien	2250000	1	12335	0.54	
26	Almatar	2050000	2	20279+19280	1.90%	
27	As Samrah	4660000	3	45794+108000+5511	2.43%	
28	Attilivizion	863966	0	0	0	
29	Sharg Almujamaa	1230000	0	0	0	
30	Industrial Area	11740000	0	0	0	
31	An Nugrah	10370000	0	0	0	
32	Ashifa	6460000	0	0	0	
33	Ashifa sharg	2270000	0	0	0	
34	Ashibaily Sharg	902644	0	0	0	
35	Ashibaily Garib	1400000	0	0	0	
36	Alwadi	7670000	0	0	0	
37	hR rasf	3940000	0	0	0	
38	Gifar	7680000	0	0	0	
39	Al Magaydah	1100000	0	0	0	
40	Al-Badiyah	2180000	0	0	0	
41	Al khumashiah	1010000	0	0	0	
42	Al buhirah	2030000	2	165000+91000	12.60%	
43	Alwidai	0	0	0	0	
Total		1277415063		1,748,093 = 0.136%		

Source: Field survey

TABLE III. PLANNING AND STANDARDS FOR RECREATIONAL AREAS IN SAUDI ARABIA

	Land area (hectares)		Population (thousands)		Means of transportation		minutes	Km
	High density	Low density	High density	Low density	Walking	By car		
Community / cluster garden	0.08	0.3	1.2	0.9	YES		5	0.1-0.2
Playground	0.09	0.6	0.9	0.2	YES		5	0.15-0.275
Neighborhood garden	0.4	0.5	5	3	YES		5-7	0.2-0.35
Neighborhood playground	0.3	0.6	5	3	YES		5-7	0.25-0.5
District garden	0.5	1	15	10	YES	YES	5-7	0.4-0.8
District playground	1.5	3.5	15	10	YES	YES	5-10	1
Sector garden	2	6	45	30		YES	15-20	2.5-5
City garden	Variable	7	100 and above			YES	variable	
Recreational centers	Variable	0.2	The city		YES	YES	variable	
Camping	Variable		The city			YES	variable	
Specialist gardens	Variable		The city			YES	variable	
Parks	Variable		The city			YES	variable	

Source: Directory of planning standards for recreational areas of cities, Ministry of Municipal and Rural Affairs, Riyadh Saudi Arabia

TABLE IV. HAIL CITY POPULATION

Year	1992	2004	2010	2013	2015	2016	2017	2018	2019	ANN. G. R.
Hail	411,284	526,882	597,144	654,700	907,494	928791	954797	981531	1009013	2.8

Projection using the 2016 demographic survey from the General Authority of Statistics, Riyadh, Saudi Arabia

IV. HAIL PARKS

A. Prince Saud bin Abdul Mohsin Park

This Park is one of Hail's largest parks, with an area of 290,000m². It is one of the most beautiful parks to be visited in the entire country (Figure 2). It has a 2200m long walkway, and is suitable for sports, hiking, and walking. Palm trees are spread along the park for a distance of 300m, in addition to a variety of small and large waterfalls. It also has a distinctive lake where tables, chairs, and umbrellas spread throughout the area. Some cafes and restaurants provide comfort services to the park's visitors. The downsides of this park are that the percentage of the green surface is less than 60%, there is no playing field for adults, the green area is either overused or not well maintained, and there is a lack of fences to protect children from the highway located beside it. Moreover, the shaded areas are very limited, and the toilets are dirty and lack clean running water. Additionally, the only available seats are located on the walking track, with no seats at children playground to facilitate monitoring, and the same situation occurs at the sitting area under shade. Most of the playgrounds floor finish is sand which may harm children.



Fig. 2. Prince Saud bin Abdul Mohsin park

B. Az Zaitoon (Olive) Park

Az zaitoon (olive) Park is located on the King Abdul Aziz Road in the West Park occupying an area of 200,000m² (Figure 3).



Fig. 3. Az zaitoon park

It is one of the most beautiful parks in Hail, filled with olive trees, hence its name. One of the most important features of this park is its location in the center of Hail, right on the intersection of King Abdul Aziz and King Fahad roads. It is

located besides restaurants and malls, which gives it merits over other parks. One of the problems that this park faces as a result of its location is air and noise pollution. Moreover, the percentage of green surface in the park is low (less than 60%) while it is unmaintained. The park does not include an adult playing field or benches, in addition to the low condition of the sitting areas. The playground is old and filled with sand finishes that expose children to danger. The toilets are limited, not maintained, and dirty. The walking track is in poor condition and the amount of light coming in is not enough nor well distributed. No workers are available to clean and take care of the park, or provide security. The garbage containers are neither enough nor distributed equally around the park. The park has a fence which doesn't surround all its area leaving some places without a fence.

C. As Salam Park

This park has an excellent location and an outstanding landscape with an area of 90,000m² (Figure 4). It overlooks the foot of a mountain, giving it an extraordinary view and good airflow. The desert area is filled with mountains that contain green spaces and trees to make the landscape look like an attractive painting.



Fig. 4. Al Salam park

The park is located at King Fahad road and is a favorite destination for families because it has large areas for jogging, playing, etc. The park is also used for many official and local celebrations and festivals because of its accessible location and large size. The problem with this park is that the percentage of the green surface is less than 50%, and its quality is low due to overuse and improper care. Moreover, there is no fencing to protect children from the highway beside the park. The shaded areas are very limited and they don't block enough sunlight for an easy afternoon out, the toilets are not clean and lack water, and there are no benches to sit on either for gathering or to monitor children. This park also has no adults' playing fields, although it has a nice waterfall which softens the air and encourages frequent visitation.

D. Azzubarah Park

This Park is located in the northern center of Az Zibarah Neighborhood bordered by Al-Imam Faisal Bin Turki in south side, Hassan Ibn Thabit in north side, and Al-Amir Migren Bin AbdulAziz from east and west sides. Its location makes it

difficult to access. The park stretches over a total area of 9,577m², and the lack of car parking discourages visitation. As a result of its location, the park is noisy and polluted. It is totally abandoned, lacking water bodies or fountains, there is no kiosk, or sitting areas, although there are many big trees forming shaded areas. It has no adults' playing fields, the finishing of the walkway is acceptable with no signboards, while no workers or security guards have been seen by the authors. Lighting is available but not enough. The park has no fence to hinder children from going out or to stop cars from entering. The playgrounds are old and have no protection for children. Nothing related to aesthetics has been seen in the park. Overall, the parks' elements are good compared with other parks (Figure 5).



Fig. 5. Azzubarah park

E. Prince Sultan's Park

This park is located in the southeast of the city. It is bordered on the north by the Al-Khamachiah neighborhood and south by Prince Abdullah bin Abdul Aziz Al-Dari road and Prince Abdul Aziz bin Masjid Airport road and west by Prince Muqrin bin Abdul Aziz Street neighboring commercial center that makes it attractive to visitors. It is close to many famous landmarks of the city, and it is one of the most popular tourist attractions in Hail. The park stretches over a total area of 165,00m² (Figure 6).



Fig. 6. Prince Sultan's park

The park location besides the highway makes it unsafe, noisy and air polluted and its location adjacent to Al Khamachiah lake invites mosquitos to disturb the visitors, as well as scattered thorns. The park is easily accessible with enough parking for cars located inside and adjacent to the highway. Regarding the services, the park has no water features or fountains, and limited toilets which lack water, and in most cases are very dirty with no maintenance. It also lacks shaded areas, green surfaces, and seats except those scattered alongside the walking tracks, while no adults' playing field was observed. The walking track is good but with no signboard either for the

park or the walking tracks. The lighting is very dim with many areas lacking light, there are no workers to maintain the services or even security to keep the park safe and protect it from vandalism. Aesthetic values are available but neglected.

F. Al Warood Park

Al Warood Park is located in the western part of Hail city, on the southern border of Al Warood neighborhood. The park stretches over a total area of 160,000m² and contains extensive green spaces and a recreational area for families and children (Figure 7). Its downsides are: the absence of shelters for visitors to stay under during day time except scattered trees with no benches to sit. Also, there is no fencing to protect children from the road, and the outside parking is placed beside the main road which makes the situation worse. The lighting system is not distributed throughout the park leaving some places with without proper lighting. There are some places of aesthetic value in the park, like the lake inside or the castle which is working as a waterfall.



Fig. 7. Al Warood park

G. Alruwad Park

Alruwad park is located on the southeast part of Hail city alongside Hatim Attai street. It is one of the most popular and attracting parks in Hail. The park stretches over a total area of 91,00m² (Figure 8). It is bordered by Al-Khammiya neighborhood, Prince Abdullah bin Abdul Aziz Al-Dari road and Prince Abdul Aziz bin Masjid Airport road. Its location besides the highway makes it unsafe, noisy, air polluted and the al Khamachiah lake brings out mosquitos and scattered thorns. The park is easily accessible with enough parking for cars. It is located outside the park and is adjacent to the highway.



Fig. 8. Alruwad park

Regarding services, the park has no water features, fountains, while it has a limited number of toilets which lack water, are dirty and unmaintained. It also lacks shaded areas, the green surfaces are very limited and constitute less than the 25% of its area, while benches are not available except those

scattered alongside the walking tracks. A fenced adults' playing field is observed, along with a good walking track without signboards. The lighting is very dim with many areas lacking light, there is no workforce to maintain the park or even security. There is no sign of aesthetic values available.

H. Al Yasmeen Park

Al Yasmeen park is located in the west part of Al Khuzama neighbourhood, adjacent to King Abdulaziz road which makes the park unsafe for children. The park stretches over a total area of 123,000m², while it has green spaces, with a recreational area for families and a playground for children. The best a visitor can do is relax and get some rest in this place. It also has a walking track, which encourages people to walk and jog. The playground is in good condition as it is new, and the clean environment of the park is one of its merits encouraging frequent visitations. Its problems are air and noise pollution as a result of its location besides the main road. There are no adult playing fields or seats except some benches located alongside the walking track. The green surface is almost the two-thirds of the whole area and doesn't contain weeds. There are shaded areas available but they are limited and do not have seats. Lighting is not sufficient and not distributed properly, while it is also limited alongside the track. The park is vulnerable to vandalism. The arrangements of park and shaded area increase its aesthetic value.



Fig. 9. Al Yasmeen park

V. RESULTS AND DISCUSSION

The amount of nearby green areas suitable for recreational usage increases the number of close-to-home outings of residents. This supports the argument that a good provision of

opportunities promotes an active lifestyle. Thus, recreation areas and facilities should be located close to residential areas, and provide safe, comfortable and year-round access for daily outings. Referring to Table II, only 14 (32%) out of 43 neighborhoods in Hail city, have an access to parks or playgrounds. Besides this, most of these parks and playgrounds don't meet the minimum park characteristics while they constitute only 0.136% of the total residential area. This percentage is far below WHO requirements (10m/person). Some residential areas such as As Suwayfilah, Almumlamakah, Labdah An Nugrah, AShifa, Ashifa sharg, etc. have no access to open spaces and parks. However, in line with the Kingdom's Vision 2030 lifestyle improvement program, the Ministry of Municipal and Rural Affairs launched the Humanization of Cities initiative, with the aim of improving the quality of life in cities, improving the urban landscape and applying universal access standards in municipal facilities and pedestrian walkways. The Ministry confirmed that the per capita rate of squares and public places rose from 3.48m² in 2015 to 4.14 m² in 2017. Concentrating only on the number of open spaces provided, it is not enough, hence it is equally important to consider the quality of public open spaces and how they will be used, in order to maximize community value and its contribution to creating green spaces in the urban environment. Accordingly, this part is going to highlight the quality of these facilities. Regarding parks' attributes and facilities shown in Table V, Azzaytoon Park located in Al Muntazah Al Gharbi has got the highest mark (601 out of 800). Its best observed attributes are the park quietness (100 points), its location with accessibilities is ranked second (93 points), and its aesthetic value is third (88points). The second highest park is Alruwad park (549 points). The third ranked park is Assalalm park in Al Muntazah Al Gharbi which got 533 point in all attributes. The park with the worst rank is Alruwad Park in Al Buhairah area which got 345 points. In this park there are not any water feature elements (0 points), the park is located in a noisy area (0 points). The second park from the bottom of the list is Al Yasmeen Park in Al Khuzama area, which got 390 total points. From our observations, it can be said that almost all parks in Hail city lack water features, their location is besides busy and noisy roads, and they lack security services to monitor undesired behavior.

TABLE V. RESULTS AND DISCUSSION

Park name	Surroundings & accessibility (13%)	Quietness (2%)	Internal environment (10%)	Water features (8%)	Services and facilities (40%)	Health issues (8%)	Security and safety (11%)	Aesthetics (8%)	Total
Prince Saud Bin Abdulmohsen park	86	0	66	77	67	77	46	66	419
Azzaytoon park	93	100	83	44	87	66	40	88	601
Assalam park	53	0	66	100	87	88	51	88	533
Az Zibarah park	73	100	81	0	50	55	34	33	426
Prince Sultan park	100	0	66	22	62	77	38	88	453
Alruwad park	60	0	41	0	31	77	59	77	345
Alwurud park	86	100	83	27	90	50	47	66	549
Al Yasmeen park	80	0	66	0	73	88	28	55	390

VI. CONCLUSION

Easily accessible and high-quality recreation opportunities, which equally serve all population groups and inhabitants of

different locations in the urban environment, are indicators of good living conditions and of quality of life. It is not easy to define whether an area is "adequate", yet recreation specialists have come up with certain rough rules, which are often used.

The amount of recreational area and parks allocated in Hail is 0.136% from the total residential area, which is not adequate in addition to other issues regarding location, management, and usage. The parks throughout the residential area are not evenly distributed. Hail's parks are not easily accessible, most of Hail's parks are adjacent to a main road or a highway road and are thus exposed to noise and air pollution. Water features are one important element of a park. Lack of water features and green areas are traits of Hail parks. The municipality did its part in creating parks but maintenance is also important. Most of the green spaces are accessible to all people without any conditions or restrictions, but there is a decline in services in green spaces as a result of the users' behavior and lack of follow up. Toilets are commonly available but have many problems: their number is small, they are not clean and their positions sometimes do not serve. This is very clear in Al Yasmien park which has only one toilet unit to serve a park which extends for over two kilometers. Regarding security and safety, it was found that the majority of Hail's parks do not have fences to protect children from hazards of accidents. It was also found that other services and facilities are not available. Almost no parks have security forces to protect them from vandalism. Car parking areas are located far from the parks making accessibility harder and reducing frequent visitations. Also, there is a severe lack of private spaces. Additionally, Hail's parks don't have a place for elderly people of both sexes.

VII. RECOMMENDATIONS

There are a few points needed to be enhanced to improve parks in Hail.

- In order to increase the percentage of recreational areas with respect to residential areas the number of parks and open spaces must increase.
 - It is necessary to have security people to protect parks from vandalism.
 - Most of the parks lack trees and shaded areas. Considering the nature in terms of using local materials, plants and trees should be used in shaping the area to become a part of nature, also helping in creating private spaces.
 - In the future, it is necessary to consider car parking with regard to the places where people practice their activities inside the parks.
 - It is necessary for parks to have a place for elderly people. When planning urban green areas and recreational services, more attention should be paid to the outdoor recreational needs of families, small children, and elderly people.
 - Open space elements and furniture should be used in a way to form more private spaces for visitors to practice their activities with high privacy.
 - The municipality needs to take care of all parks' attributes such as toilets and their distribution, especially when the park is in rectangle shape and the length is very long compared to the width.
- Workshops and seminars should be held to assist people to safeguard their parks while using them.

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APPENDIX: ASSESSMENT TOOL

Park Name				Address			Area (m ²)	
A	Surrounding environment and accessibility						total	Evaluation
1	Park location			Visitors Number 1-5			5	
		main road	branch road					
		0	2				2	
2	Location of the main entrance							
		main road	branch road					
		0	2				2	
3	Car parks							
		available	rating					
		2	1,2,3,				5	
4	Location: Neighboring to malls or supermarkets							
		yes	no					
		1	0				1	15 (13%)
B	Surrounding environment and quietness							
1	quite area	noisy area						
	2	-1					2	2 (1%)
C	Internal environment (green area and its condition)							
1		available	not available	percentage	rating			
		2	0	1-5	1-5		12	12 (10%)
D	Water features							
1	Water bodies, waterfalls							
		available	not available	rating				
		1	0	1-3			4	
2	Fountains or springs							
		available	not available	rating				
		1	0	1-3			4	
3	Drinking fountains							
		available	not available					
		1	0				1	9 (8)
E	Services and facilities							
1	toilets	kiosks	seats	sitting areas	shaded areas	prayer areas		
	0-5	1	0-5	0-5	0-5	0-3	24	
2	Playground equipment for children and adults							
		for children	not available	rating	for adults	not available	rating	
		1	0	1-5	1	0	1-5	12
3	Protected and shaded areas							
		available	not available	rating				
		1	0	1-3			4	
4	Pedestrians							
		available	not available	rating				
		1	0	1-3			4	
5	Signboards							
		available	not available	rating				

	1	0	1,2				3		
6	Worker availability								
	available	not available							
	1	0					1	48 (40%)	
F	Health issues								
1	Air								
		not polluted	polluted						
		1	0				1		
2	Disturbing insects								
		not available	available						
		1	0				1		
3	Weeds								
		not available	available						
		1	0				1		
4	Cleanness								
		not clean	clean						
		0-3					3		
5	Garbage containers								
	available	not available	enough	not enough	well distributed	not well distributed			
	1	0	1	0	1	0	3	9 (8%)	
G	Safety and security								
1	Lighting: a handful to keep the park light and safe for those who stay late. Automatically turns on and off by detecting the lightness in the environment or according to the government regulations.								
	available	not available	rating						
	1	0	1-5				6		
2	Security guard: someone patrols the park daily								
3	available	not available							
	1	0					1		
4	Fencing								
	available	rating							
	0-3	1-3					6		
5	Hinders								
		available	not available						
		0	1				1	14 (12%)	
I	Aesthetics								
1	Monuments								
		available	not available						
		1	0				1		
2	Heritage features								
		available	not available						
		1	0				1		
3	Landmarks								
		available	not available						
		1	0				1		
4	View								
		from inside	weight	from outside	weight				
			1-3		1-3		6	9 (8%)	
	Total								118 (100%)