

Recreational Aspects of Open Green Spaces in Neighbourhood

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Abstract- Open green space in neighbourhood primarily meant for recreation. Recreation is always been an integral part of human life for being physically and mentally fit. Quantity and quality of open spaces, parks in particular, provide opportunities for recreation and social interactions that provide quality of life to residents. Due to lack of quality standards for open space, park potentials in terms of recreation are not being utilized properly. This paper aims to understand the recreational aspect of open green space and their contribution in recreational needs in neighbourhood. Recreational aspects of the park can be understood by investigating park quality and user experience, here park quality assessment based on quality for neighbourhood park criteria (QNPC). The study focuses on green open space in a planned residential area in Faridabad an industrial town in NCR region. The Methodology follows a qualitative approach; field observation and interviews of park users Result reveal that without quality, the quantity of parks did not satisfy user's recreational experience. Findings also act as a performance indicator of existing parks and provide guidelines for further work of the urban local bodies on green open spaces in a residential area.

Keywords: Open space, Urban Greens, Neighbourhood parks, Recreation, Recreational benefit.

I. INTRODUCTION

Open green space in neighbourhood primarily uses for recreation. Apart from recreational benefits open greens provide an environmental, social, and psychological benefits to urban people. Recreational activities can lead to increased confidence, improved creativity, and better self-esteem, Recreation allows some to rejuvenate, calm the mind, improve their outlook on life and increase positive affect. However, despite all those factors, park potentials in terms of recreation are not being utilized properly. Therefore, it is important to the understand recreational aspects of existing open green by evaluating the quality of green space including, features, facility, and user experience. This study focus on organized open spaces mainly in neighbourhood is considered the backbone of an open space system, serves residents from all walk of life to recreate, congregate, relax and meet others daily and within their residential neighbourhood[1]. Different researchers from different cities provide some guidelines to evaluate the character of green spaces. Firstly, one of the main factors in determining the character of green spaces is their quantity in the city [2] which is well defined in open space standard by MoUD in India. Secondly, existing qualities like activities and experiences, and perceived benefits to the users determine the utilization of green spaces [3] which is less

explored in Indian cities. Thirdly, the functionality of those green spaces is equally influenced by the location and distribution means accessibility in the whole city [2], [3].

Qualitative approach used to achieve the aim of this research. Observation method used, to understand the existing quality of green open spaces, QNPC model followed[4], which include physical characteristics like elements and activities, and further interviews of user were conducted to understand users experience to determine recreational aspects of parks. Purpose of this study to investigate the recreational aspect of open greens for recreational needs of residents in neighbourhood by understanding user experience and satisfaction of a using park in neighbourhood. Result reveals that without quality, the quantity of parks did not satisfy user's recreational experience. Findings also act as a performance indicator of existing parks and provide guidelines for further work of the urban local bodies on green open spaces in a residential area.

II. NEIGHBOURHOOD OPEN SPACES AND OUTDOOR RECREATION

Neighbourhood open space primarily serves as the recreational focus of a community as well as social. Residents get opportunity for recreation by the variety of features and facilities in proximity. Neighbourhood open green spaces, provide opportunities for social interactions that may help the residents to establish recognition and develop relationships[1], [5]. Study shows green open spaces in inner-city neighbourhoods also provide important cultural ecosystem services to local communities. The largely free and accessible character of green spaces could provide opportunities for social contacts between people[5]as well. Increasing empirical evidence however, indicates that the presence of open greens contributes to the quality of life in many ways, including providing breathing spaces in cities[6]use behaviour such as visit pattern, sensation, and healing evaluation of the green open space can also be shaped manipulating space enclosure in dense urban area [7].

Recreation means to regain lost enthusiasm and get a sense of joy, refreshment, and satisfaction. Outdoor recreation spaces provide a setting for informal play and physical activity, relaxation, and social interaction thus, enhance physical and mental health through the activity that provides relaxation, amusement, or stimulation researchers from many disciplines and theoretical perspectives have recognized the importance

of play and recreation to humans[8].Activities performed within a nearby park are one of the simplest forms of recreation. A successful park is categorized as one that satisfies the physical, psychological and social needs of the people[9]. Diverse natural settings and outdoor recreational facilities also encourage visits and promote social interactions[10], [11]. The proximity of recreational facilities and amenities appears to influence physical activity participation [12]. So, it is important to provide accessible and attractive open green space in a residential areas while planning for the liveable cities also well maintained and inviting green space becomes a green magnet attracting variety of visitors [13]. Therefore, recreational aspect of green open is important and can be interpreted by investigating quality and user experience. Park quality represents parks features and facilities, maintenance and cleanliness, accessibility, aesthetics and vegetation, and safety.

III. UNDERSTANDING OPEN SPACE STANDARD

The open space standard is to provide sufficient outdoor recreation facilities to the residents of a city. Also, improves air and water quality, buffering of noise pollution, and mitigation of impacts from extreme events, urban open spaces can reduce environmental health risks associated with urban living. Aspects such as open green per capita including public parks and other recreation areas are often mentioned as important factors to make the city liveable, pleasant, and attractive for its citizens[14]. Open spaces denotation related to a population of 1000 or by square meter per capita. WHO recommended norms of 9 sqm/capita and green area network within a15-minute walk. In USA, the National Recreation and Parks Association (NRPA)and in Britain the fields in trust (FIT) recommend standard of 40 square meter per capita and 24 square meters per capita respectively, dated from early in the twentieth century[15] also empirical studies show that developed countries, measure open space standards by four indicators. These are quantity, quality, accessibility, and neighbourhood or locality; whereas in Australia, only the first three and in Hong Kong and Kuala Lumpur quantity and accessibility standard are used, in general quality overlooked in the system to archive open space aspiration[16]. As per open space standard in India, 10-12 square meter per capita quantity recommend by URDPFI[17].urban greening guidelines 2014TCPO[18], says at the neighbourhood level, planned green spaces are provided in the form of neighbourhood parks/tot-lots. These have to be properly maintained in terms of irrigating the plants and making the provision of pruning at regular intervals. Without any specific guideline on attributes and facilities. Whereas in CPWD “handbook on landscaping” the guideline on development and construction of parks and garden specify without highlighting features for recreational aspects[19].For a better understanding of green space in neighbourhood it is necessary to have a large overview of open spaces in a city. Urban greens include tot lot lots, housing parks, neighbourhood parks, city parks, regional parks, green belts. Open spaces also include a playground, multipurpose open space, mela grounds.

This study has only taken consideration of organized open spaces in neighbourhood to meet its purpose. Every city has its own definition of open space but the provision, design, management, and protection of urban green spaces are at the top of the agenda of sustainability and liveability[6].As per URDPFI 2014 guideline, open space categories under social infrastructure planning shows quantity indicator as follows (Table-1)[20].

TABLE I: ORGANISED OPEN SPACE AS PER UDRFI

S. no	categories	Numbers of park required unit	Unit area in ha.
1	Sub-city park	1 for 1,000,000 population	100
2	District park	1 for 500,000 population	25
3	community	1 for 100,000 population	5
4	neighbourhood	1 for 15,000 population	1
5	Housing area	1 for 5000 population	0.5

IV. UNDERSTANDING QUALITY STANDARD

In an open space system, the quality standard is a matrix that identifies what infrastructure and landscape features are appropriate and suited for open spaces for user satisfaction [21]. Moulay, Ujang et al.(2016) found in his study that quality attributes of neighbourhood parks influence residents' pattern of engagement, particularly duration of use, therefore addresses the value and importance of park quality in the design of more preferred parks. Other study says park quality can be assessed by assessment tool named Quality Neighbourhood Parks Criteria (QNPC),based on need, preferences, use pattern as well as the overall satisfaction of the park users[4].It’s important to managing green spaces in a diversified way, so as to fulfil the recreational needs and expectations of all the segments of residents including children, families, elderly people, etc.[14] for the positive experience. Studies suggest people, engage in different activities depending on green space characters that can be interpret as necessary, optional, and social [22].There are around 600 parks in Faridabad city, of which some of them are managed by municipal corporation Faridabad, RWA and other industrial association. Quality indicator for quality experience and recommendation may be helpful in harness of full potential of these parks.

V. METHODOLOGY

This research undertakes qualitative approach. The context of this study is the planned residential sectors in Faridabad city. The Study was conducted in three sectors represent neighbourhood, numbers of open green space, size and typology of assess through reconnaissance survey. After assessing the condition of all available open spaces in all three sectors, most preferred parks identified in every neighbourhood and field observation was conducted to observe attributes of the park to assess the quality of existing park which include, features and facility, accessibility,

maintenance and cleanness, aesthetics and vegetation and safety developed by Quality Neighbourhood Parks Criteria (QNPC)[4].Park users were identified as toddlers, kids, accompanied with caretakers, teenagers, adults, and elders then observed activities they perform in parks. Total 320 users (N=320),120 users in park P1-A, 60 users in P5-B and 220 uses in park and 80 users in P2-C were observed to study the activity they performed and furthermore, face to face interview of user conducted to know their recreational experience. Data was gathered in February and March 2020, in the morning and evening in working days and on weekends when parks were had more visitors. After completing data compilation, data was then analysed using analysis technique from descriptive analysis, statistic descriptive analysis, and correlation statistics.

A. Study Area

The study focuses on a planned residential area in Faridabad an industrial town in NCR national capital region encompasses the NCT national capital territory of Delhi. One of the cities selected for “smart city” revolutionary flagship mission of Indian government launch in 2015.Planned residential three sectors namely 21-A, sector 21-B, and sector 21-C were selected (Figure 1) represent as neighbourhood area to study open green spaces within. Sector 21-C divided into three parts 21-C I, 21-C II, and 21-C III, 21-III has group housing so this study considered only part I and II. The Selection of sector is based upon the factor of planned residential area dotted by green open space. All green space within all three sectors developed and maintain by either municipal corporation of Faridabad and Resident welfare or private institutions.

Faridabad city



Fig. 1Map of three selected neighbourhood (study area) with all open green space marked.

VI. RESULTS

A. Green open space quantity and condition

All three neighbourhood meet standard in the term of quantity as there is one neighbourhood park in each sector, park P1-A is neighbourhood park area of 1 hecter and rest of six parks P2-A, P3-A,P4-A, P5-A, P6-A,P7-A serves as housing park

with the facility of walking, kids rides for and green lawn (Table 2).P5-B has recently developed as smart park under smart city mission by Faridabad smart city mission and rest of six park serves as housing park manly P1-B, P3-B, P4-B,P6-B,P7-B, and P8-B. one park (P2-B) near 21-B developed by Haryana development authority, area of 3.1 hecter Mostly used by Fatehpur chandela village falls within sector 21-B.

park P1-C is neighbourhood park for sector 21-C in term of size but unmaintained and lying in poor condition. Parks P2-C, P4-C, are in good condition serves recreational needs to residents P4-C, P5-C, P6-C, P7-C, P8-C and P9-C are housing parks (Table 3). this field observation shows that all three

sectors have open green spaces as per UDRPFI guidelines. Research results of observation of three neighbourhood based upon quantity and condition shown in table-2 and table 3 respectively.

TABLE II: RESULT OF OBSERVATION BASED UPON QUANTITY OF GREEN OPEN SPACE

Observation	Neighbourhoods								
	Sector 21-A			Sector 21-B			Sector 21-C I		
Population	4155			5295			6900		
Green Open spaces	Parks	Size (sqmt)	Typology	Parks	Size (sqmt)	Typology	Park	Size (sqmt)	Typology
	P1-A	10,000	Neighbourhood park	P1-B	3600	Housing park	P1-C	10000	Neighbourhood park
	P2-A	5350	Housing park	P2-B	31500	Neighbourhood park	P2-C	7500	Housing park
	P3-A	1338	Totlot	P3-B	3400	Housing park	P3-C	3000	Housing park
	P4-A	1338	Totlot	P4-B	3600	Housing park	P4-C	6000	Housing park
	P5-A	2000	Housing park	P5-B	10200	Neighbourhood park	P5-C	3600	Housing park
	P6-A	3000	Housing park	P6-B	3000	Housing park	P6-C	2400	Housing park
	P7-A	2508	Totlot	P7-B	8000	neighbourhood	P7-C	2100	Housing park
				P8-B	2000	Housing park	P8-C	2100	Housing park
						P9-C	1750	totlot	

TABLE III: RESULT OF OBSERVATION BASED UPON EXISTING CONDITION OF GREEN OPEN SPACE.

Observation	Neighbourhoods					
	Sector 21-A		Sector 21-B		Sector 21-C	
Population						
Green Open spaces	Parks	Condition	Parks	Condition	Park	Condition
	P1-A	Good	P1-B	poor	P1-C	Poor
	P2-A	moderate	P2-B	moderate	P2-C	Good
	P3-A	moderate	P3-B	moderate	P3-C	moderate
	P4-A	moderate	P4-B	moderate	P4-C	Good
	P5-A	moderate	P5-B	Good (smart park)	P5-C	moderate
	P6-A	Good	P6-B	moderate	P6-C	moderate
	P7-A	moderate	P7-B	moderate	P7-C	moderate
			P8-B	poor	P8-C	moderate
				P9-C	moderate	



Fig.1 Vegetation in Park P1-A in sector 21-A

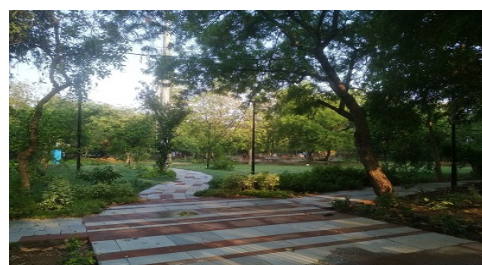


Fig.2 landscaping in Park P5-B in sector 21-B



Fig.3 Open Gym equipment in P1-A in sector 21-A



Fig.4 Unmaintained Condition of the parks in Sector-21-B

B. Assessment of Quality of Park

Park P1-A in sector 21-A, park P5-B in sector 21-B, and park P2-C are found in good condition and identified for further investigation of park variables those are considered to have effect on quality of park. these variables are parks feature and facility, park accessibility, cleanliness and maintenance, aesthetic value and vegetation condition and safety as per QNPC assessment tool developed by researcher Malek et al in 2014. Observation shows every park have good walkways and seating facility covered and open. Seats placed in groups which promote interaction among residents, playing facility like swings and see-saw for kids were not present but open gym equipment was noticed in each park in neighbourhood. All three parks are accessible from three sides including one side main entry and other two sides by metal revolving gate. Park P1-A and P2-C don't have disable friendly access expect

P5-B which is recently developed (Table 4).Park P1-A, andP2-C, maintained by municipal corporation of Faridabad (MCF) and resident welfare association. P5-B presently maintained by Faridabad smart city limited (FSCI). Aesthetic value and vegetation conditions are very good in park P5-B (smart park), flowerbeds, various plants and shading tress create a relaxing and enjoyable environment. In other parks walkways aligned with low height hedge and tall and shady trees are mostly on the outer periphery of park, few big trees were located middle of park enhanced appearance. For Safety surveillance system were not present in parks expect smart park, although park P1-A, andP2-C have lighting fixture in the park and low height wall with a fence. Park P1-A has a central light fixture, low height lighting fixture and lighting fixture along the walkways which makes this park usable at night time also.

TABLE IV: RESULT OF OBSERVATION OF VARIABLES WHICH HAVE IMPACT ON QUALITY OF PARK, BASED UPON QNPC MODEL

Dependent variable	Independent variables	P1-A	P5-B	P2-C
Park features and facility				
	Overall quality of facilities	Good	Very good	Good
	Pedestrian paths and walkways	✓	✓	✓
	Seating facilities	✓	✓	✓
	Playing facilities	x	✓	x
	Health and sports facilities	✓	✓	✓
	Public toilet facilities	x	✓	x
Park accessibility	Accessibility and ease of access	Poor	Good	Poor
	Access for people with special needs	x	✓	x
	Parking facility	x	x	x
Cleanliness and maintenance	Quality of facilities maintenance and cleanliness	Good	Good	Good
	trash bin	✓	✓	✓
Aesthetic value and vegetation condition	Aesthetic value and condition of vegetation	Good	Very good	Moderate
	Quality of scenery and visual appeal	Good	Very good	Good
	Suitability of plant and plant maintenance	Good	Very good	moderate
Safety of park	Urban park quality of safety	low	good	low
	Condition of fences	moderate	good	moderate
	Urban park lighting conditions	good	Very good	Moderate

C. Park use Pattern and activities

User's engagement in park depending depends on user profile like toddlers and kids were mostly use open gym (not comfortable)which has replaced swings and see-saw in the park during morning and evening time accompanied by patents or caregiver. Teenagers use parks in a group generally 5 to 10 friends in the evening, adults use parks in the morning and evening for a walk and jogging, elder residents use park in the morning to socialize with other residents and for yoga

sessions. For elders, these parks are place to interact with others and they spend time in group or alone while enjoying nature and watching children to play. Total 320(N=320) users were observed during field study and that confirms the park users were include 30% (elders above 60yr), 30% adults(30 to59yr), 20% teenagers and 20% kids with caretakers use parks during day time while few joggers of age between 20 to 30 years use park in the late evening. The result shows that parks mostly used for walking by adult and elders (Figure 2).

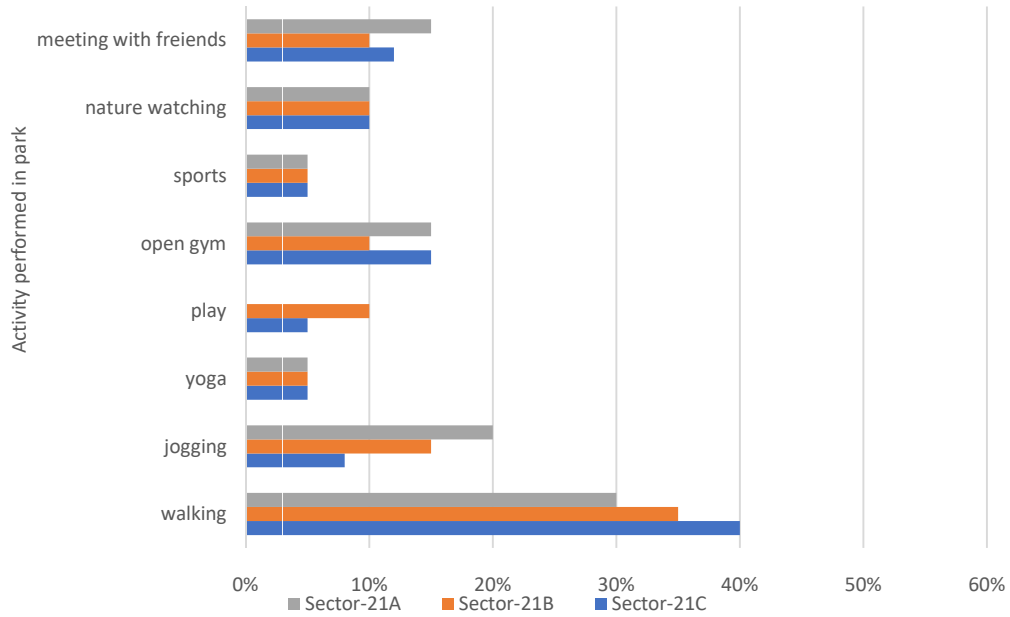


Fig.5 Activities perform by visitors in park.

D. User recreational experience in park

Face to face interview of park users shows that experience level varies in different park depending on park attributes which contribute towards park quality. In park P5-B (smart park) 50% users express good experience in terms of

recreation (Figure-3) where 30 % express very good experience. 40% users of Park P1-A, P2-C were appreciating the greenery of park-like tall trees and green grass but not happy with the other facility so express the satisfactory experience in terms of recreation. This shows that recreational experience depends on the quality of park.

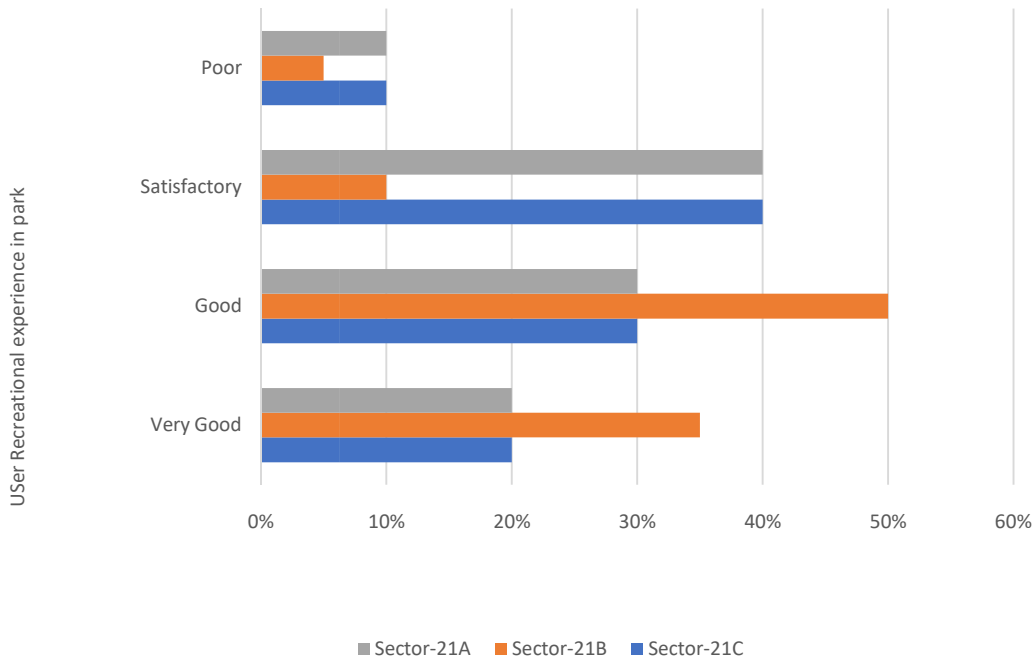


Fig.6 Users recreational experience in park

VII. DISCUSSION

Above results show all three neighbourhoods are well planned with green open spaces and have huge potential to serve different recreational need of residents. but not every park attracts visitors. The Study finds not every park attracts visitors because of their quality, which needs to be improved to fulfil the indented purpose of the spaces. All three sectors have one Neighbourhood parks are housing parks, most of the green opens are housing parks meant for only walking with a walkway all around the park and hedge planted along with, these parks offer less activities for the user giving them reason not to spend much time in the park, research shows low level neighbourhood attachment which positively linked with decrease activity in parks [23]. Trees can be noticed well grown in park but facility for kids to play is almost were absent which considered a very important feature for kids’ physical activity and wellness. Some large park also divides into four parts by crossing walkways without any specific purpose. Study of smart park suggests that organization of spaces also an important factor in park quality as it attracts more visitors as compared to other two parks P1-A and P2-C studied. This shows the recreational aspect of parks depends upon the quality of park.

A. Smart Park

Smart park(P5-B) developed in the sector under smart city mission flagship launched in 2015 set an example for other parks in terms of design. “Revival of open spaces” one of the goals of Faridabad smart city limited and it has understood the recreation benefits of the citizen of Faridabad by providing the new concept of parks with smart feature called smart park for all age group. Smart park has silent features which are considered necessary for recreational need of all users as well as a sustainable solution, set an example for development of other parks as well. Silent features of smart parks are followings:

1. Amphi-theater	7.canopy covered sitting deck	13. Smart toilet
2. smart screen	8.compost pit	14. Sculptures
3.smart pole	9.vender kiosk	15. water fountain
4. CCTV cameras	10. solar canopy	16. mobile operate tower
5. smart kiosk	11. water ATM	17. bench seat out
6. grass mound and flower bed	12. rain water harvesting pit	

VIII. CONCLUSION

Quality of park plays an important role in user’s recreational experience in the park, also all elements were found to be a significant predictor of recreational participation and satisfaction. This study suggests that every park needs to be designed and maintained a high-quality standard to increase

the accessibility of the locals to recreational opportunities as an example set by SMART PARK. Park design and layout found have direct impact on user’s recreational experience in the park. Clear sightline, passive and active surveillance, permeable boundaries, and clear signage and lighting be considered also visibility and clear sightline are important factor in enhancing the perception of safety in visitors. Good lighting in park provide a clear overview to user, lighting and signages can be coordinated to create a sense of order. This study addresses the value of quality as well as the quantity of parks for quality of life in neighbourhood. Potential of other parks need to be utilized by incorporating park attributes like features and facility, maintenance and cleanliness, accessibility, landscaping and safety.

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