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Identification of Relationship between the Quality and Uses of Public Parks in India

Aniruddha Jogdande, Abir Bandyopadhyay*

Department of Architecture, National Institute of Technology Raipur, Chhattisgarh, India

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Abstract The study aims to identify the relationship between the quality and the uses of public parks in India. It has been observed from the literature that the quality of the park is generally evaluated based on some 'factors' that, in turn, define the 'use' of the park. In this study, a mixed-method approach is adopted for evaluating the relationship between the quality of parks and their uses. Statistically, Pearson's Correlation Analysis determines such a relationship. The finding of the study identifies that some of the identified factors are "design factors" of the parks, and the rest are mostly contextual, like extraneous, characteristics of surrounding areas and management factors. The study concludes that the use of park is not only dependent on design factors and their quality but also depends on the quality of the extraneous factors, characteristics of surrounding areas and management policies of the parks. These four factors create an image of the park and generate legibility for its specific use. Park designers and planners must focus on the design factors which give legibility for its specific use, considering the characteristics of the surrounding areas and management policies of the park. They should also understand the users' needs while designing and planning the parks. The study would be helpful for park designers and planners to improve the utility of the park.

Keywords Public Parks, Uses of Parks, Quality of Parks

1. Introduction

Urban green space along with public parks provides various ecological benefits to the cities by regulating urban heat island, noise reduction, air pollution, and various ecosystem services [1,2]. They also contribute to enhancing physical and social-cultural value, promoting long-term economic benefit and wellbeing [3,4]. Public parks are increasingly becoming popular for people to engage in social-physical activities; they also help in improving the quality of life of city dwellers [5,6] by providing many recreational, social-ecological, and economic benefits [7-10]. Common reasons for inappropriate use of public parks may be attributed to a lack of design guidelines and public participation, limited funding, poor maintenance, security and adequate facilities, as well as, lack of sports and social activities [11-13]. In this context, the present study deals to analyze the role of public parks, its uses, and relationship with the quality of parks in Indian context.

2. Literature study

Uses of Public Parks

Several literatures explain the usage of public parks. In the larger Asian context, the usage pattern of public parks is different from the western context due to a difference in social-economic status, culture, and geo-climatic conditions [14]. In a developing country, like India, parks are mostly used for recreation, physical exercises, and social gatherings; they are also used for other activities like reading and napping at times [15-17].

Activities of park visitors are one of the essential factors that determine the usability of public parks [18-20]. The nature and variety of activities of park visitors are determined by the characteristics of park and surrounding area of the park [21,22]. Activities can be spontaneous because of space configuration [22]. There may be individuals sitting or playing a game in a dedicated or multi-use area [22]. Activities can also be based upon services and events, such as food and beverage provision, concerts, awareness campaigns, or street markets [5,6]. Activities and services must be managed by ensuring the elements required for these activities, the availability of necessary utilities, and the level of performance [21]. In addition, appropriate programs are also organized for more active events and providing various services either directly or through concessions [19,23].

Quality of Public Parks

Several studies have examined the significant role of quality of a park, which promotes use of park [19,24-26]. From literature it is found that the quality of the park plays an essential role in attracting visitors, as it provides a scope for various activities [27-29]. The quality of a park has been assessed through various factors, namely accessibility, safety, amenities, maintenance, vegetation, aesthetic feature, illumination, etc. [30-49].

Table 1. Classification of factors which define quality of parks

Factors	Categories
1. Accessibility 2. Safety	Extraneous
3. Amenities 4. Vegetation 5. Aesthetic feature 6. Illumination	Qualitative feature (Design)
7. Maintenance	Management

(Source: Authors)

These factors which define the quality of parks are further classified into Qualitative feature (Design) Extraneous, and Management categories based on their nature, as shown in Table 1.

In addition to this, some other factors such as time, day, season, or weather, are associated with use of park [50,51]. The probability of use of park is generally higher on weekends, as opposed to weekdays, and higher in the afternoons and evenings than in the mornings or at noon [52-54].

Characteristic of Surrounding Area of the Park

Researchers have also found that neighborhood characteristics, including social-demographic characteristics, surrounding built environments, and road connectivity, are integrally associated with use of park [31,53].

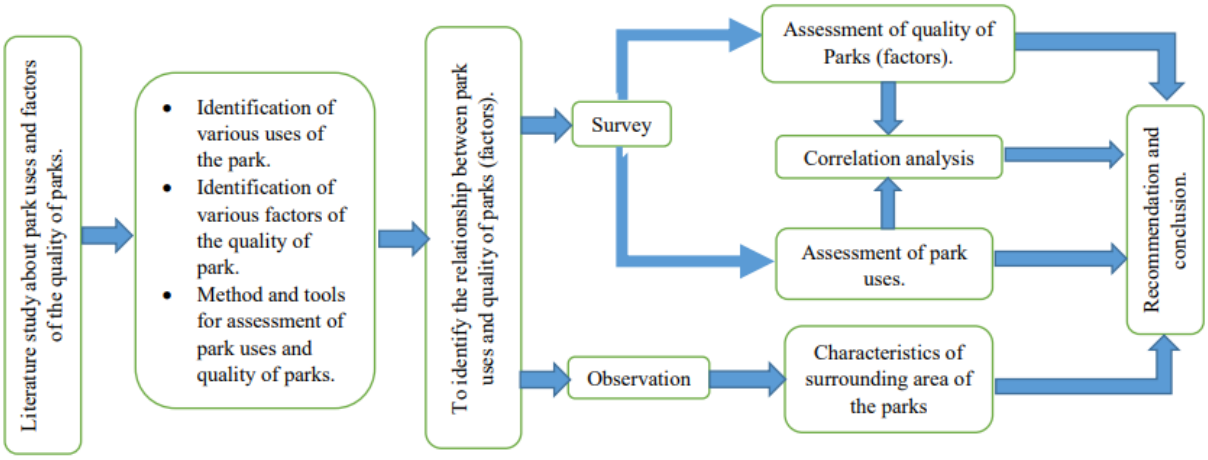
Literature also identified that geographical features such as the area of the park and location influence use of park [21,22]. Park management policies like Opening hours, events, and programs also built an image of the park for its specific use [21,22].

3. Research Method

A mixed-method approach has been adopted to identify and assess usage of parks [55]. In environmental behavior research, 'observation' does help in better understanding the relationship between the physical characteristics of a place, and how humans interact with that place [56-58]. Therefore, for the present study, “observation” has been adopted for assessment of the characteristics of the surrounding area of parks.

Additionally, surveys are conducted to understand the park users' purpose for visiting and also the perception of the quality of the spaces and their benefits [59-62]. Thus, a survey of park visitors was conducted to identify the purpose of visit (activities in parks), frequency of visit, time spent in the park, and preferable time to visit. Furthermore, survey methods also helped in assessing the quality of the parks through certain factors. In the present study, the responses to the survey were collected on a 5-point Likert scale (1=poor, 2=average, 3=Good, 4=V.Good, 5=Excellent). The result from the survey was converted into percentages for the sake of convenience.

Statistical Package of Social Sciences (SPSS, version-25) was then used for data analysis. Descriptive statistics were used to determine the mean and percentage. Pearson’s correlation was performed to identify the relationship between use of park and quality of parks. Based on a survey of quality and uses of parks, observation of characteristics of the surrounding areas, and correlation analysis of quality and uses of parks, some recommendations are suggested for improving the quality of parks. Fig. 1 shows the overall research method.



Source: Authors

Figure 1. Research Method

4. Study Area

For the present study, the city of Raipur (Latitude 21.250000, Longitude 81.629997) is taken for consideration. Raipur is the capital city of the state of Chhattisgarh, which was carved out of the erstwhile of Madhya Pradesh state in 2001. Raipur is basically an administrative city with a population of 1, 010, 087, [63]. Raipur also served as a business center and a plethora of people belonging to various strata of society within the city. The parks in Raipur were mostly made during the colonial period (British rule), and they are still in use with certain changes. The Interim Report for the Revised City Development Plan for Raipur in 2014 shows that only around 3% of the city's total area is under open space, including public parks. Thus, there is a need to develop the parks in the city.

According to the Revised Development Plan of Raipur [64], there are about 150 public parks under the maintenance of The Garden Department of Raipur Municipal Corporation of which Anupam Park, Collector Park, Gandhi Park, and Neelab Park have been the most popular parks among the residents of Raipur. These four parks were selected based on their popularity for the study.

5. Data Collection

Assessment of Characteristics of the Surrounding Area of the Parks

Site visits were conducted for assessment of characteristics of the surrounding area of the selected parks. The characteristics of surrounding area of the parks were assessed through observation of surrounding buildings, opening hours, events and programs in the parks, connectivity and location, natural and geographical features inside the parks, and scenic view from the park. The data was collected in spring 2022 on alternate days in the month of February in three-time slots; namely, 6 AM to 10 AM, 12 PM to 3 PM, and 5 PM to 9 PM. The observations were conducted by a single person purposefully to eliminate the problem of inter-rated reliability and, to compare each park qualitatively and quantitatively. Photographs, maps, videos and notes were used to collect preliminary data. The information collected from site visits led to an ideal image of the parks and a comprehensive understanding of the parks and their pattern of usage, as shown in Table 2.

Table 2. Assessment of Characteristics of the Surrounding Area of the Parks

Name of park	Area (SQM.)	Location	Approach Road (Meter)	Adjacent building/land use	Programs /events	Opening hours	Major findings
A	B	C	D	E	F	G	H
Anupam Park	14619	• Latitude $21^0$14’36.36” N • Longitude • $81^0$36’33.04” E	• North: 18 M wide road • South: Nil • East: 6 M wide road • West: 18 M wide road	• North: Commercial • South: Residential, Religious, Commercial • East: Educational • West: Educational, commercial	• Yoga class operated by trained professional • Sport competition • Health checkup program • Women safety program	Morning 6 to 10 AM Evening 4 to 9 PM (9 hrs.)	• Park is mostly used in morning times • Eateries stall of juice and fruit are surrounded at the entrance of the park • Large open area for group activity is available inside the park • Varity of open gym equipment and maintain jogging track is seen inside the park • First aid box available inside park office
Collector Park	7217	• Latitude $21^0$14’43.54” N • Longitude $81^0$38’34.59” E	• North: 9 M wide road • South: 18 M wide road • East: 18 M wide road • West: 9 M wide road	• North: Administrative • South: Administrative, Open green space • East: Administrative, commercial • West: Commercial	• Festival celebration • National events celebration • Social club meetings	Morning to Evening 6 AM to 9 PM (16 hrs.)	• Park is mostly used between 11A.M. to 6 P.M • Park is located in city Centre • Large meeting hall is present adjacent the park for group activity • Park is mostly empty on Saturday and Sunday • Eateries stall of tea and snack are surrounded of the park
Gandhi Park	18433	• Latitude $21^0$14’31.28” N • Longitude $81^0$39’12.39” E	• North: 18 M. wide road • South: Nil • East: 9 M wide road • West: 12 M wide road	• North: Open green space, Commercial • South: Residential • East: Residential • West: Commercial	• Yoga class • Health checkup camp • Laughing club	Morning 6 to 10 AM Evening 4 to 9 PM (9 hrs.)	• Park is mostly used in morning times • Eateries stall of juice and fruit are surrounded at the entrance of the park • Varity of trees found as compared to other parks • Density of vegetation is maximum as compared to other parks • Maintained open gym equipment inside the park • First aid box available inside park office • Regular Health checkup programs

Table 2. Continued

Neelab Park	13571	• Latitude $21^0$14’05.12” N • Longitude $81^0$38’05.30” E	• North: 12 M. wide road • South: Nil • East: Nil • West: Nil	• North: Residential, commercial • South: Lake • East: Open ground, Educational • West: Lake	• Festival celebration • Musical concert	Morning 6 to 10 AM Evening 4 to 9 PM (9 hrs.)	• Park is mostly used in evening times • Maximum park visitors have been observed on holidays and weekends • Eateries, toys, and balloon stall are present at the entrance of the park • A beautiful scenic view and boating facility available in the park • Beautiful design of illumination and variety of aesthetic features inside the park • Musical fountain in the park is main attraction point of visitors

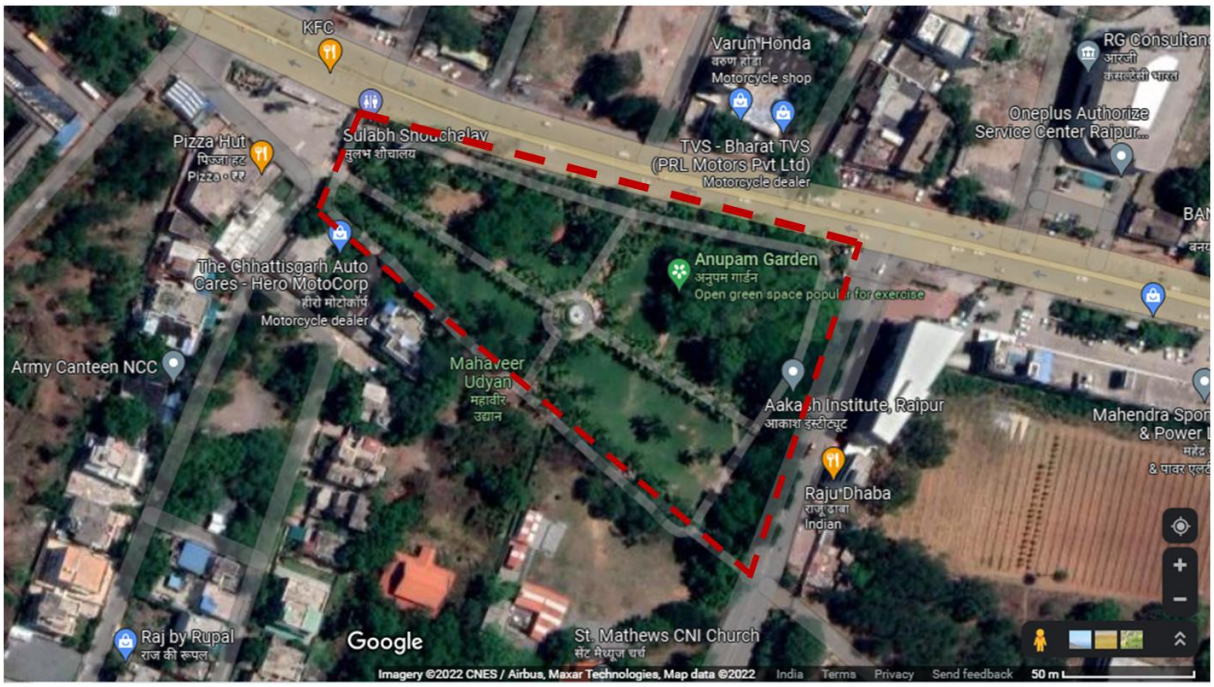
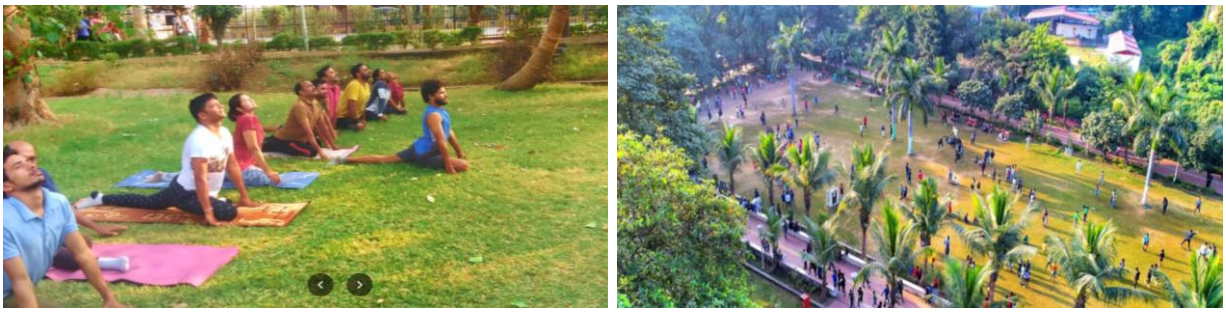


Image source: https://www.google.com/maps/@21.2437008, 81.6083551, 307m/data=! 3m1! 1e3

Figure 2. Anupam Park



(a) (b)

Image source: Authors, Photographs taken in the park

Figure 3. Anupam Park

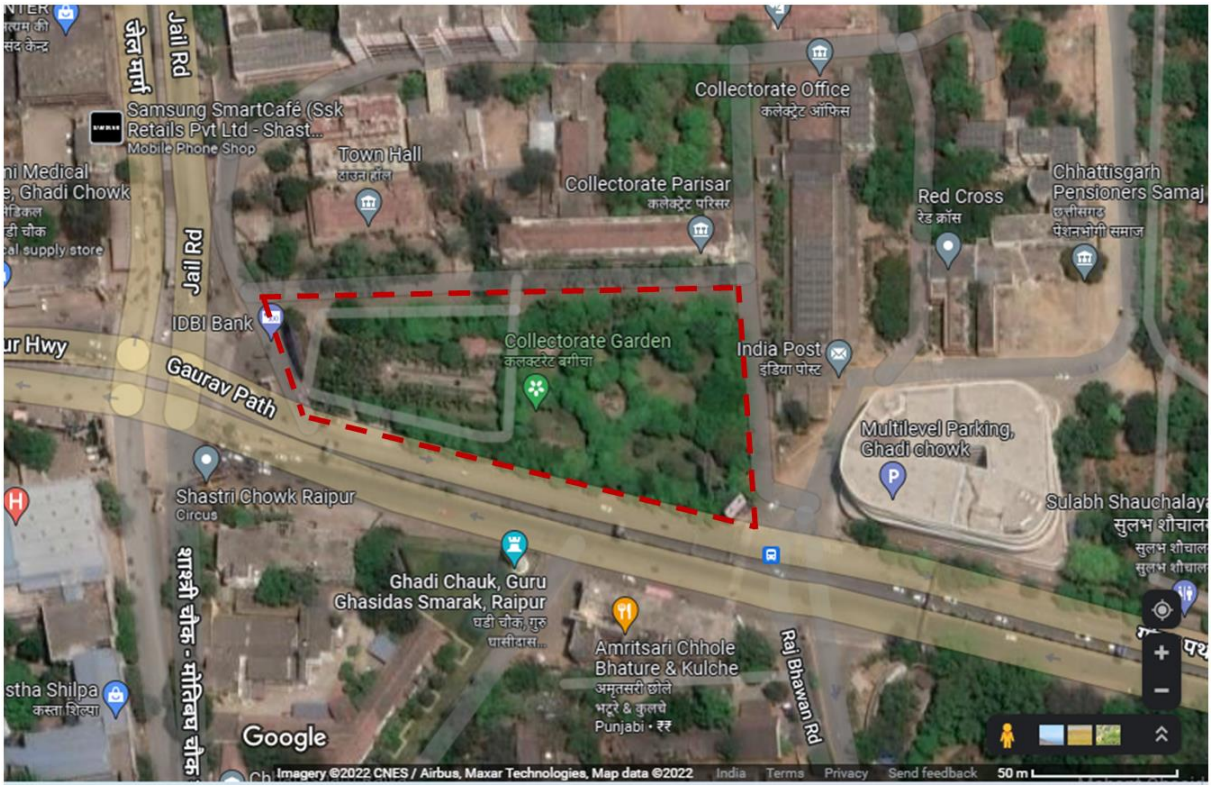


Image source: https://www.google.com/maps/@21.2455423, 81.6421689, 307m/data=! 3m1! 1e3

Figure 4. Collector Park

(a) (b)

Image source: Authors, Photographs taken in the park

Figure 5. Collector Park

Fig. 2 shows that Anupam Park is connected by major roads and surrounded by various buildings such as churches, restaurants, and shopping outlets. Fig. 3 (a) shows the trained professionals in the park operate yoga classes. It also shows that the park has a large open area for physical exercise (b).

Fig. 4 shows that Collector Park is connected by major roads and surrounded by District Collector Office, post office, and commercial outlets. Fig. 5 (a) shows that the town hall, which is adjacent to the parks, is used for senior citizen social meetings. It also shows that the park is used for national events celebrations (b).

Image Source: https://www.google.com/maps/@21.2421788, 81.6529771, 307m/data=! 3m1! 1e3

Figure 6. Gandhi Park

(a) (b)

Image source: Authors, Photographs taken in the park

Figure 7. Gandhi Park

Image source: https://www.google.com/maps/@21.2340698, 81.6336264 434m/data=!3m1!1e3

Figure 8. Neelab Park

(a) (b)

Image source: Authors, Photographs taken in the park

Figure 9. Neelab Park

Table 3. Classification of activities of park visitors into specific uses of parks

Sr.no	Purpose of park visitor's (activities) to visit the parks	Use of parks
1	● Enjoying beauty of the park ● Relaxing on bench or lawn ● Family picnic	Recreational
2	● Meeting to friend ● Group discussion ● Participating in event	Social
3	● Physical exercise ● Jogging ● Walking ● Yoga ● Meditation	Physical

(Source: Authors)

Fig. 6 shows that Gandhi Park is connected through major roads and surrounded by commercial outlets and residential buildings. Fig. 7 (a) shows that senior citizens use the park for laughing club and physical exercise. It also shows that the park has dense vegetation (b).

Fig.8 shows that Neelab Park is connected by road on only one side and is surrounded by the lake, school, commercial outlets, and residential buildings. Fig. 9 (a) shows that the park is primarily used in the evening times and has beautiful illumination and a musical water fountain inside the park (b).

From the visit to the parks, it has been observed that there are certain qualitative features (vegetation, illumination, aesthetic feature, amenities, etc.) that depend on the design of the space in the parks, but there are some other (extraneous) features (accessibility, safety, etc.) that are not considered as "Objects of design" but are imperative for the usage of the parks. Management policies (Opening hours, organized programs & events, maintenance) framed by park authorities also influence the use of parks.

Hence, the assessment of the quality of the parks is done based on 'qualitative' 'extraneous' and 'management' factors as identified. Whereas assessment of the use of parks is done based on the activities performed by the park visitors.

Assessment of the Use of Parks

The use of parks has been evaluated through a questioner survey from park visitors of selected parks. That consists of questions about purpose to visit (activities) the park. Further, park visitor's responses about purpose to visit (activities) are classified into three categories of use of parks, i.e. recreational, social, and physical use, as identified from the literature study. Classification of purpose of park visitor's (activities) into specific use of parks is shown in Table 3.

The characteristic of park visitors has been assessed through a survey of questions related to gender, age, total time spent, frequency of visit, and preferable time to visit. The survey form was distributed randomly to 100 numbers of park visitors from each selected park.

Assessment of Quality of Park

Quality of park was also assessed by the survey from the park visitors of each selected park. The survey questioned

about the quality of factors identified from extant literature; includes accessibility, safety, amenities, maintenance, vegetation, aesthetic features, and illumination. The scores obtained from the primary survey (in 5-point Likert scale) were tabulated and the mean score of each factor and the sum of all factors as the overall quality of park was calculated.

Correlation Analysis

Correlation analysis is adopted to identify the relationship between overall quality of park and park use. Pearson's correlation analysis is used to identify the relationship between two variables with different measuring units [65]. Pearson's Correlation Analysis was applied on the data of uses of park and quality of parks to identify the relationship between the quality and use of public parks.

6. Result and Analysis

Analyses of the data collected through primary survey and *characteristics of the surrounding areas of the parks* are noted. It includes the examination of bivariate associations tested after removing any outliers in order to determine the quality of parks and uses of parks. It also examined whether characteristics of the surrounding areas of the parks and use of park were associated with each other.

The descriptive analysis helps determine the relationship between some of these factors. The characteristics of park visitors play an important role in understanding park use patterns by users of different age groups and gender. Table 4 shows the descriptive analysis of each selected park in terms of percentage of gender, age group in years, time spent in hours, preferable time slot, purpose of visit and visit frequency.

Table 4. Descriptive analysis of uses of parks

Sr.no	Characteristics	Anupam Park %	Collector Park %	Gandhi Park %	Neelab Park %
1	**Gender**				
	Male	42	78	77	54
	Female	68	22	21	46
2	**Age Group in years**				
	18 to 24	2	2	2	24
	25 to 30	6	4	4	36
	31 to 40	14	12	12	22
	41 to 55	60	64	66	12
	>55	18	18	16	6
3	**Time Spent in hours**				
	0.5	6	4	6	3
	1	84	80	82	10
	2	10	16	12	82
	3	0	0	0	5
	>3	0	0	0	0
4	**Preferable Time slot**				
	Morning 6 to 9 AM	77	4	86	21
	Afternoon 12 to 4 PM	0	84	0	0
	Evening 5 to 9 PM	23	12	14	79
5	**Purpose of visit (Activity perform)**				
	Recreation	15	11	16	74
	Social	12	79	12	12
	Physical	73	10	72	14
6	**Visit frequency**				
	Daily	82	16	89	8
	Weekly	16	3	9	12
	Monthly	2	79	2	18
	Occasionally	0	2	6	62

(Source: Authors)

Table 4 shows that the male visitors have been found maximum in Collector Park (78%). Whereas female visitors have been seen maximum in Anupam Park (68%).

The visitors from the Age Group of 41 to 55 years preferred to visit Gandhi Park (66%) more than Collector Park (64%) or Anupam Park (60%). Whereas in Neelab Park, visitors from the age group of 25 to 30 years are found to be a maximum (36%).

Visitors like to spend one hour in Anupam Park, Collector Park, and Gandhi Park; but in Neelab Park, visitors like to spend 2 hours.

Considering the preferable time to visit, Anupam Park and Gandhi Park are mostly visited in the morning hours (6 to 9 AM); collector Park is mostly visited in the afternoon (12 to 4 PM); neelab Park is mostly visited during the evening (6 to 9 PM).

Considering the preferable usage of parks, Anupam Park and Gandhi Park are mostly used for physical activities (73% & 72% respectively), Collector Park for social activities (79%). Whereas Neelab Park is mainly used for recreational activities (74%).

Considering the visit frequency, Anupam Park and Gandhi Park have maximum daily visitors (82% and 89%, respectively). Collector Park has the maximum monthly visitors (79%). Neelab Park has maximum occasional visitors (62%).

The quality of parks has been identified from certain factors of parks as identified from the literature. In addition, ranking of the parks was done based on their overall quality score. Table 5 shows the quality assessment of factors of parks.

Considering the preferable usage of parks, Anupam Park and Gandhi Park are mostly used for physical activities (73% & 72% respectively), Collector Park for social activities (79%). Whereas Neelab Park is mainly used for recreational activities (74%).

Considering the visit frequency, Anupam Park and Gandhi Park have maximum daily visitors (82% and 89%, respectively). Collector Park is the maximum monthly visitors (79%). Neelab Park has maximum occasional visitors (62%).

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Table 5 shows the quality of each factor for each park, the importance of factors (I), park rank, and ideal park use. The importance of factors for each park is evaluated through dividing the overall quality of each park by the total number of factors (7). The importance of factors helps to determine the overall importance of quality of each factor in the park.

In the case of Anupam Park, the quality of vegetation (4), maintenance (3.5), safety (3.4), amenities (3.3), and accessibility (3.2) are higher as compared to the quality of illumination (2.6) and aesthetic feature (2.5). The overall quality of Anupam Park is 22.5, and the importance of factors is 3.2 and secured 3rd rank.

Similarly, the other selected parks were also evaluated as shown in Table 5.

A Pearson's Correlation Analysis was applied to the survey data about use of park and the overall quality of parks to identify the relationship between use of park and quality of parks. The result of the correlation analysis is shown in Table 6.

Table 5. Quality Assessment of factors of parks

Sr. no	Park	Accessibility	Safety	Amenities	Maintenance	Vegetation	Aesthetic feature	Illumination	Overall quality of park	Importance of factors (I) (Mean) H/n	Rank	Use of park
									H			
		A	B	C	D	E	F	G	H=A+B+C+D+E+F+G			
1	Anupam Park	3.2	3.4	3.3	3.5	4.0	2.5	2.6	22.5	3.2	3	Physical
2	Collector Park	3.1	3.0	3.1	2	1.2	1	1.1	14.5	2.1	4	Social
3	Gandhi Park	3.5	3.4	3.6	3.3	4.8	2.4	2.5	23.5	3.4	2	Physical
4	Neelab Park	3.7	3.7	3.9	3.2	2.1	4.1	4.3	25	3.6	1	Recreational

(Source: Authors)

Table 6. Correlation between overall quality of park and uses of parks

Parks	Overall quality of park (H)(from Table 5)	Recreational use %	Social use %	Physical use %
Anupam Park	22.5	15	12	73
Collector Park	14.5	11	79	10
Gandhi Park	23.5	16	12	72
Neelab Park	25	74	12	14
Correlation coefficient with relation to quality of park (ρ)		0.516	-0.983	0.498

(Source: Authors)

The value of Pearson correlation lies between -1 and +1; hence, it shows that the overall quality of parks and uses of parks has some correlation.

These findings suggest that only recreational and physical uses of the selected parks depend on the quality of parks. From the study, it has become evident that the social uses of parks do not depend on the quality of parks. It suggests that apart from the quality of the park, some other factors are also important for social use. The explanation about specific uses of park, apart from the quality of the park factors, has been discussed and interpreted further.

7. Discussion and Interpretation

According to Table 4, Anupam Park is primarily used for physical activities (Fig. 3). These activities take part because of the qualitative features (Table 2, Column H), such as the variety of gymnasium equipment, well-designed jogging track and a large open area covered with lawn. It is also because of the various management policies of the park (Table 2, Column F & G) such as suitable opening hours, organizing events and programs such as health checkup camps, yoga classes etc. which attract visitors from 41 to 55 years (Table 4). Events such as sports competitions with the availability of a first aid box in the park ensure visitors about their safety during physical exercise. The women's safety program in Anupam Park is the reason for the maximum percentage of female visitors (Table 4). Characteristics of the surrounding areas such as adjacent residential buildings (Table 2,Column E) major road connections (Table 2, Column D), fruit stall and juice center (Table 2, Column H) also encourage people to spend more time in and around the park (Table 4). The quality of vegetation, maintenance, safety, amenities, and accessibility is in good condition (Table 5), encouraging people to spend more time in the park.

The interpretation of the physical use of Anupam Park is that the qualitative features (vegetation, amenities) mainly create legibility for the park user. Whereas extraneous factors (safety, accessibility) attract park visitors and encourage them to spend more time in the park.

Characteristics of the surrounding areas (residential land use, eatery stall) (Fig. 2) and management policies of the park (Opening hours, maintenance and events by trained professional, health checkup camp, sports competition, and first aid box) helps to build its image for physical use.

Collector Park is mainly used for social activities (Table 4).The reason for this is the qualitative features and their quality (Table 4) are not concerned with the characteristics of the surrounding areas of the park (Table 2) while designing the park. The management policies such as opening hours, organized events and programs (Table 2, Column F & G) helps to promote the social use of the park. Due to these visitors from aged group 41 to 55 years (Table 4) has found maximum. Characteristics of surrounding areas (Table 2, Column E & H) have maximum impact on the social use of park. The result of management polices like maximum opening hours (Table 2, Column G) deteriorates the overall quality of the parks (Table 5). The area of the park is small (Table 2, Column B) as compared to other parks; due to this, the maximum time spent in the park is 1 hour. The location of the park is in the central part of the city (Table 2, Column H). It is also connected on each side by major roads (Table 2, Column D).

The interpretation of the social use of Collector Park is that the surrounding characteristics (Land/Building use, central location) (Fig. 4) and management policies (maximum opening hours, festival celebration) help to build its image for social use. Extraneous factors (accessibility, safety) (Fig. 4) also promote social importance among the user.

Gandhi Park is mainly used for physical use because the qualitative features and their quality, such as densely planted trees of different variety (Table 2, Column H), attract park visitors for yoga and physical exercise. Surrounding characteristics like residential buildings and major road connectivity (Table 2, Columns D & E) generate an image for its physical use. The management policies such as organized yoga classes, a laughing club and a health checkup program (Table 2, Column F) attract visitors from the age group of 41 to 55 years and the maximum time spent in the park is 1 hour. The park is operated only in the morning and evening hours (Table 2, Column G), giving enough time for maintenance. The quality of vegetation, amenities, accessibility and safety is in good condition (Table 5). The overall quality of the park (Table 5) is also one reason for its concern use.

The interpretation of the physical use of Gandhi Park is that the well-design qualitative features and their quality (vegetation, amenities) (Fig. 7) helps to promote its physical importance among park visitors. The extraneous factors (accessibility, safety, and maintenance) help attract and engage visitors in physical activities. Characteristics of the surrounding areas (residential land-use) (Fig. 6) and management policies of the park (opening hours, program, and events) create an image of the park for its physical use.

Furthermore, visitors use Neelab Park for recreational purposes; because of the qualitative features such as a musical water fountain, beautiful illumination inside the park and various aesthetic features (Table 2, Column H) that create a recreational ambience in the park. Therefore, visitors from all age groups prefer to visit Neelab Park, apart from other parks. Surrounding characteristics such as residential and educational buildings and road connections (Table 2, Columns E & D) attract visitors from all age groups. Management policies like the boating facility, beautiful lake and scenic view (Table 2, Columns G & H) encourage visitors to spend 2 hours in the park.

The interpretation of recreational use of Neelab Park is the attractive qualitative features (illumination, aesthetic feature, and amenities) (Fig. 9) creates ambiance for its recreational use. Extraneous factors (Maintenance, safety) help to spend maximum time on recreational activities and generate the feeling of safety in the park. Surrounding characteristics (lake, residential buildings) (Fig. 8) cater to visitors and enhance the park's scenic beauty.

It is also found that visitors from the age group 41 to 55 are predominant and frequent park users and primarily engage in physical and social activities. While for recreational use, the age group 25 to 30 years are predominant and frequent park users.

8. Conclusions

The study confirmed that in public parks in India, in cities like Raipur, there are some relationships between the quality of parks and the use of parks.

The findings of the study indicate that use of park depends on some qualitative (design) features; extraneous factors (accessibility, safety etc.), surrounding areas (land use, connectivity etc.) and management policies (opening hours, events & programs etc.).

A well-designed park (design features) creates legibility for its specific use. The extraneous factors help to access the park by the users and create a sense of "safety" which is imperative for the use of the park. The characteristics of the surrounding areas also determine the 'use' of park; whereas management policies help to maintain the quality of the park (design features) and help to promote the use of park.

While this study primarily focuses on the Indian city of Raipur, it may be noted that this city is representative of cities in nations where substantial urbanization has been taking place, with little regard for planned green infrastructure.

Based on findings and observations, this study suggests some recommendations that would help to improve the use of the park in similar context. They are as follows:

- The characteristics of the surrounding areas of the parks should first be assessed by its location and the existing 'extraneous factors'.
- Designers and planners should design large open areas inside the park with a variety of trees and gymnasium equipment, which create legibility for physical use of the park.
- For designing a park for recreational use, the designer and planner must focus on the innovative aesthetic feature and illumination in the park, which create a recreational ambience for visitors. It is also recommended that the park's natural and geographical land features must be conserved and maintained.
- For social use of the park, it is necessary to design a closed place for social activities inside the park.
- The park management authorities should maintain the quality of the design features of the park.
- The opening hours of the park should be considered for its specific use.
- Regular events and programs should be arranged by the park management authorities regularly to promote social and recreational use. These activities also help in the generation of 'funds' and could be used to maintain the park and its quality.

Policies similar to these may be adopted for parks of cities which are similar to the city of Raipur. For other big or smaller cities, similar studies may be conducted to create a more generalized policy framework for development of parks in countries like India.

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