

Understanding User Perception of Urban Green Space Quality in Bengaluru Neighbourhoods

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ABSTRACT

Urban Green Space (UGS) is an important element of nature-based solutions, providing multiple benefits to its users. UGS has garnered focus of extensive research efforts targeting areas such as quantity, accessibility, and ecosystem services provided. Relatively less focus has been on UGS Quality (UGSQ). Understanding the perception of Urban Green Space Quality (UGSQ) by users is important in rapidly urbanizing cities in India, making user-based assessment important. This exploratory study identifies the dimensions associated with UGSQ in Bengaluru neighbourhoods using questionnaire survey; analysis of responses using reliability analysis, exploratory factor analysis and Friedman ranking. Emerged latent dimension were, UGS Usability including availability, maintenance, safety, accessibility, and functionality; and UGS Experiential Quality including surroundings, amenities, aesthetics, size/type. The findings provide a base for developing a user-centric base for assessment framework that can help urban planners and designers improve the quality of UGS.

Keywords: Bengaluru, Exploratory Factor Analysis, Urban Green Space, Urban Green Space Quality, User Perception

INTRODUCTION

Urban Green Spaces (UGSs) are important components of sustainable and liveable cities, providing ecological, recreational, social, and health-related benefits to urban residents (Kabisch, 2015; Wolch et al., 2014) and playing an important role in improving the urban quality environment (Thi Loi et al., 2015). UGSs have also been identified as an important element of nature-based solutions to achieve the targets of Sustainable Development Goal (SDG)11, which aims to reduce the adverse effects of natural disasters, reduce the environmental impact of cities, and provide access to safe and inclusive green and public spaces. However, for users to redeem the benefits of UGSs, it is important that they are used, which is only possible when these spaces are of good quality (Douglas et al., 2017; Van Herzele & Wiedemann, 2003). Therefore, it is essential to understand and improve the UGSQ in rapidly urbanizing cities.

However, rapid urbanization has placed increased pressure on UGS in Indian cities, such as Bengaluru. Experiencing challenges such as, declining vegetation cover, increasing environmental pressure, and reduced green space availability. The per capita green space in the city is estimated to be approximately 3 m² (Ramaiah & Avtar, 2019), which is substantially lower than the 10–12 m² recommended by the Urban and Regional Development Plans Formulation and Implementation (URDPFI) guidelines. Several other studies have highlighted more UGS challenges related to inequitable access, governance, and the declining quality of urban green spaces in Bengaluru (Bhor & Mayavel, 2024; Ramachandra T.V. et al., 2017). This increases the need for understanding the quality of UGS and to analyse if UGS meets users' requirements.

Research on UGSQ has expanded over the past few years. Many studies have assessed the individual aspects of the UGSQ, although an understanding from the user perspective is still lacking. Most existing UGS assessment frameworks consider quality based on criteria such as availability, accessibility, and ecological attributes, whereas fewer studies examined how users perceive UGS, especially in urban neighbourhood contexts. These criteria help to evaluate the physical attributes of UGS but do not identify the reasons for its usability or non-usability. Good quality UGS are basis for sustainable development of urban economy, society, environment, and quality of human life (Zhu et al., 2019). Although UGS quality is under-researched, it is an important factor that influences human health and well-being (Cameron et al., 2020).

Despite the increased interest in this topic, there is still no universally accepted definition of; UGSQ (Taylor & Hochuli, 2017) or universally accepted assessment framework, making it difficult to measure (Lennon et al., 2017). UGSQ cannot be defined by one/many universal criteria, as people have different needs and neighbourhoods have varied demands, making UGSQ context dependent (Lennon et al., 2017; Taylor & Hochuli,

2017). While certain dimensions can be quantified and objectively measured by multiple means such as, area of vegetation, tree cover and the different types of species present, it is very difficult to measure the usefulness of UGS, which is a subjective aspect of its quality and depends on the user (Lennon et al., 2017; Zhu et al., 2019). Previous studies have assessed UGS based on various aspects such as ecological, economic, social, planning (Baycan-Levent et al., 2009). Other criteria of assessment identified are quantity, quality, accessibility and availability (Sun et al., 2019), built elements present within the UGS (Knobel et al., 2019), assessment through a distance-based approach (Knobel et al., 2019; McCormack et al., 2010; T. Zhang et al., 2024) and based on spatial context/surroundings of UGS (Knobel et al., 2019; Kraemer & Kabisch, 2021). It is however observed that focus on quantity assessment of green space is higher than its quality assessment, which is often ignored. Although, a few studies have noted that the quality of greenspace is as important as quantity and proximity (Lennon et al., 2017) and assessment tools are required which reflect relevance of UGS in different areas and not just for merely measuring the overall percentage of its quantity (Lang et al., 2008). Assessing the quality of UGS at the neighbourhood scale is also helpful for urban planning and policy, which can help further improve UGS (Zhu et al., 2019). In addition, the quality of UGS may support the development and extent of social ties formed within the neighbourhood (Każmierczak, 2013).

Despite having made considerable progress in the assessment of UGS, a few research gaps remain. Three of the gaps identified are; (i) there is no consensus for the criteria which represents UGSQ, (ii) existing assessment frameworks focus on objective assessment of spatial indicators, while very few investigate the latent dimension of perceived UGSQ, (iii) studies from cities experiencing rapid urbanization are limited.

To address the above-mentioned gaps, the aim of this study is to understand the user perception of UGS at the neighbourhood level and identify the criteria considered relevant for its use.

Thus the objectives of this study are as follows:

- To understand user perceptions of UGSQ.
- To identify the latent dimensions of perceived UGSQ.
- To rank UGSQ criteria based on user perceptions

METHODOLOGY

Study Design

This exploratory questionnaire-based survey was conducted to investigate user's perceptions of UGSQ in Bengaluru neighbourhoods. The focus area is neighbourhood-level UGS, as neighbourhood-level studies can help understand; the nuanced preferences of users based on their life stages (Xu et al., 2025), can identify local factors which influence the user perceptions (Kajosaari et al., 2024), and are relevant due to their proximity, as urban dwellers prefer using nearby parks and gardens, emphasizing the importance of location in shaping engagement with these spaces (Lahoti et al., 2023).

Several studies, such as (Swamy & Devy, 2014, 2010) have used baseline surveys to understand people's perceptions of UGS and urban green/blue spaces, justifying the use of this methodology for understanding user experience.

Questionnaire Design and Data Collection

The questionnaire was developed based on literature review on UGS assessment studies, specifically the ones focussing on UGSQ. The quality criteria included in the survey were based on the SDG 11, and the socio-cultural benefits provided by UGS, which were identified from previous studies through literature review. There were 11 criteria which were identified for UGSQ:

1. Availability (Ghale et al., 2023; Gupta et al., 2012, 2016; Kaur & Gupta, 2022; Shahfahad et al., 2019; Thi Loi et al., 2015)
2. Proximity to residence (Dong et al., 2024; Ghale et al., 2023; Gupta et al., 2016; Stessens et al., 2020; Thi Loi et al., 2015)
3. Ease of accessibility (Choi et al., 2020; Ghale et al., 2023; Gupta et al., 2016; Knobel et al., 2021; Woldeamanuel et al., 2020; J. Zhang et al., 2021)
4. Functionality (Dong et al., 2024; Knobel et al., 2021; Shu-Chun, 2010; Stessens et al., 2020)
5. Size/type (Ghale et al., 2023; Gupta et al., 2016; Kraemer & Kabisch, 2021b; Stessens et al., 2020; Thi Loi et al., 2015)
6. Safety and security (Knobel et al., 2021; Stessens et al., 2020; Voigt et al., 2014)
7. Aesthetics (Ghale et al., 2023; Kraemer & Kabisch, 2021b; Stessens et al., 2020; T. Zhang et al., 2024)
8. Maintenance and condition (Abdul Malek et al., 2018; Ajmi et al., 2023; Hallum et al., 2024; Knobel et al., 2021; McCormack et al., 2010; Palliwoda & Priess, 2021; Stessens et al., 2020; Van Leeuwen et al., 2006)
9. Surroundings (Ajmi et al., 2023; Gupta et al., 2016; Hallum et al., 2024; Knobel et al., 2021; Kraemer & Kabisch, 2021b; McCormack et al., 2010; Palliwoda & Priess, 2021; Schöpfer et al., 2005; Van Leeuwen et al., 2006; T. Zhang et al., 2024; Zhu et al., 2019)

10. Amenities(Ajmi et al., 2023; Hallum et al., 2024; Kraemer & Kabisch, 2021b; McCormack et al., 2010; Palliwoda & Priess, 2021; Schmitt & Gruber, 2018; Stessens et al., 2020; Van Leeuwen et al., 2006)
11. General awareness was included to understand if awareness regarding UGS affects its usability among users. Participants were requested to indicate the importance of each criterion using a five-point Likert scale ranging from 1 (not important) to 5 (very important). The data for the study were collected using an online questionnaire created using Google Forms, while a few were in person responses. The data was collected between 10-5-2025 and 20-5-2025. Approximately 100 respondents in Bengaluru neighbourhoods were asked to participate in the survey.

DATA ANALYSIS

Data was analysed using (The jamovi project, 2025). Descriptive statistics were used to assess perceptions, usage patterns, and perceived importance of individual UGSQ criteria. The reliability of the questionnaire was checked using Cronbach's alpha.

Exploratory Factor Analysis (EFA) was conducted to identify the latent dimensions underlying users' perception of UGSQ, using the minimal residual extraction method with Oblimin rotation, as the dimensions of UGSQ were assumed to be related (Balram & Dragičević, 2005; Laforzezza et al., 2009).. First, the suitability of the dataset for analysis was assessed using the Kaiser–Meyer–Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity (Hair et al., 2019). This was followed by the Friedman test to find out the existing differences in respondent's ratings of the importance of UGSQ criteria. This test is used when the same respondents have evaluated multiple variables using ordinal data, such as Likert-scale ratings, and the assumptions of parametric repeated-measure tests cannot be met (Field, 2018).

RESULTS

UGS Awareness among Users

When questioned about the benefits of UGSs, it was noted that approximately 60% of the respondents reported being aware, while almost 97.8% of participants identified at least one of the mentioned benefits related to ecology, environment or health-related. This indicates that there is a high level of awareness among the users of UGS in improving the urban quality of life. Some of the respondents mentioned other benefits related to urban economy and supporting biodiversity, which was not mentioned in the survey.

UGS Use Patterns

Table 1 shows the UGS usage patterns, which indicated regular use by 75.5% of respondents, with most (35.3%) visiting about two-three times per week or once a week (28.2%). Most regular users (60%) spent 30-60 min per week in the UGS.

Table 1 Frequency of Visit to UGS, Source: Author

Frequency_visit	Counts	% of Total
Twice/thrice a week	25	35.2%
Once a month	10	14.2%
Everyday	11	15.5%
Once a week	20	28.2%
Rarely	5	7.0%
Time_spent	Counts	% of Total
30 mins or less	12	17.1%
1hr - 2 hr	16	22.9%
30 mins - 1 hr	42	60.0%

Preferred UGS Types & Qualities

Users showed a preference for neighbourhood-scale UGS as 77.5% users preferred to use Small Parks. Although the results show they are open for different kind of UGS as well; 71.8% reported the preference for Greenery on Streets, Large Parks and Gardens and, Greenery around Lakes/Ponds. Only 43.7% of users preferred playgrounds/stadiums, whereas UGS associated with commercial complexes and within apartment complexes were among the least preferred types of UGS.

When asked about the factors that encourage the use of UGS, it was observed that the availability of UGS within the neighbourhood (73.2%) was the most relevant factor, followed by proximity to residence (62%) and ease of accessibility (59.2%). The presence of facilities (54.9%) and the condition of UGS (53.5%) were identified as important motivators.

In contrast, amenities (11.3%), surroundings (21.1%), and size/type of green space (25.4%) were considered less influential in encouraging the use of UGS, contradicting the findings of multiple studies which suggest that aesthetic/ attractiveness (Fatiah et al., 2021; Ghale et al., 2023; Van Herzele & Wiedemann, 2003) and contextual attributes (Cameron et al., 2020; Kraemer & Kabisch, 2021b) are equally important. This establishes that, while functional and accessibility-related characteristics are important, attribute such as aesthetic and contextual attributes like serenity and design also play a significant role in promoting UGS use and its quality (Maikov, 2013).

Among users who did not visit the UGS regularly, 23.5% mentioned inadequate maintenance as the most prominent reason. Other reasons cited were lack of proximity and limited awareness of green spaces by 17.6% of users. Meanwhile, 15.7% of users cited the non-availability of green spaces as a reason for not visiting. The results suggest that improving maintenance, accessibility, and awareness of the benefits of green spaces may improve the quality and increase the use of neighbourhood green spaces.

Reliability Analysis

Cronbach's Alpha test was carried out to test the internal reliability of the questionnaire items related to the perceived quality of the questionnaire items. Results shown in

Table 2, showed high reliability, with a Cronbach's alpha of 0.875. This value indicates strong consistency among the variables.

Table 3 shows, the item-rest correlation values ranged between 0.454 and 0.683, suggesting a strong relationship between individual items and the overall scale of items. No to very little change was observed in the Cronbach's alpha values when individual items were dropped. This indicates that all variables contribute equally meaningfully to the reliability of the questionnaire.

Table 2 Overall Cronbach's Alpha (Reliability Statistics), Source: Author

	Mean	SD	Cronbach's α
scale	4.28	0.601	0.875

Table 3 Item-wise Cronbach's Alpha Score, Source: Author

Item Reliability Statistics				
Item	Mean	SD	Item-rest correlation	If item dropped Cronbach's α
Availability Importance	4.72	0.646	0.510	0.869
Proximity to residence Importance	4.35	0.864	0.570	0.865
Ease of accessibility Importance	4.31	0.904	0.661	0.859
Functionality Importance	4.31	0.904	0.683	0.857
Size/Type importance	4.07	0.930	0.558	0.866
Safety/security Importance	4.48	0.889	0.574	0.865
Aesthetics Importance	4.01	0.933	0.582	0.864
Maintenance/ Condition Importance	4.60	0.693	0.612	0.864
Surroundings importance	4.09	1.012	0.454	0.874
Amenitites importance	3.80	1.113	0.623	0.862
General awareness importance	4.36	0.926	0.625	0.861

Latent Dimensions of UGSQ

EFA was applied to identify the underlying latent dimensions of UGSQ. According to the classification suggested by (Hair et al., 2019), the overall KMO value 0.851, indicates good sampling adequacy. The results of the Bartlett's Test of Sphericity ($\chi^2 = 450$, $df = 55$, $p < 0.001$) suggest sufficient correlation among the variables, and support the use of EFA (Field, 2018).

Figure 1 shows the two identified latent dimensions of UGS perceived quality, and the variables identified within each dimension, while

Table 4 shows the factor loadings of each latent dimensions. The first factor demonstrated strong loadings for variables associated with availability (0.900), proximity to residence (0.664), maintenance and condition (0.634), ease of accessibility (0.595), safety and security (0.578), and functionality (0.570). The high loadings of availability, proximity, maintenance, and accessibility collectively define the practical aspects of UGS use; hence, this factor was interpreted as "UGS Usability." The high loading of availability suggests that users strongly

associate the presence of UGS, accessibility, and functional usability of neighbourhood green spaces with their perceived quality and utility.

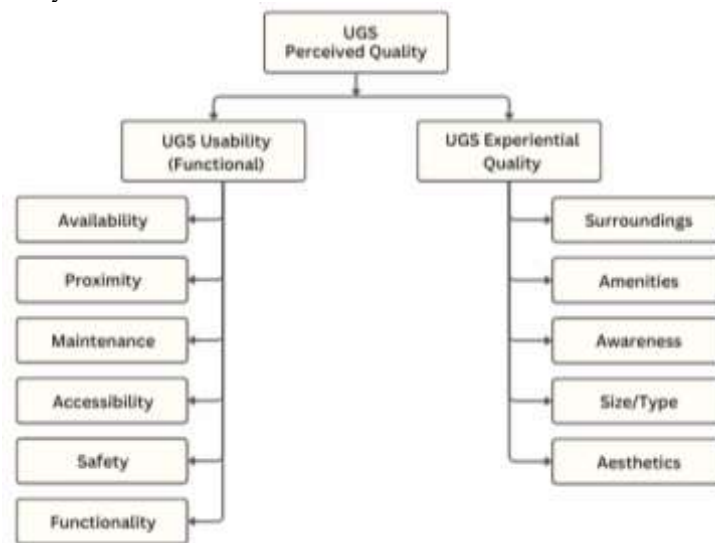


Figure 1 UGS Perceived Quality Latent Dimensions, Source: Author

The second factor consisted of surroundings (0.845), amenities (0.600), general awareness (0.521), size/type (0.518), and aesthetics (0.466). This factor is interpreted as “UGS Experiential Quality,” reflecting the broader environmental setting, visual appeal, and experiential characteristics of the UGS. The results show that UGSQ is not perceived as an isolated attribute but as a broader, experiential construct.

Table 4 Factor Loading of Latent Dimensions, Source: Author

Factor Loadings			
	Factor		
	1	2	Uniqueness
Availability_Importance	0.900		0.286
Proximity to residence_Importance	0.664		0.518
Maintenance/ Condition_Importance	0.634		0.506
Ease of accessibility_Importance	0.595		0.467
Safety/security_Importance	0.578		0.573
Functionality_Importance	0.570		0.454
Surroundings_importance		0.845	0.358
Amenities_importance		0.600	0.493
General awareness_importance		0.521	0.535
Size/Type_importance		0.518	0.606
Aesthetics_Importance		0.466	0.607
Note. 'Minimum residual' extraction method was used in combination with a 'oblimin' rotation			

Ranking of Quality Criteria

The Friedman test showed significant differences in the perceived importance of the 11 UGSQ criteria, [$\chi^2(10)=127.0$, $p < .001$]. Since $p < .001$, proving that the respondents do not consider all quality attributes equally important and existence of a hierarchy of user preferences regarding UGSQ, given in

Table 5.

Table 5 Friedman Test Results, Source: Author

Friedman		
χ^2	df	p

127	10	<.001
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Where,

χ^2 : Refers to Friedman test statistics, which measure the extent to which the rankings of the criteria differ; a larger value indicates greater differences in respondents' ratings.

df: Refers to the independent comparisons used in the test and is calculated as the number of criteria minus one.

p-value: Refers to the probability that the observed difference occurred by chance.

The Durbin-Conover post-hoc test was conducted to determine which UGSQ showed a significant difference in perceived importance as shown **Table 6**. The results show distinct clusters of criteria that received comparable importance ratings and other criteria that received significantly different ratings. It was found that Availability, Maintenance/Condition, and Safety/Security were consistently rated differently and higher than many lower-ranked criteria, whereas Usability-related attributes (Proximity, Accessibility, Functionality, and General Awareness) and physical/environmental attributes (Size/type, Aesthetics, and surroundings) were perceived at similar levels of importance. This supports previous studies which found that accessibility, maintenance, and safety were the key drivers of park use and perceived quality of UGS (Balram & Dragičević, 2005)

The users were asked to rate the UGSQ criteria on a scale of 1-5, **Table 7** shows the mean of the ratings they received. This clearly shows that Availability, Maintenance/condition and Safety/security are the top priorities for users, while the remaining criteria are ranked lower. Aesthetics and amenities were ranked as the least important factors by users.

Table 6 Pairwise Comparison (Durbin-Conover)

Pairwise Comparisons (Durbin-Conover)				
			Statistic	p
Availability Importance	-	Proximity to residence Importance	3.9394	<.001
Availability Importance	-	Ease of accessibility Importance	4.3788	<.001
Availability Importance	-	Functionality Importance	4.4091	<.001
Availability Importance	-	Size/Type importance	6.6364	<.001
Availability Importance	-	Safety/security Importance	2.3788	0.018
Availability Importance	-	Aesthetics Importance	7.1516	<.001
Availability Importance	-	Maintenance/ Condition Importance	1.3636	0.173
Availability Importance	-	Surroundings importance	6.5607	<.001
Availability Importance	-	Amenities importance	9.0607	<.001
Availability Importance	-	General awareness importance	3.6212	<.001
Proximity to residence Importance	-	Ease of accessibility Importance	0.4394	0.660
Proximity to residence Importance	-	Functionality Importance	0.4697	0.639
Proximity to residence Importance	-	Size/Type importance	2.6970	0.007
Proximity to residence Importance	-	Safety/security Importance	1.5606	0.119
Proximity to residence Importance	-	Aesthetics Importance	3.2121	0.001
Proximity to residence Importance	-	Maintenance/ Condition Importance	2.5758	0.010
Proximity to residence Importance	-	Surroundings importance	2.6212	0.009
Proximity to residence Importance	-	Amenities importance	5.1213	<.001
Proximity to residence Importance	-	General awareness importance	0.3182	0.750
Ease of accessibility Importance	-	Functionality Importance	0.0303	0.976
Ease of accessibility Importance	-	Size/Type importance	2.2576	0.024
Ease of accessibility Importance	-	Safety/security Importance	2.0000	0.046
Ease of accessibility Importance	-	Aesthetics Importance	2.7728	0.006
Ease of accessibility Importance	-	Maintenance/ Condition Importance	3.0152	0.003
Ease of accessibility Importance	-	Surroundings importance	2.1818	0.029
Ease of accessibility Importance	-	Amenities importance	4.6819	<.001
Ease of accessibility Importance	-	General awareness importance	0.7576	0.449
Functionality Importance	-	Size/Type importance	2.2273	0.026
Functionality Importance	-	Safety/security Importance	2.0303	0.043
Functionality Importance	-	Aesthetics Importance	2.7424	0.006
Functionality Importance	-	Maintenance/ Condition Importance	3.0455	0.002
Functionality Importance	-	Surroundings importance	2.1515	0.032
Functionality Importance	-	Amenities importance	4.6516	<.001

Pairwise Comparisons (Durbin-Conover)			
		Statistic	p
Functionality Importance	- General awareness importance	0.7879	0.431
Size/Type importance	- Safety/security Importance	4.2576	<.001
Size/Type importance	- Aesthetics Importance	0.5152	0.607
Size/Type importance	- Maintenance/ Condition Importance	5.2728	<.001
Size/Type importance	- Surroundings importance	0.0758	0.940
Size/Type importance	- Amenities importance	2.4243	0.016
Size/Type importance	- General awareness importance	3.0152	0.003
Safety/security Importance	- Aesthetics Importance	4.7728	<.001
Safety/security Importance	- Maintenance/ Condition Importance	1.0152	0.310
Safety/security Importance	- Surroundings importance	4.1819	<.001
Safety/security Importance	- Amenities importance	6.6819	<.001
Safety/security Importance	- General awareness importance	1.2424	0.214
Aesthetics Importance	- Maintenance/ Condition Importance	5.7879	<.001
Aesthetics Importance	- Surroundings importance	0.5909	0.555
Aesthetics Importance	- Amenities importance	1.9091	0.057
Aesthetics Importance	- General awareness importance	3.5303	<.001
Maintenance/ Condition Importance	- Surroundings importance	5.1970	<.001
Maintenance/ Condition Importance	- Amenities importance	7.6970	<.001
Maintenance/ Condition Importance	- General awareness importance	2.2576	0.024
Surroundings importance	- Amenities importance	2.5000	0.013
Surroundings importance	- General awareness importance	2.9394	0.003
Amenities importance	- General awareness importance	5.4394	<.001

Table 7 Criteria Ratings by Users, Source: Author

Rank	UGSQ Criteria	Mean Rating by Users
1	Availability	4.72
2	Maintenance/condition	4.60
3	Safety/security	4.48
4	General awareness	4.36
5	Proximity to residence	4.35
6	Ease of accessibility	4.31
7	Functionality	4.31
8	Surroundings	4.09
9	Size/type	4.07
10	Aesthetics	4.01
11	Amenities	3.80

DISCUSSIONS AND CONCLUSION

The results of the study gave an insight on various aspects of perceived UGSQ by users. Users were generally aware of the benefits of the UGS. The study confirms the results of previous findings of multiple studies emphasizing the importance of availability (Gupta et al., 2012, 2016), proximity to residence (Akpınar, 2016; Gupta et al., 2012, 2016) and ease of accessibility (Gupta et al., 2016; Woldeamanuel & Kent, 2016) of UGS in improving its quality as most of the users reached UGS by walking.

Users showed a preference for neighbourhood-scale and easily accessible green spaces, particularly small parks, street greenery, large parks and gardens and greenery around lakes and ponds, showing that UGS preferences are dependent on size, location and accessibility (Madureira et al., 2018; Palliwoda & Priess, 2021).

The identified latent dimensions, which are collection of multiple physical, functional and experiential attributes, suggesting that UGSQ cannot be assessed through single-indicator assessment frameworks (Balram & Dragičević, 2005; Daniels et al., 2018; Levent et al., 2004).

The first dimension, UGS Usability includes functional and accessibility-related criteria, indicating that practical usability, safety, and maintenance play a critical role in shaping user experiences within the neighbourhood UGSs,

indicating that users initially evaluate the UGSs based on their ability to support everyday activities safely and conveniently. Supporting the finding of previous studies, which emphasize accessibility, maintenance, and safety as important criteria for park/UGS use (Knobel et al., 2021; McCormack et al., 2010). Similar findings have been reported in previous studies, where availability, accessibility, usability, and facilities emerged as major determinants of perceived UGSQ and frequency of use (Chiesura, 2004; Van Herzele & Wiedemann, 2003). The second dimension, UGS Experiential Quality includes criteria such as surroundings, amenities, and aesthetics, which contribute to and affect the user experience in UGS. These attributes contribute to comfort, attractiveness and place attachment. These findings are supported by previous studies (Knobel et al., 2019; Kraemer & Kabisch, 2021) which noted that surroundings, spatial context and recreational infrastructure are important for users and influence their perception of quality. The study emphasizes that both Functional and Experiential qualities of UGS contribute to perceived UGSQ, rather than singular physical characteristics and quantity.

Another aspect of the study revealed, that there is a clear difference between the attributes users consider important for good quality UGS and the characteristics that encourage the use of existing space. While multiple qualities and attributes were recognised as important, the actual use was dominantly associated with availability, proximity and accessibility. On the other hand, lack of maintenance, poor accessibility and other qualitative characteristics were reported to be the barrier for use. This suggests that the provision of green space alone may not ensure that existing UGS meet users' broader quality expectations, highlighting the need for assessment of the qualitative attributes of UGS. These findings suggest a clear quality gap in neighbourhood UGS. Since, the residents reported using the UGS because they were accessible and convenient, despite non-presence of several attributes reported important by the users, clearly suggesting that the provision of green space alone may not ensure that existing UGS meet users' broader quality expectations.

The findings further imply the need to create a user-centric approach for UGSQ assessment, which may support the development of UGSQ assessment frameworks and planning strategies for UGS in Bengaluru and other rapidly urbanizing cities. The study demonstrates that the criteria of UGSQ should not be solely objective such as park size, vegetation cover, availability or accessibility, measured by GIS based analysis, but also be subjective considering the user perception of UGS. The identified latent dimensions of UGSQ provides a conceptual basis for development of user-centric Green Space Quality Assessment Framework, which includes functional and experiential components of UGSQ. The study also brings to our notice that highly ranked criteria such as availability, maintenance, and safety should be given greater attention in neighbourhood UGS planning in rapidly urbanizing cities such as Bengaluru, as improving the UGSQ is equally important as its quantity.

LIMITATIONS OF THE STUDY

The study conducted has certain limitations. This is an exploratory survey and with a limited sample size from Bengaluru, thus might not represent the diversity of users across different cities of India. Most of the participants in this study belonged to the middle- and upper-middle-income groups. This demographic skew implies that the findings may not represent perceptions and priorities of lower-income group. Thus future research can focus on taking inputs from all income classes to obtain more diversified data with a larger sample size.

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