Jurnal Arsitektur TERRACOTTA | No.1 | Vol. 4 | Hal 70 - 79
ISSN (E): 2716-4667 Desember 2022

Comparative Study on the Comfort of Public Space in Residential Settlement (Case Study: RBRA Kalpataru & RPTRA Anggrek)

Maqbul Kamaruddin[1], Wenny Arminda*, Fernando Raja Monang, Gading Eko Rahardianto, Yoan Feliks Siburian, Septiadi Nugroho

[1] Architecture Program, Department of Regional and Infrastructure Technology, Institut Teknologi Sumatera, Lampung Selatan, 35365, Lampung, Indonesia

* Corresponding email: wenny.arminda@ar.itera.ac.id

Abstract

In addition to its roles as a water catchment and green space, a city's public space is a location for people to congregate and participate in activities together. For these reasons, public space is a vital component of the design of a city. As study objects, we will be using Child-Friendly Playrooms (RBRA) Kalpataru and Child-Friendly Integrated Public Spaces (RPTRA)Anggrek in our investigation. It is anticipated that the availability of child-friendly public places would facilitate the fulfilment of children's rights, making it possible for them to live, grow, develop, and engage in social activities to the fullest extent possible. The primary topics discussed in this research are the design and requirements of both public spaces in communities with varied environmental and cultural settings. Observation and interviews are the methods that were used in this investigation. This research aims to discover how the general population feels about the comfort level in public spaces. Aspects of thermal comfort, safety, circulation, amenities, noise, and view are evaluated as part of the comfort assessment. RPTRA Anggrek was found to have a comfort level with an average score of 94.5 (very good), which was higher than RBRA Kalpataru, which got an average score of 68 (moderate).

Keywords*: public area, child friendly, playroom, green space*

1. INTRODUCTION

The growth of cities in Indonesia is increasing rapidly, with the flow of urbanization increasing every year. According to the Central Statistics Agency, as much as 56.7% of the total population of Indonesia lives in urban areas. This figure has increased by 6.9% in the last ten years. The city's rapid growth due to population growth cannot be separated from the issue of green space (RTH), which is threatening to turn into residential functions. To avoid this, the city government enforces regulations regarding the existence of green spaces in urban areas. Based on the policy of Law No. 26 of 2007, green space is an area overgrown with naturally or intentionally planted plants. An urban area has at least 30% green space of the total area [1].

Urban green space represents the intersection of natural and human processes in an urban setting. In addition, it enhances the quality of the residential environment, notably in terms of preserving urban ecosystems in terms of hydrological ecosystems and regulating temperature, as well as boosting inhabitants' access to clean air [2]. Sustainable urban areas are characterized by balanced interactions and reciprocal relationships between humans and nature that coexist [3].

Green spaces in urban areas are usually designed with the services of the city dwellers in mind. Based on its use, green space can be in urban forests, city parks, public cemetery parks, sports fields, green lines, roads, railroads, and riverbanks. City parks, as open land, carry out social and aesthetic functions as a means of recreation, education, or other activities at the urban level [4]. The city park can serve a minimum of 480,000 residents with a minimum standard of 144,000 m^2. City parks are often green fields equipped with recreational and sports facilities with green space of at least 80% - 90% of the total park area.

The public area can use as the green space of city parks to carry out various social which are equipped with sports facilities, playgrounds for children and toddlers, recreational facilities, senior parks, and urban farming [4]. Because urban people generally access it without age restrictions, comfort and safety are a priority in the public spaces of city parks without impeding visitors' freedom to carry out various public activities in the area. Comfort aspects important to consider in public space include thermal comfort, safety, circulation, facilities, noise, and scenery.

Providing thermal comfort for users of public areas is a vital element. Thermal comfort is closely related to creating an environment in which the human body can adapt. Comfort is influenced by several factors: air temperature, wind movement, humidity, radiation, and subjective factors, such as metabolism, clothing, food and drink, body shape, and age and gender. Factors that affect thermal comfort are air temperature, radiant temperature, humidity, wind speed, clothing insulation, and activity [5]. However, each individual's thermal comfort will differ based on their activity and clothing. Depending on local climatic conditions, the artificial environment also impacts the physical state of humans on a larger scale [6]. A person adapted to a tropical environment will feel more comfortable in a zone warmer than the maximum effective temperature a person experiences from a subtropical climate. The value of temperature comfort is only limited to air conditions that are not extreme (moderate thermal environment), where humans do not require any effort, such as shivering or sweating.

The safety of public areas also has an impact on the comfort of visitors there. The ideal public space must ensure the safety of all visitors during the activity [7]. According to Indonesia's 2019 demographic statistics, 30.5% of the population comprises children aged 0 to 17. Due to a large number of children in Indonesia, Rizal and Prasetya (2021) see the notion of a Child-Friendly City (KLA) as a need for urban communities that might be applied there [15]. Therefore, urban ideas must consider society's demands from a young age.

Playgrounds should ideally comply with relevant safety regulations to reduce the likelihood of accidents, especially for active children [8]. The selection of children's play equipment must consider all conditions that can endanger active children [9]. The choice of play materials and types of activities should also be considered to ensure the safety of children in public areas.

Green spaces, such as city parks and Child-Friendly Integrated Public Places (RPTRA), are one of the city's requirements to create a safe and enjoyable play, recreation, and recreation spaces [10]. Apart from safety and comfort, other vital issues that are considered important include accessibility, environmental health, and aesthetics [11]. These factors can be influenced by location markers, layout, game equipment, and building material [12].

According to the Minister of Women's Empowerment and Child Protection Regulation Number 11 of 2011, which regulates KLA at the district and city levels, this idea involves a planned and sustainable integration of the government, community, and commercial groups in policies, programs, and activities to ensure the fulfillment of rights child [13]. UNICEF [14] notes that child-friendly cities must guarantee the rights of children as city dwellers in several respects, such as:
1. Physical condition of the path and activities of children visitors
2. Sufficient green space for plants and animals,
3. Pollution-free air conditions.

This article will assess the comfort and safety aspects of child-friendly city parks in Indonesia. Six aspects will be assessed: thermal comfort, safety, circulation, amenities, noise, and view. The assessment was based on visitor satisfaction and supported by direct field observations in two case studies, RBRA Kalpataru Kemiling, Bandar Lampung, and RPTRA Anggrek Bintaro, South Jakarta.

2. METHODOLOGY

This study was conducted using a quantitative methodology, which included filling out a questionnaire and interviewing visitors, which was supported by observing the situation of the two case studies. Temperature, safety, circulation, amenities, noise level, and site views are some of the aspects that will be evaluated.

2.1 Characteristics of Public Space

a. RBRA Kalpataru

RBRA Kalpataru is located in Kemiling, Bandar Lampung, which the City Government has managed since 2019. This location stands on an area of 2.63 Ha. The location is relatively easy to reach because it is in a residential area (Figure 1).

(b)

Figure 1. Kalpataru RBRA (a) Site Plan, (b) Location [15]

b. RPTRA Anggrek

RPTRA Anggrek is located in Bintaro, Pesanggrahan, South Jakarta. The total land area is 2,736 m^2. This location is flanked by residential housing Villa Anggrek on the west, east and south sides. While on the north side is a productive plantation area surrounded by city rivers (Figure 2).

(a) *(b)*

Figure 2. RPTRA Anggrek (a) Site Plan, (b) Location [16]

2.2 Respondents Overview

A total of 40 public space users from the two case study locations became respondents in this study, 20 each for RBRA Kalpataru and RPTRA Anggrek. Characteristics of respondents are divided by age group and gender, as shown in Table 1.

Table 1. Identity of research respondents

Identity of Respondents		Number of Respondents RBRA Kalpataru	Percentage (%)	Number of Respondents RPTRA Anggrek	Percentage (%)
Age Group	10 - 20 Years old	9	45%	10	50%
	21 - 30 Years old	6	30%	6	30%
	31 - 40 Years old	2	10%	3	15%
	41 - 50 Years old	1	5%	1	5%
	> 50 Years old	2	10%	2	10%
Gender	Male	11	55%	10	50%
	Female	9	45%	10	50%
Total		20	100%	20	100%

3. RESULTS AND DISCUSSION

Twenty visitors to each case study were asked questions, including thermal, safety, circulation, amenities, noise, and view factors. The temperature, safety, and circulation aspects had two questions, followed by the facility aspect with as many as nine questions, the noise aspect, and three questions about its outlook.

The study indicators use five scales, namely strongly agree (SS), agree (S), Neutral (N), disagree (TS), and severely disagree (STS), with a score sequence ranging from 5 to 1 and the following interval scale:

Table 2. Study indicators

Average	Predicate
85- 100	Very Good
71 - 84	Good
56 - 70	Moderate
≤ 55	Less

In addition, table 3 displays the questionnaire findings for each comfort variable for RBRA Kalpataru and RPTRA Anggrek. The comparison table reveals that RBRA Kalpataru has an average comfort score of 68 (moderate), whereas RPTRA Anggrek has an average comfort value of 94.5 (very good). The most significant and lowest values recorded by RBRA Kalpataru are an average of 84 for thermal aspects and 57.5 for safety aspects, respectively. In contrast, on average, RPTRA Anggrek had the most fantastic thermal score (99.5) and the lowest noise and view score (77.3).

Table 3. Comparison of the Average Values of RBRA Kalpataru and RPTRA Anggrek

No	Sub - Variabel	RBRA Kalpataru	Result	RPTRA Anggrek	Result
		Average Value		Average Value	
1	Thermal Aspect	84	Good	99.5	Very Good
2	Security Aspect	57.5	Moderate	95	Very Good
3	Sirculation Aspect	68.5	Moderate	93.5	Very Good
4	Facility Aspec	66	Moderate	99.3	Very Good
5	Noise & view Aspect	71	Good	77.3	Good
Average		68	Moderate	94.5	Very Good

Visitor satisfaction assessment was selected on a scale of 1 to 10. This time, visitors in the RBRA Kalpataru area got a satisfactory score, considered very good in the RPTRA Anggrek area.

Table 4. RBRA Area Satisfaction Assessment

RBRA Kalpataru - Kemiling, Lampung

No.	Name	Age	Gender	Public Space Satisfaction Value
1	Sugeng	18	Male	5
2	Tomi Elmanta Prayoga	27	Male	6
3	Maya Astriana W	24	Female	7
4	Fauzan Mzaki	24	Male	6
5	Mona Safira	23	Female	6
6	Suwandi	31	Male	7
7	Noni	56	Female	8
8	Ujang	45	Male	5
9	Sudirman	57	Male	5
10	Aini Putri	16	Female	9
11	Rita Mulyanti	14	Female	9
12	Gita	15	Female	8
13	Meylani	16	Female	7
14	Iqbal	16	Male	6
15	Ema	16	Female	5
16	Yusuf	17	Male	8
17	Miswati	35	Female	5
18	M Rian Holio	22	Male	7
19	Gilang	17	Male	6
20	Hadi Prayoga	26	Male	7
TOTAL				**132**

Average Satisfaction Rating = 132 : 20 = 6.6 or 66

The RBRA area has a satisfaction rating with the predicate **Moderate**

Table 5. RPTRA Area Satisfaction Assessment

RBRA Kalpataru - Kemiling, Lampung

No.	Name	Age	Gender	Public Space Satisfaction Value
1	Bimo Arman Pribadi	24	Male	8
2	Suci Wulandari	20	Female	9
3	Ukhti Fatimah	15	Female	10
4	Lingga Gumelar	16	Male	9
5	Rizki Darmawan	16	Male	7
6	Satria Edo	15	Male	8
7	Deni AMaleldi	22	Male	9
8	Indah Permata	21	Female	9
9	Ferry Kurniawan	20	Male	10
10	Arif	19	Male	9
11	Khotimah	38	Female	10
12	Marmar	58	Female	9
13	Fauzi	10	Male	8
14	Iin ristianingsih	11	Female	9
15	Mela	14	Female	10
16	Oktantia	32	Female	9
17	Sari Ningsih	49	Female	10
18	Ema Emi	35	Female	9
19	Rahmat Harianto	25	Male	8
20	Abu Bakar	28	Male	7
TOTAL				**132**

Average Satisfaction Rating = 177 : 20 = 8.85 or 88.5

The RPTRA Anggrek area has a satisfaction rating with the predicate **Very Good**

To support the interview data for visitors, the researcher also observed the existing condition of each aspect studied in the two case studies.

a. Thermal aspect

Based on the thermal data of the city of Bandar Lampung (Figure 3), the RBRA Kalpataru area in the Bandar Lampung area has the hottest season from September 8 to November 3, with an average daily temperature above 31°C. The hottest month is May, with a maximum temperature of 31°C and a minimum of 24°C. Meanwhile, the worst circumstances in Bandar Lampung occurred from December 19 to February 16, when the most significant daily temperature was 30°C, and January was the coldest month of the year, with temperatures ranging from 24°C to 30°C. From 6:00 a.m. to 12:00 p.m., the average temperature varies from 24°C to 29°C, allowing for a pleasant climate. From June to October, between 4:00 a.m. and 8:00 a.m., the temperature ranges between 18°C and 24°C, which is the most pleasant.

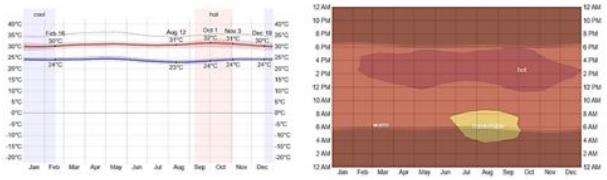

Figure 3. Thermal Data of Bandar Lampung City [17]

The RPTRA Anggrek is located in the Jakarta area; the season with the highest temperature lasts from August 26 to November 13, with a daily average high temperature above 32°C. The hottest month in Jakarta is October, between 32°C and 24°C. Also, the lowest-temperature season runs from January 3 to February 24, with daily average highs below 30°C. The coldest month in Jakarta in February, with an average low of 24°C and a high of 30° (Figure 4).

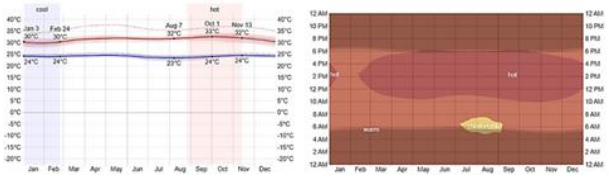

Figure 4. Thermal Data for the City of Jakarta [18]

Although the RPTRA Anggrek area is in an area with higher temperatures than RBRA Kalpataru, visitors are more satisfied with the thermal comfort of RPTRA Anggrek. It can be attributed to many green areas in the form of trees around the RPTRA Anggrek, reducing the air temperature.

b. Safety

In the RBRA Kalpataru, a 90-centimeter-tall fence has been erected to ensure the safety of children playing there. In addition, the park's proximity to the police station might provide tourists with a feeling of protection against crime. Similarly, in the RPTRA Anggrek region, visitor safety is ensured by the iron fence enclosing the garden area in the garden area. In addition, vegetation is present on the south and west sides of the RPTRA access road. On the east and north edges of the community settlement area, concrete barriers lead to the plantation region.

c. Circulation

The RBRA Kalpataru area has circulation access as broad as 4 m to be accessed by car. This area has access roads that circle the land making circulation in the land area more practical. In the Kalpataru RBRA area, circulation is provided as a walkway with a width of 1.5 m to allow two people to walk side by side (Figure 5a). Meanwhile, the circulation in the RPTRA area has a ramp area. It is in the form of a ladder width of 90 cm, whose circulation path surrounds the RPTRA area (Figure5b). Access for disabled people can be through supporting buildings and a mini plaza near the supporting building area.

(a) *(b)*

Figure 5. (a) Kalpataru RBRA Circulation, (b) RPTRA Anggrek Circulation

3.4 Supporting facilities

The Kalpataru RBRA area has some indoor and outdoor supporting facilities, such as play areas, toilets, reading rooms, and guard rooms. At the same time, the Anggrek RPTRA has more supporting facilities (Figure 6). It makes RPTRA Anggrek visitors rate a high level of satisfaction with an average value of 99.3.

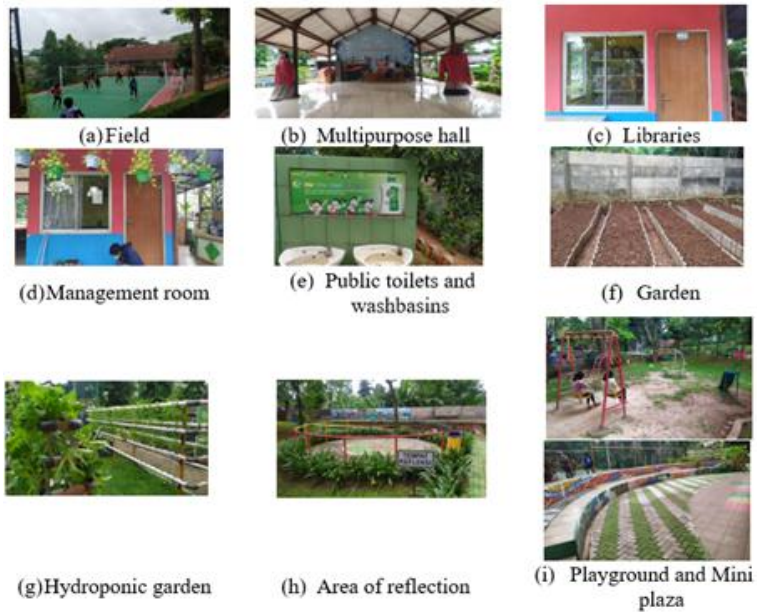

Figure 6. Supporting facilities of RPTRA Anggrek

1.5 Noise and view

The RBRA Kalpataru and RPTRA Anggrek areas both have low noise levels. It is advantageous for children because the number of vehicles crossing the parking area is minimal, especially RPTRA Anggrek, located in a residential area. The existence of trees and ornamental plants that become buffers around the area also reduces air pollution around the park and also helps reduce noise from outside the land (Figure 7).

Figure 7. Plants as noise buffer at RBRA Kalpataru

Tall plants and trees dominate the RPTRA Anggrek area. The number of trees around the park makes the park look beautiful and relaxed. The east side is directly opposite the residence with a concrete guardrail. Some of the concrete fences are painted with murals so that the display is not empty and is more attractive to children (Figure 8). The west and south sides use a wire guardrail so that the views between spaces are transparent to each other. In comparison, the west side has views of the river and housing complexes.

Figure 8. View from inside to outside

Conclusion

Inferences may be derived from the community's responses to the two case studies' convenience based on the interview data. The qualitative interviews at the Kalpataru RBRA were deemed sufficient, but those at the RPTRA Anggrek were excellent. In addition to the findings of the interviews, an observational study of the research object reveals that the degree of comfort in the two public areas is pleasant. Nevertheless, there are minor changes in the amenities and circulation of the two public places, such as the gaming area and upkeep.

The degree of comfort is deemed satisfactory. However, various factors make public spaces unpleasant, including:

1. Based on circulation observations, RBRA Kalpataru is more pleasant since its 1.5-meter-wide walkway can accommodate two persons and is accessible to those with disabilities. However, the central circulation, which serves as the entry to the RBRA zone, is often a parking place on the road's shoulder. There is no designated parking space available. It differs from RPTRA Anggrek, where some circulation routes are just 90 centimeters wide, making the movement area accessible to only one person and unsuitable for impaired access.
2. There is no significant distinction between the present amenities in the two public places. However, the Anggrek RPTRA is deemed better in maintenance since all current facilities are in good condition. In the Kalpataru RBRA region, filthy restrooms are not routinely cleaned, particularly in the guard and reading rooms.

RBRA Kalpataru's pedestrian facilities are more pleasant than RPTRA Anggrek, and the questionnaire's answers are dissimilar. This evaluation is likely attributable to the park's surrounding circulation region. In addition, visitors have diverse perspectives due to their utilization of qualitative data.

Thus, while certain facilities have deficiencies, this is not an issue since, according to the comments gathered via interviews, most users felt very at ease. To better satisfy the demands and comfort of facility users, it is desired that the designer of the public space area would pay closer attention to the comprehensive technical standards while creating the public space area.

References

[1] "UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 26 TAHUN 2007 TENTANG PENATAAN RUANG," 2007.

[2] A. L. Prianto, "Kebijakan Pengelolaan Ruang Terbuka Hijau di Kota Makassar," no. 26, pp. 674–695, 2007.

[3] W. A. Rahmy, B. Faisal, and A. R. Soeriaatmadja, "Kebutuhan Ruang Terbuka Hijau Kota pada Kawasan," *Lingkung. Binaan Indones.*, vol. 1, no. 1, pp. 27–38, 2012.

[4] "PERATURAN MENTERI PEKERJAAN UMUM NOMOR : 05/PRT/M/2008 TENTANG PEDOMAN PENYEDIAAN DAN PEMANFAATAN RUANG TERBUKA HIJAU DI KAWASAN PERKOTAAN," pp. 2–4, 2008.

[5] A. Auliciems, "Thermal comfort," no. January 2007, 2014, doi: 10.1243/PIME.

[6] O. I. Kalaoglu-Altan, B. K. Kayaoglu, and L. Trabzon, “Improving thermal conductivities of textile materials by nanohybrid approaches,” *iScience*, vol. 25, no. 3, p. 103825, 2022, doi: 10.1016/j.isci.2022.103825.

[7] S. Amilia, “Pengaruh Akses/Keterjangkauan dan Keamanan/Kenyamanan terhadap Kepuasan Pengunjung Objek Wisata Hutan Mangrove Kota Langsa,” *J. Samudra Ekon.*, vol. 4, no. 1, pp. 31–40, 2020.

[8] M. Baskara, “Design Control Principles of Children Playground in Public Space,” *J. Lanskap Indones.*, vol. 3, no. 1, pp. 27–34, 2011.

[9] G. R. Darmawan, H. Sufianto, and A. Murti, “Kids Safety Park , Batu Penerapan Konsep Keselamatan Pada Pengguna Taman Bermain Anak,” *J. Mhs. Jur. Arsit.*, vol. 4, no. 4, 2016.

[10] “Kesesuaian Taman Kota sebagai Ruang Publik Terpadu Ramah Anak di Kota Bandar Lampung 2020 | UPT PERPUSTAKAAN INSTITUT TEKNOLOGI SUMATERA.” .

[11] H. Pineo, B. Professor, Y. Rydin, U. Editor, S. Agass, and T. Mulhall, *Cities, health and well-being*, no. June. 2018.

[12] Z. Ring, D. Damyanovic, and F. Reinwald, “Green and open space factor Vienna: A steering and evaluation tool for urban green infrastructure,” *Urban For. Urban Green.*, vol. 62, p. 127131, 2021, doi: 10.1016/j.ufug.2021.127131.

[13] S. Supardi, A. M. Nugroho, and L. B. Said, “The Influence of Performance and Policy of Local Institutions As Well As Community Participation on the Growth of Slums in Urban Area of Makassar City Indonesia,” *Int. J. Civ. Eng. Technol.*, vol. 10, no. 5, pp. 220–238, 2019, [Online]. Available: http://www.iaeme.com/ijmet/issues.asp?JType=IJCIET&VType=10&IType=5http://www.iaeme.com/IJCIET/issues.asp?JType=IJCIET&VType=10&IType=5.

[14] R. B. B, U. Trisakti, R. Publik, T. Ramah, and K. Keluarga, “RUANG PUBLIK TERPADU RAMAH ANAK (RPTRA): LAYAKKAH,” no. 12, pp. 293–298, 2018.

[15] “Taman Kalpataru - Google Maps.” https://bit.ly/3nFGIRO (accessed Jul. 06, 2022).

[16] “RPTRA Anggrek Bintaro - Google Maps.” https://bit.ly/rptraanggrekbintaro (accessed Jul. 06, 2022).

[17] “Bandar Lampung Climate, Weather By Month, Average Temperature (Indonesia) - Weather Spark.” .

[18] “Jakarta C`limate, Weather By Month, Average Temperature (Indonesia) - Weather Spark.”