



# *AicE-Bs2022KotaKinabalu*

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**10<sup>th</sup> Asia-Pacific International Conference on E-B Studies**  
The Magellan Sutera Resort, Kota Kinabalu, Sabah, Malaysia, 07-08 Sep 2022

## **Low Income and Mental Health: Can urban parks be the solution for better health?**

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### **Abstract**

This study investigates park elements influencing the park visit frequency of low-income communities in an urban area, Kuala Lumpur. A set of survey questionnaires was distributed to identify participants' health history, the frequency of park visits and the park elements that pleasure low-income users during visits to Rimba Bukit Kerinchi Park in Pantai Dalam. The findings show the low-income community was unsatisfied with the park's safety. As a recommendation, additional planning guidance to planners and professional designers assists in accommodating a low-income-friendly park that supports healthy lifestyles.

**Keywords:** Urban park; low-income community; mental health; preliminary study

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DOI: <https://doi.org/10.21834/ebpj.v7i21.3720>*

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### **1.0 Introduction**

Malaysia is a country in Asia that has undergone rapid development. Nevertheless, Malaysia faces urban poverty and the number affected has notably increased since the pandemic began. The Department of Statistics Malaysia (2020) explained that the pattern of poverty escalated from 5.6% of the population in 2019 to 8.4% in 2020, caused by direct and indirect economic concerns related to the COVID-19 pandemic. However, before the pandemic, Malaysia demonstrated good progress in poverty reduction, from 7.6% in 2016 to 5.6% in 2019. A person who lives in a family with an income below the poverty line income, RM2,208, is considered poor by the Government of Malaysia. This problem has become a critical issue where the individuals affected by poverty are vulnerable to mental health problems. Previous studies in Western countries have identified a significant relationship between poverty or low income and psychological distress (Weissman et al., 2015). In addition, Weissman et al., in the National Health Interview Survey, have found that adults aged 65 and over have challenging and limited daily activities. This hardship prevents people from catering to basic needs and means they may have difficulty

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caring for themselves. A study undertaken by Hussein et al. (2021) shows that spending time regularly in a natural setting can alter mental health and support a more positive and healthier lifestyle. Due to shortage of time, safety problems, and being able only to visit the park alone, there is often low interest among visitors to undertake park activities. However, people's preference for park visits can differ from one person to another, depending on certain variables (Ishak et al., 2018) that include features and elements of the park itself. Therefore, this study aims to investigate park elements influencing the park visit frequency of low-income communities in an urban area. The objectives are to identify participants' health history, the frequency of park visits and the park elements that pleasure low-income users during visits to Rimba Bukit Kerinci Park in Pantai Dalam.

## 2.0 Literature Review

Recreational parks provided by the local authority in the urban area open the opportunity to visit every level of the community. An urban park is defined by the Malaysian Department of Town and Country Planning (2012) as a recreational area targeting residents living in the urban area to carry out recreational activities, such as sports and spending time in the provided natural setting. The size of urban parks is usually between 40-100 hectares, which can cater for 50,000 and above visitors for recreational activities. In previous studies, individuals who engaged adequately with the green environment demonstrated positive mental health outcomes (Van den Berg et al., 2010; Thompson et al., 2014; Ujang et al., 2015; Moulay & Ujang, 2016; Ishak et al., 2018). Ayala-Azcárraga et al. (2019), in a study undertaken in Mexico City, stated that the characteristics which defined the association of urban parks with visitor use patterns included the proximity to residential areas, tree abundance, safety, playground qualities, and park hygiene. Other elements that have been found to contribute to the frequency of visitation and reducing stress are water features, outdoor play areas and scented plants included in designing the park (Othman & Fadzil, 2015). Moreover, the fresh air and the presence of physical exercise space contribute to positive feelings that provide tranquillity, relieving people from the stress of working (Ujang et al., 2015).

Nevertheless, it has been shown that one out of five low-income residents who live in an urban area are physically inactive (Su et al., 2019). As supported by Mansor et al. (2015), the benefits of enjoying a natural setting and performing recreational activities are not fully appreciated by urbanised and underprivileged communities. In urban areas, specifically Kuala Lumpur, low-income housing is common in high-density flats with shared green space. Access to green space is limited due to privacy concerns or restricted space. Sometimes, the green space provided gets vandalised and has no regular maintenance. In other situations, low-income residents are not focused on the formal open space offered by the government for recreation. Having a suitable programme that contributes to generating income attracts the involvement of these people in spending time for recreation (Poon, 2017). Low-income people face barriers that make them less likely to visit parks, including lack of time and safety concerns, where some parks' equipment may need to be upgraded (Bakar et al., 2016). A study by Huang et al. (2020) shows that neighbourhood built environment, crime rates, and area-level deprivation each impacted park use by children in low-income diverse communities in New York City.

The famous theory from Kaplan & Kaplan (1989) - Attentional Restoration Theory (ART) - is connected to green space that can refresh the brain's psychophysiological and cognitive functioning after being worn out from daily activities that require focused attention. Thus, the association between green space and mental health can help the low-income population in urban areas to elevate their lifestyle to a better one. The participation of low-income people in an urban park that provides calming and tranquil experiences encourages spontaneous or effortless attention that distracts them from overthinking other problems.

## 3.0 Methodology

As this study focuses on the low-income community, the park's selection needed to satisfy specific criteria for selection. The identification of Rimba Bukit Kerinci Park as the case study is based on the management authority, travel distance within a radius of 3km from a low-income residential area, and size. According to Jabatan Perancangan Bandar dan Desa Negeri Selangor (2010), the recreational facilities at the urban park consist of a green field to perform sports; multipurpose courts; a sports complex; swimming pool; golf driving range; children's playground; picnic and camping area; water sports amenity; along with a forest and gardens; gazebo and prayer space; public toilets and telephones lodging; shop and stall; parking for cars and buses; and a bus stop. This park was under the management of Kuala Lumpur City Council for its development and maintenance, provides recreational and leisure facilities for every age level and can cater for a catchment of 50,000 population. This park was formerly a rubber plantation area and is now no longer cultivated. The uneven topography of this park attracts hikers to do activities on Gasing Hills, which the visitor can access via the Kuala Lumpur entrance or Petaling Jaya entrance. Rimba Bukit Kerinci Park is surrounded by the mixed development area of Pantai Hillpark, Jalan Pantai Dalam. The neighbourhood of this park consists of low-density housing, low-cost housing, offices, high-rise buildings and a religious centre. Survey questionnaires were distributed to the low-income community from Program Perumahan Rakyat (PPR) or People's Housing Project, who live near the park. Figure 1 shows the location of Rimba Bukit Kerinci Park.

The data analysis for the questionnaire was undertaken using the standard statistical software SPSS (Statistical Package for Social Science) Version 21. The demographic data were analysed with each variable associated with park perceptions and use and the stress outcome measure.

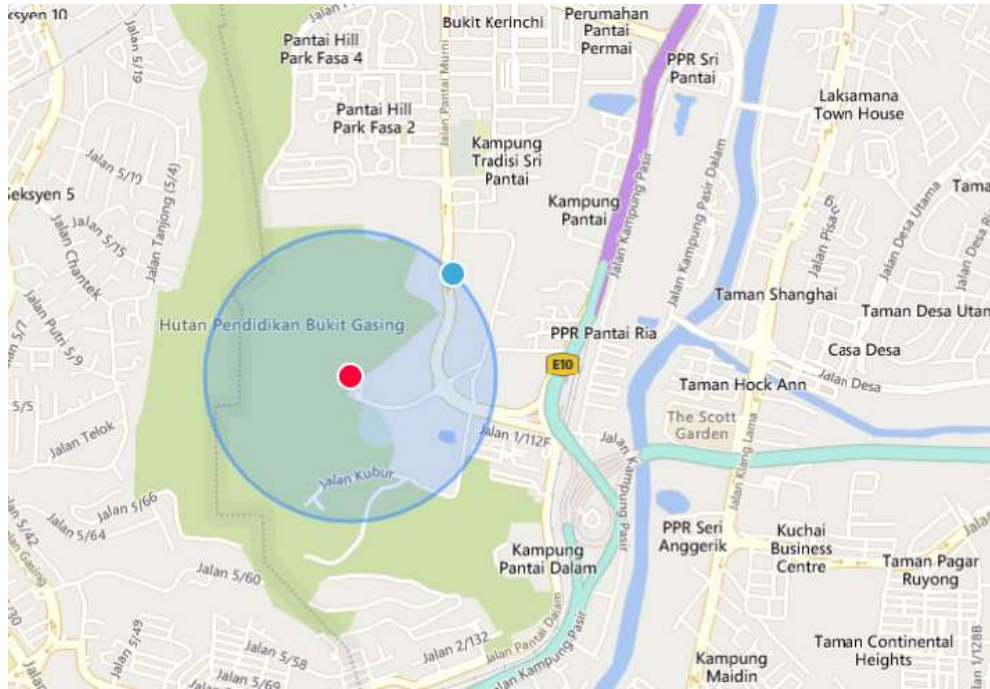


Fig. 1: The location of Rimba Bukit Kerinchi Park surrounded by mixed development areas with a 500-metre radius (Source: Google map)

## 4.0 Recruitment of Participants and Findings

### 4.1 Recruitment and demographics of respondents

Based on the catchment population of 50,000, the sample size targeted was a minimum of 382 samples needed to have a confidence level of 95% that the real value is within  $\pm 5\%$  of the surveyed value. Due to the COVID-19 restrictions, only  $n=179$  responses returned from the low-income communities living at the PPR around Rimba Bukit Kerinchi Park with 80% to 85% confidence levels. The sample was recruited based on the list of PPR residents provided by the local authority. They were recruited from their home environment as the surveyors approached them at the entrance doorway to their building for an immediate response. Some were received via an electronic form completed and returned by email. The self-reported questionnaire consisted of four sections: demographic, park usage, Perceived Stress Scale (PSS), and park condition. In the first section, the respondents' background information was obtained. Most of the respondents were female, and the largest age group was 20 to 29. The majority were Malay, working or students, healthy and non-smoking. More than half of the respondents were not taking an antidepressant, and most lived in a housing area less than 2km from the park. Table 1 summarises in detail the demographic data of respondents from PPR housing.

Table 1. Demographic data of respondents at low-income residential

Variables		Percentage %
Gender	Male	35.2
	Female	64.8
Age	12-19	14.5
	20-29	31.3
	30-39	15.6
	40-49	16.2
	50-55	15.1
	>56	7.3
Race	Malay	86.6
	Chinese	0
	Indian	8.9
	Others	4.5
Employment status	Employed	44.7
	Unemployed	18.4
	Student	17.9
	Housewife	11.7
	Job Seeking	3.9
	Retired	3.3

Health status	Diabetes	11.2
	Hypertension	8.4
	Heart Disease	2.2
	Cancer	0.6
	Asthma	4.5
	No	73.2
Smoking status	Yes	17.9
	No	82.1
Antidepressant status	Yes	46.9
	No	53.1
Personal income	No	48.0
	<RM3860	47.5
	RM3861-RM8319	2.8
	>RM8320	1.7
Distance park to resident	<1km	38.5
	1km-2km	40.2
	3km-4km	7.8
	4km-5km	2.8
	>5km	10.6

#### 4.2 Park usage among the low-income communities

After identifying the respondents' background, the park usage of the low-income communities was documented in the second section of the questionnaire. The questions asked included time, duration of stay and frequency of visitors to parks to record the behaviour of low-income communities within the park. From the data collected, 33% of respondents visited the park 2 to 3 times per week. Usually, they stay between 4 to 6 hours per visit (36.9%) and mainly during the evening (77.1%). A high percentage of respondents, 91.1%, claim that park visits can help them release stress. Table 2 below shows the questions asked to the low-income communities who live at the PPR around Rimba Bukit Kerinchi Park.

Table 2. Park usage data from low-income communities who live at the PPR around Rimba Bukit Kerinchi Park

Questions		N	Percentage %
How frequently do you visit the park for recreational purposes?	Once	19	10.6
	Everyday	21	11.7
	2-3 times a week	59	33.0
	Every weekend	37	20.7
	1-3 times per month	43	24.0
How long do you stay per visit?	Less than 1 hour	40	22.3
	1 hour	60	33.5
	2-4 hours	66	36.9
	4-6 hours	10	5.6
What time of the day do you visit?	Morning	38	21.2
	Evening	138	77.1
	Afternoon	1	0.6
Do you think going to the park can release your stress?	Yes	163	91.1
	No	16	8.9

Note: The highlighted rows represent the highest percentage for each question

#### 4.3 Stress level of low-income communities

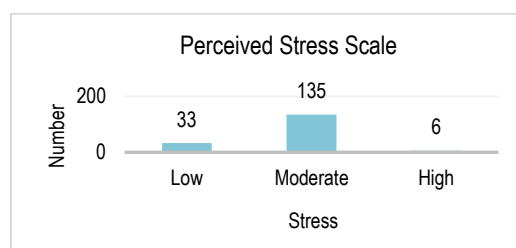


Fig. 2: The stress level of respondents at PPR housing (Source: Authors)

In the third section of the questionnaire, the adoption of PSS plays the role of a scale to measure the stress level of low-income communities. This psychological instrument asks questions about people’s daily lives, e.g. if the situation is too much for them to handle. The scores of PSS are divided into three levels, high perceived stress (27 to 40), moderate stress (14 to 26) and low stress (0 to 13). Figure 2 shows that most (n=135) low-income community members experienced a 'moderate stress' level based on PSS.

4.4 Rimba Bukit Kerinchi Park evaluation

The last section of the questionnaire was the evaluation form for the current park condition. Eighteen (18) items were asked about using a Likert scale that contained aspects of park elements, safety and design, with scale values representing 0: very unsatisfied, 1: unsatisfied, 2: neutral, 3: satisfied, and 4: very satisfied. The measures related to the variables evaluating park conditions were analysed to show the frequency of items for which respondents showed the lowest levels of satisfaction. The respondents were most unsatisfied with access to the toilet, with a low percentage satisfaction of 29.6%, followed by satisfaction with feeling safe (30.3%), water features (33%), disturbance by wild dogs and monkeys (38%), and the accessible features for elderly, children and disabled people (44.7%) and preferred more visitors (45.8%). Table 3 shows the park conditions in which participants scored 4, i.e. 'very satisfied', based on the evaluation of the low-income respondents.

Table 3. Levels of satisfaction for the 18 items of park conditions in a sample of low-income communities who live at the PPR around Rimba Bukit Kerinchi Park

No.	Variables	Very satisfied percentage %
D1	Proper directional road signs	51.4
D2	Toilet facilities access	29.6
D3	Clean, well-maintained park	69.7
D4	Well designed & maintained walking trails	68.7
D5	Provided car parks and bicycle racks	63.1
D6	Provided shaded area structure (e.g. gazebo)	69.3
D7	Seating numbers	62.0
D8	Able to enjoy nature in the park	78.8
D9	Disturbance of wild dogs and monkey	38.0
D10	Water feature (river, stream, or pool)	33.0
D11	Trees as a shelter at the park	74.3
D12	A broad range of activities available	66.6
D13	Good natural lighting	80.4
D14	Clear information about user safety	56.4
D15	Feeling safe in the park	30.3
D16	Number of other visitors present	45.8
D17	Accessible features for people with disabilities, children, and seniors	44.7
D18	Distance from park to residential	70.5

Note: The highlighted rows represent the percentage below 50% for each variable

The 18 items were summarised into a categorical variable, the ordinal data, and the correlation test with PSS was run. Table 4 presents the correlation analysis of park conditions with low-income respondents' stress levels from PSS and prescribed antidepressants.

Table 4. Spearman rank correlation table

			PSS	Antidepressant status
Spearman's rho	Park conditions (Sum of 18 items)	Correlation Coefficient	.096	.186*
		Sig. (2-tailed)	.203	.013

Note: Correlation is significant at the 0.05 level (2-tailed).

The descriptive statistics show that the data distribution pattern is normally distributed. The skewness (-.525) and kurtosis (.955) values are within the normal distribution range for the total of all the individual item scores, as shown in Table 5.

Table 5. Normal distribution of individual item scores

		Statistic	Std. Error	
Park conditions (based on the sum of 18- items in Table 4)	Mean score	2.5279	.05400	
	95% Confidence Interval for Mean	Lower Bound	2.4214	
		Upper Bound	2.6345	
		5% Trimmed Mean	2.5448	
	Median	2.6111		
	Variance	.522		
	Std. Deviation	.72252		
	Minimum	.00		
	Maximum	4.33		
	Range	4.33		
	Interquartile Range	.89		
	Skewness	-.525	.182	
	Kurtosis	.955	.361	

### 5.0 Discussion

From the data collected, 80.4% of the low-income respondents were very satisfied with the natural lighting at the park. There is artificial lighting in the park; however, people are not allowed to visit the park after dusk. 78.8% of the respondents enjoyed the nature present in the park. Self-reported psychological improvements have been recorded in the individuals that spent time just passively sitting in a natural setting compared to a set of artificial structures (Tsunetsugu et al., 2013). The natural environment can reduce possible stress and restore mental health, as indicated by 74.3% of the respondents who were very satisfied with the number of trees in the selected case study. Trees can play a significant role in people's lives and the environment. According to Turner-Skoff and Cavender (2019), trees can contribute to health and social wellbeing, cognitive development and education, improve economy and resources, reduce climate change, and enhance habitat and green infrastructure. 74.3% of the respondents were happy with the natural shelter from the trees, which give shelter and offer a shaded experience on a sunny day. Supported by Astell-Burt and Feng (2020), the protection and reestablishing of an urban tree canopy can become an excellent way to promote public mental health. Regarding the distance to the park, 70.5% of the respondents were very satisfied with the location, less than 2km with their housing. There was no significant correlation between self-reported stress level and evaluation of park conditions. However, a clinical diagnosis of mental health issues (46.9% of respondents noted they were prescribed antidepressants) showed a stronger relationship with an evaluation of park conditions ( $r=.186, p<.05$ ) compared to the PSS score indicating stress level ( $r=.096, p>.05$ ). Table 6 shows that people on antidepressants are significantly associated with evaluations of safety ( $r=.263, p<.05$ ) as they feel less satisfied with the park's safety.

Table 6. Correlation between the antidepressant status of low-income respondents and with park's safety

			Safety
Spearman's rho	Antidepressant status	Correlation Coefficient	.263**
		Sig. (2-tailed)	<.001

Note: Correlation is significant at the 0.01 level (2-tailed).

The perceptions of people with mental health issues are important as they may demand certain elements and indicate particular preferences in the park for recreation. For example, Vujcic et al. (2017) explained that individuals diagnosed with depression, anxiety and stress may choose to participate in horticulture therapy to improve mental health. A limitation of this study is that the questionnaire is based on self-reports. There is a chance that the results on stress level, duration of stay at the park and health score might reflect respondents overestimating their actions. Furthermore, this study sample was insufficient to represent all of the low-income population in Kuala Lumpur, and the sample is almost certainly not representative of all adults living in the target residential area. Apart from this, some residents avoided participating in the survey and returned incomplete forms. There was difficulty obtaining results from the pandemic Standard Operation Procedure, health issues and problems approaching the residents.

### 6.0 Conclusions and Recommendation

The assessment from the respondents on Rimba Bukit Kerinchi Park showed that they are very satisfied with 12 out of 18 environmental conditions studied. These are good wayfinding, clean, well-maintained parks; well-designed walking trails; provided car parks and bicycle racks; shade structure; seating; nature; trees; a variety of activities; good natural lighting; safety; and distance from the park to the residential area. The income of respondents did not show a significant correlation with the park condition evaluation. The income data of the respondents shows 48% with no income and 47.5% at the poverty level. The no-income respondents represent unemployed, students, housewives, job-seeking, and retired people. Most respondents (55%) visited the park at least once a week, and the park was close to where most people lived (within 2km). The study shows a sample of predominantly Malay female users with moderate stress levels using the selected park. They highlight the safety issues associated with disturbance by wild dogs and monkeys, lack of toilet access, and fewer visitors. Besides, the satisfaction with park condition evaluation contributes to our understanding of what might lie behind park visit frequency. As supported by Subiza-Pérez et al. (2020), a sufficient number of benches, water, fountains, playgrounds, and trees can help

improve mental health. Subiza-Pérez et al. also mentioned spaces for recreation, entertainment and being physically active are provided as psycho-environmental attributes in the urban park.

Since Malaysia is a country where most public parks in urban areas are free, there are, in principle, no restrictions for low-income populations to visit. Some recommendations to increase the number of visits by this group might reduce the chances of getting severe illness mentally and physically. With current guidelines provided by the Department of Town and Country Planning and National Landscape Department, access to a toilet must be universal to vulnerable groups such as disabled people, older people and children. Also, there is a need to improve people's sense of security, involving internal factors (such as the park's condition) and external factors (such as vandalism and the number of visitors). For future studies, more respondents, a comparison of urban parks in Kuala Lumpur, and clinical diagnoses for health status among low-income communities are needed for more accurate analysis. This effort can support the creation of better urban parks for low-income communities in Malaysia to reduce stress levels.

## Acknowledgements

Special thanks to Universiti Malaya under the Impact Orientated Interdisciplinary Research Grant Programme (IIRG008B-19HWB) for making the data collection achievable and the residents at Pantai Dalam for their participation in this study.

## Paper Contribution to Related Field of Study

This preliminary study cogitates on the potential of Taman Rimba Bukit Kiara as the solution to improve the mental health of low-income communities. With increasing living costs, mental health issues are also potentially following the trend. It is not a one-day job to overcome poverty; however, providing a suitable park for recreation can reduce the mental health issues among the low-income. This study will be an eye opener for the professionals to develop a park preferred by the low-income community in the urban area.

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