DO DURATION OF STAY AND PARK VISITATION MATTER? AN EVALUATION OF PARK DISTANCE

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Abstract

Among ways to keep up with healthy lifestyle include physical activities. Recent statistics by the Ministry of Health (2016) indicated a drastic increase in the prevalence of non-communicable disease from 1990 to 2016 and the number is expected to increase or remain high. In response to the issue, the Eleventh Malaysia Plan 2016-2020 was formulated to improve Malaysians' wellbeing by providing ample open spaces to encourage an active lifestyle. This paper aims to investigate the association of proximity to neighbourhood park and its level of utilisation. 680 respondents were involved in the questionnaire survey conducted at 7 selected neighbourhood parks. The output of the Pearson Correlation evinced that proximity to neeighborhood parks was highly associated to the level of park utilisation. There was a strong and positive relationships between (i) park distance and numbers of visitations ($r = 0.841, n = 680, p = 0.000 < 0.01$), (ii) park distance and length of stay ($r = 0.803$, $n = 680$, $p = 0.000 < 0.01$), and (iii) number of visitations and length of stay ($r = 0.644$, $n = 680, p = 0.000 < 0.01$). The results also indicated that that the longer the distance of the park from home, the longer the time spent at the park. Whereas, the shorter the distance of the park from home, the higher the utilisation of the park.

Keyword: physical activities, quality neighbourhood park, proximity

INTRODUCTION

Malaysia is one of the developing countries besides other Asian and European countries that experience a high number of non-communicable disease (NCDs). Apart from other determinants, physical inactivity is identified as the leading cause of NCDs and other health-related problems (Ministry of Health Malaysia, 2016). Including Malaysia, statistics have reported over 5.3 million deaths a year worldwide due to unhealthy lifestyle (Sallis and Carlson, 2015). The Malaysian government has introduced green cities and neighbourhood as its core initiatives towards achieving sustainable cities (Ministry of Housing and Local Government Malaysia, 2010). Besides enhancing people's wellbeing and increasing bodily health and muscle composition, strong evidence shows that physical activity helps in overcoming various types of cancer, depression and high blood pressure (Fong et al., 2012; Ferioli et al., 2018). This paper intends to investigate the association of National Park (NP) proximity with its utilisation for the improvement of the quality of neighbourhood park (QNP) in Malaysia. The objectives of this study are to (i) identify the relationship between park distance and number of visits, (ii) to investigate the association of park distance with length of stay and (iii) to investigate the association of number of park visitations with length of stay.

DETERMINANT FACTORS TO PARK UTILIZATION

Over the past century, there has been a dramatic interest in the subject of green open spaces (GOS). Numerous urban theorists emphasise the importance of GOS for social connectedness, recreational opportunities, enhancement of physical health and wellbeing (Samimi et al., 2009; Karuppannan et al., 2012; Brown et al., 2013). Despite the fact that GOS brings extensive value to the community, the issues of underutilisation of parks or GOS in Malaysia remain unchanged (Norsidah et al., 2015). Urban theorists agree that types of activities, safety, legibility, quality and proximity are the prominent factors that influence GOS utilisation (Ewing and Handy, 2009; Sugiyama et al., 2010; Taylor et al., 2011; Paquet, Cargo, Kestens and Danial, 2010; Akpınar, 2014). A current study conducted on the quality of GOS in Malaysia suggests that distance is one of the essential criteria for successful GOS (Nurhayati and Amanina, 2018).

Studies conducted on park utilisation related to frequency of use claim that distance has a significant influence on park utilisation (Sturm and Cohen, 2014; Ribeiro et al., 2015). The claim is supported by Agboola et al. (2011) who assert that park utilisation is highly associated with proximity to the park. One of the possible explanations is that, parks that are in close proximity to the residence of the park users are convenient to reach hence encouraging physical activities (PA) participation such as walking and cycling to the park.

Previously, several studies have reported that proximity of park to residence influences the time spent in the park and level of park utilisation. In Chicago, people who live near to parks are more likely to visit the park due to shorter travel time as compared with people who live farther from parks. Meanwhile, people who live farther away from parks would hardly visit the park yet tend to stay in the parks much longer than those who live nearby (Gobster 2002; Tinsley et al., 2002). Other studies related to satisfaction of neighbourhood park evince that distance has the strongest influences on GOS utilization compared to other factors (Hadavi et al., 2017). This suggests that the more frequently people visit the parks, the more likely that they would be involved in PA.

The frequency of park utilisation is strongly associated with a higher level of PA (Bedimo-Rung et al., 2005; Kaczynski and Henderson, 2008). Studies conducted by Kaczynski et al. (2009) reveal that proximity to parks strongly relates to age. Indeed, Sanesi and Chiarello (2006) claim that residential area, marital status and age are strong factors influencing park utilisation. Meanwhile, studies by Barbosa et al. (2007) and Schipperijn et al. (2013) discover that accessibility is an important factor that influences park usability. However, there is lack of reliable methods to measure park accessibility (Maroko et al., 2009). It is important to note that factors such as proximity to GOS are closely related to accessibility, travel time, street environment and land uses (Balfour and Allen, 2014; Pojani and Stead, 2015; So, 2016).

METHODOLOGY

Site Study
Seven neighbourhood parks under the jurisdiction of Petaling Jaya City Council (Majlis Perbandaran Petaling Jaya, MBPJ) and Shah Alam City Council (Majlis Perbandaran Shah Alam, MBSA) were selected for this study. 680 park users were involved as respondents of the questionnaires. Table 1 shows detailed information about on of the park selected for the study.

Table 1 Details on selected Neighbourhood Parks in Malaysia

Name of Parks	Location	Size	Jurisdiction
Taman Rimba Riang	Section 9, Kota Damansara	4.45ha	MBPJ
Taman Aman	Petaling Jaya	5.2 ha	MBPJ
Taman Jaya	Petaling Jaya	10.7 ha	MBPJ
Ara Damansara Park	Ara Damansara	9.9. ha	MBPJ
Taman Rekreasi Tasik Seksyen 7	Seksyen 7, Shah Alam	18 ha	MBSA
Western Park	Setia Alam	4.35 ha	MBSA
Taman Rekreasi Indah	Shah Alam	7.5 ha	MBSA

RESULT AND DISCUSSION

In line with the findings from the literature, this study believed that distance served as one of the significant factors influencing neighbourhood park (NP) utilisation particularly in Malaysia. SPSS 16 was utilized to conduct Pearson Correlation. The Pearson Correlation determined whether there was a significant correlation between, i) park distance from neighbourhood and number of visitations, and ii) park distance from neighbourhood and length of stay in the park.

The options for park distance were: 1=< 1km, 2= 1km - 2km, 3= 3km - 4km, 4= 4km - 5km, and 5= < 5km. The options for park visitiations were: 1= this is my first time, 2= everyday, 3= 2-3 times/ week, 4= every weekend and 5= 1-3 times/ month. The options for the the length of stay were: 1= 1 hour, 2 = 1 hour, 3 = 2-4 hours, 4= 4-6 hours, and 5= full day.

Table 2 shows the output of the correlation analyses. The results indicate a strong and positive correlation between (i) park distance and number of visitations. Moreover, there is a strong and positive correlation between (ii) park distance and length of stay, and (iii) number of visitations and length of stay. The results show that (i) the shorter the park distance from home, the greater the utilisation of the park, (ii) the longer the distance of the park from home, the longer the time the user spent at the park, and (iii) the lesser the number of visitations, the longer the time the user spent at the park.

Table 2: Statistical Output of Bivariate Correlations on NP distance and utilization in Malaysia

H⁰	There are no statistical correlations between (i) parks distance and numbers of visitation, (ii) parks distance and length of stay, and (iii) number of visitation and length of stay
H¹	There are statistically significant correlations between (i) parks distance and numbers of visitation, (ii) parks distance and length of stay, and (iii) number of visitation and length of stay

Measures	Statistics	Parks distance	Length of Stay	Number of visitations
Parks distance	Correlation coefficient (r)	1	.803**	.841**
	Coefficient of determination (r²)		0.646	0.707
	Sig. (2-tailed)		.000	.000
Length of Stay	Correlation coefficient (r)	.803**	1	.644**
	Coefficient of determination (r²)	0.646		0.414
	Sig. (2-tailed)	.000		.000
Number of visitation	Correlation coefficient (r)	.841**	.644**	1
	Coefficient of determination (r²)	0.707	0.414	
	Sig. (2-tailed)	.000	.000	

The followings are the results of the correlation statistics:

i.   At the 99 % confidence level, there is a statistically strong and positive correlation between park distance and number of visitations (r = 0.841, n = 680, p = 0.000< 0.01). The coefficient of determination (r^2 = 0.707, p < 0.01) indicates that park distance explains 70.7% variation in number of visitations. Therefore, the null hypothesis is rejected.

ii.   At the 99 % confidence level, there is a statistically strong and positive correlation between park distance and length of stay (r = 0.803, n = 680, p = 0.000< 0.01). The coefficient of determination (r^2 = 0.644, p < 0.01) indicates that park distance explains 64.6% variation in length of stay. Therefore, the null hypothesis is rejected.

iii. At the 99 % confidence level, there is a statistically strong and positive correlation between number of visitations and length of stay (r = 0.644, n = 680, p = 0.000< 0.01). The coefficient of determination (r^2 = 0.414, p < 0.01) indicates that number of visitations explains 41.4% variation in length of stay. Therefore, the null hypothesis is rejected.

The statistical outputs suggest that park distance has a strong connection to park utilisation, that is (i) the number of visits and (ii) the length of stay at the park.

Park Distance in Relation to Time Spent at Park

In Malaysia, one of the greatest challenges is to encourage people to be involved in outdoor physical activities. Park planners need to identify the needs of people of various ages to get them involved in outdoor activities. Moreover, time spent at the park indicates higher chances of getting involved in different types of outdoor activities. Several studies have documented that the more time spent outdoors, the healthier people's well-being and the happier they will be (Thompson and Travlou, 2007; Mitchell and Popham, 2008). The claim is supported by Lestan et al. (2014) who assert that the proximity of open green spaces to home strongly affects the number of visitations and time spent at the park. The findings from this study also indicate that a park located farther from home leads to longer travel time. Whereas, park visitors who stay closer to the neighbourhood park would pay frequent visits to the park and spend lesser travel time to reach the park as compared with visitors who could only go to the park over the weekend. Current studies by Bertram et al. (2017) indicate similar findings where individuals tend to spend more time at the park during the weekend.

Interestingly, other studies indicate that distance is not the only factor influencing the time spent in green GOS. In Malaysia, health-related factors, facilities, social opportunities, accessibility, place attachment and elements of GOS are found to have significant influence on the time spent in GOS (Nor Akmar Abdul Aziz, 2012; Norsidah et al., 2015; Amir Hossein Askari, 2014;

Sreetheran, 2017). Therefore, further studies and more in-depth investigation related to NP distance and duration of time spent are needed. It is believed that frequency of park visitation and time spent are among important indicators of successful GOS design (Amir Hossein Askari, 2014). However, there is no specific justification hitherto of whether parks should be located near to, or farther from the residential areas. Different GOS-related studies measure distance differently depending on the context of the study. Moreover, some studies indicate that distance is highly related to other factors such as accessibility and streetscape design.

Park Distance in Relation to Frequency of Visitation
Based on Table 2, the results suggest that residents who live within less than 1 kilometer from the park tend to have higher frequency of visitation. Meanwhile, residents who live farther away from the park, but within less than 5 kilometers; show less visitation to the nearest NP. The results indicate that the distance of park from neighbourhood significantly influences the utilisation of neighbourhood parks. Previous studies have reported that park proximity is one of the main reasons that invite and attract frequent visits to the parks in Putrajaya. The respondents stated that their attraction to the parks reflected in their regular visits was due to the short distance of the parks from their residences (Norsidah et al., 2015). Kayczynski and Henderson (2008) state that proximity to GOS is highly connected to the increase in physical activities and the health of the communities. These findings are further supported by the studies conducted in New Delhi, India which evince that frequency of park visitation is strongly influenced by distance to the park. People who live less than 1 kilometer are more likely to pay visits to the parks as compared with those who live further than 1 kilometer away. Similarly, other studies also report the same results where the distance to GOS influences the utilization of the park (Coles and Bussey, 2000; Neilsen et al., 2013).

Previous studies claim that some park visitors particulatly the elderly, have difficulties travelling long distances. The claim is supported by recent studies stating that the older park users are unwilling to travel far due to their age and less mobility regardless of larger and attractive GOS (Lo and Jim, 2012; Paul and Nagendra, 2017; and Nurhayati Abdul Malek et al., 2018). Some studies state that NP located within walking and cycling distance would attract more users from various economic backgrounds (Cohen et al., 2012; Mohd Salleh et al., 2019). Findings of this study are supported by Walker and Crompton (2012) who mention that residents who live nearby parks, that is within .25, .5 and .75 miles, would more likely to pay frequent visits compared to those who live further away from the parks. Studies conducted by Ward Thompson and Aspinall (2011) as well as Wendel et al. (2012) state that nearby GOS located within neighbourhood

areas attract more residents to utilise them due to their sense of attachment to natural environment.

The studies further add that the nearby GIS increases people's level of satisfaction towards outdoor spaces. Recent studies by Schipperijn et al. (2017) on the comparison between eight countries in terms of park utilisation in relation to pattern of use and distance, indicate that residents who live within 1 kilometer from the park pay frequent visits to the park as compared to those who live further than 1 kilometer away from the park. It is important to highlight that these findings do support the Green Neighbourhood Plan 2010 formulated by the Ministry of Housing and Local Government Malaysia (2010) that aim to reduce carbon footprints and improve people's health and well-being through walkable neighbourhood. Moreover, parks situated within walking distance and paved with proper streetscape design would invite all people regardless of various demographic and socioeconomic backgrounds to utilise the parks. Meanwhile, parks located farther away would discourage older people and lower income groups from visiting the park. Consequently, these types of parks decrease the level of recreational opportunities among users. This is supported by other research which indicate that distance from neighbourhood to urban green spaces are highly correlated to park utilisation, particularly types and level of physical activities and frequency of use (Cohen et al., 2012; Björk et al., 2008; Toftager et al., 2011; Rasidi et al.,2012; Akpinar, 2014; Nurhayati Abdul Malek et al., 2015).

However, there is yet a specific study which discusses the maximum tolerable distance that could define either how near or far the neighbourhood is to the park. Different countries would have their own tolerable distances depending on age and transportation. Studies conducted in Shenzhen, China and Los Angeles report that 300 meters to 400 meters from neighbourhood area to open space is the acceptable distance. Distance greater than 400 meters would decrease frequency of visitations to GOS (Badland et al., 2014; Sturm and Cohen, 2014). In New York, 1 mile (1.6 km) is identified as the tolerable distance to GOS (Maroko et al., 2009). The closer the park's location to the neighbourhood, the higher the chances of recreational opportunities among residents regardless of age and socio-economic status. Unlike riding vehicles, pedestrians restricted by walkable distance (Dill, 2004; Kawada et al., 2014). Hence, parks located closer to their home are more preferable. Walking is also known as one of the sustainable alternatives advocated by various developing countries to access the GOS.

CONCLUSION

This study has proven that distance is one of the important design characteristics that have an influence on park visitation and time spent at the park. However, according to previous studies that investigated distance, other factors such as accessibility, streetscape design, safety and attractiveness need to be considered when delving into the issue of park usability. In the Malaysian context, neighbourhood parks situated close to the residential areas are more preferred instead of other influential factors such as maintenance, facilities, safety, and park qualities. Previously, the results of this study have evinced that visitors who live less than 1 kilometer from the park pay frequent visits to the park as compared to those who live further than 1 kilometer away. Hence, studies on possible factors related to distance such as accessibility, street characteristics and socio-economic background need to be investigated further to support the current study comprehensively for future GOS planning and design references.

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