Who Uses Urban Parks? A Study of User Characteristics and Activity Patterns of Ramna Park, Dhaka

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ABSTRACT: A growing body of research shows positive association between parks and physical activity, but very few studies have investigated the characteristics of users and how the activities vary according to different user groups. The purpose of this study was to investigate the socio-demographic profile of the users, their activities and motivation of visiting the park. Total 400 users of Ramna Park were surveyed in face to face interview at different time periods. The participants were asked to provide information about their socio-economic profile, frequency and purpose of visit, mobility and activity patterns in the park and level of satisfaction about different facilities. At a random selection of the sample, we found larger proportion of male users than female users with a majority in the age group 40-60 years. The park has a large catchment area which extends beyond the range of walking distance and the frequency of visiting the park was found closely associated with the proximity of the users. Besides, no significant association was found between the proximity and duration of staying in the park. An overwhelming majority of the users come to the park for health purpose mainly for walking, jogging and physical exercise. The findings suggest that the purpose of visiting the park significantly varies according to the gender and age group of the respondents. The users were also asked about their satisfaction level and problems they usually faced based on their individual perception. Most of them raised their concerns for poor toilet facility and waste management.

INTRODUCTION

Parks offer a unique type of landscape in urban fabric, providing the opportunities of recreation, physical activities and social interactions of people. Increasing number of empirical evidences suggest that urban parks and green spaces are important for physical health, mental well-being, human cognitive function and social cohesion (Lin et al., 2014; Sacker & Cable, 2005; Keniger et al., 2013; Hayward & Weitzer, 1984). Besides the role of developing healthy citizens, parks generate significant economic and environmental benefits for a city. Parks provide environmental and ecological services by filtering air pollutants, reducing noise level, cooling temperature, infiltrating storm water and creating biodiversity (Escobedo et al., 2011; Groenewegen et al., 2006). Moreover,

these natural landscapes are not without economic values. Parks add property values, create formal and informal economic activities and contribute to the urban economy (Brander & Koretse, 2011; Harnik & Welle, 2009).

Although the benefits of parks are well recognized, the space for parks and open spaces in many metropolitan areas in the world is grossly inadequate (Yanez & Muzzy, 2005; Byomkesh et al., 2012). Besides in many instances, the existing parks remain underutilized and face a progressive decline in quality (Mishu et al., 2014). However, there is a great potential to make the proper uses of urban parks by knowing the user group. The pattern of use and activities performed in the parks principally depends on individual preferences and their characteristics (Gobster, 2002; Tinsley et al., 2002). A detailed understanding

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about users' demographic characteristics, their activities and perceptions will help to enhance the level of satisfaction, sense of place and emotional attachment to the parks (Lo & Jim, 2010; Dooling et al., 2006; Oguz, 2000). To make the parks more user-friendly, planners and designers need to know about the users to better capture their needs. For example, a good understanding about the mobility pattern of the users such as mode of transport, distance travelled, their point of origin from where they come to the park etc. is very much important to define the catchment area of the park and to analyze how much a park is accessible to its main user group. These pieces of information can provide useful inventories for inclusive park design that can attract more people from diverse communities (Jay & Schraml, 2009). Such parks and open space will be able to contribute social, environmental and economic value to the cities. Although a wide range of research on parks has been conducted, those works rarely focused on socio-economic variables of the users and their activities. (Lin et al., 2014; Grove et al., 2006; Kearney, 2006; Byrne & Wolch, 2009).

Dhaka has been experiencing continuous decline in parks and open space due to increase pressure of urbanization. There are approximately 54 registered parks in the city covering only 14.5% of the total land area of the city (Neema et al., 2014). There is very little scope for meeting this standard space requirement for urban parks in a densely populated city like Dhaka. However, there is certainly a good opportunity to improve the quality and facilities of the existing urban parks. A good understanding about the users and their activities will be the most important initial step to revitalize the existing parks

of the city. Several studies have been conducted on parks and open spaces in context of Dhaka (Chowdhury, 2004; Islam et al., 2002; Siddiqui, 1990; Nehrin et al., 2004; Mishu et al., 2014). But the existing body of literature cannot provide us any comprehensive findings about the characteristics of the users and the nature of their activities in the parks. To fill the existing knowledge gap, in this study we explored the socio-economic characteristics of the people visiting Dhaka's Ramna Park and investigated their activity and mobility patterns in terms of different interrelated factors.

MATERIAL AND METHODS

Site Selection
Ramna Park is the most widely used park in Dhaka City. The history of the park dates back to the 17th century when the city started its journey as the capital (Rahman et al., 2016). This park is located at the heart of the city and has a deep cultural and traditional influence on the city dwellers. It is one of the largest urban parks with an area about 68.50 acres. The lake covers an area of 8.76 acres (Fig. 1).

Survey Data Collection
In the first stage, a draft questionnaire was prepared, and a pilot questionnaire survey was conducted on 40 respondents. Based on the feedback from the pilot survey, the final questionnaire was prepared. A total of 400 users (n=400) were surveyed randomly in face to face interview in the morning and evening hours. A major finding from the pilot survey was that more users come to the park in morning than evening. Hence,
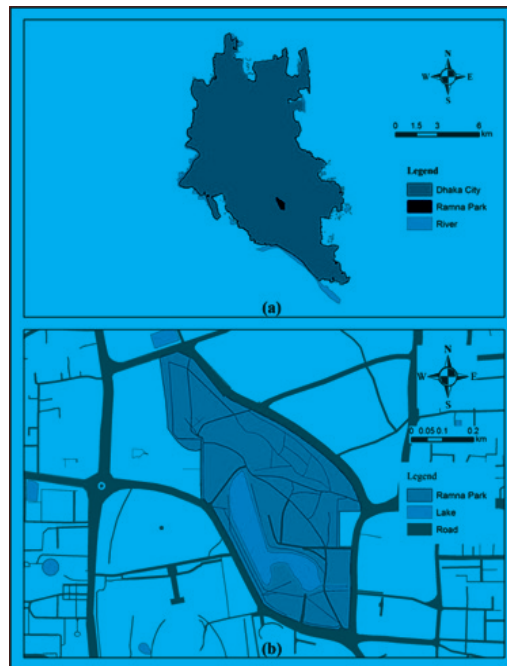

Fig. 1: (a) Location of Ramna Park in Dhaka City (b) Map of Ramna Park

238 samples were taken from morning and the rest samples were taken from evening period. Data were collected under four broad categories such as socio-economic profile of the users, their mobility pattern, their activity pattern and some important issues related to facilities and maintenance of the park. Socio-economic variables included age, gender, income and occupation of the users. The users were also asked about their purpose of visiting, activities they usually perform, duration of staying and whether they come to the park alone or accompanied by others. Moreover, place of origin, the mode used for arrival and departure, travel time, travel cost and travel distance were included in the questionnaire to understand the mobility pattern of the users.

RESULTS AND DISCUSSION
Socio-economic Characteristics of the Users
The result of the survey shows that more male users (62.75 percent) came to the park than female users (37.25 percent). While comparing different age groups, we found that approximately, half of the users (47.5 percent) were within the range from 40 to 60 years (Fig.2). Comparatively a smaller number of users were found in the age group of 15-25 years and above 70 years (5.75 percent and 2.5 percent respectively). Male users above 40 years were higher in percentage than

female. However, the tendency was quite opposite for the users between 25 and 40 years old. Women in this age group (25-40 years) came to the park in higher percentage than their male counterpart. The survey was conducted both in morning and evening sessions. For a more detailed understanding, the age and gender of the respondents were analyzed in terms of the time they visit the park. No significant association was found between the age of the users and the time of their visit. However, the result shows that female users were greater in percentage in the morning than the male users. But significantly higher number of male users were found in the evening than female (Table 1).

The occupation and income distribution of the users shows that the park is visited by all income groups of people from different range of occupations. However, it is evident that, maximum users are of middle income. Table 2 shows that the leading percentages of the users are businessmen, housewives and private employees.

Mobility Pattern of the Users
To understand the mobility and accessibility to the park, users were asked about the place of origin and distance they travelled to reach the park. It was found that Ramna Park has a wide catchment area which extends beyond the usual walking range.

Table 1: Visiting Time to the Park of Male and Female Users Location of Ramna Park in Dhaka City (b) Map of Ramna Park

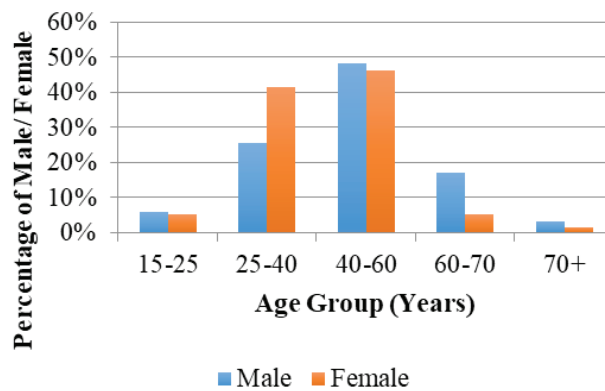| Visiting Time	Gender (%)		Total
	Male	Female	
Morning	56.6	67.1	60.5
Evening	43.4	32.9	39.5
Total	62.75	37.25	400
Chi-Square Test: p= 0.084*			
*significant at 0.1 level of significance			

Fig. 2: Age Distribution of Male and Female users

24.30 percent of the users came to park within 2 km distance while 53.30 percent of them came from 2-4 km (Fig. 3). We can grossly define a range of 4 km as the catchment area of the park since most of the people come to the park within this distance (Fig. 4). But, it is noteworthy that 12.50 percent and 10.10 percent of the users came from the range 4-6 and more than 6 km. It is well understood that, a good number of users of the park are from a long distance. Studies based on the cases of other countries found that majority of the people come from 1.5 to 2.5 km (Cohen et al., 2007; Mowen et al., 2007; Jilcott et al., 2007). By contrast, our findings suggest that the Ramna Park draws the users from a wider range of area.

It was also of interest to understand the mobility pattern of the users. Most of the users came to the park by walking (55.25 percent in arrival and 50.25 percent in departure) (Fig. 5). The users showed a higher tendency of using rickshaw and other modes with the increase of distance. Apart from walking, a good majority of the users used rickshaw. People who live within the catchment area were most likely to come to the park by walking or rickshaw. However, some users also came by using bus, car and motorcycle especially those who were from longer distance.

To understand the relationship of distance travelled with the age and gender of the respondent, independent sample t-test and ANOVA was carried out. The result shows a close association between the variables. Male users came from the longer distance than female users (Table 3). Travelling distance also varies with age. Younger users were more likely to come from longer distance than the older users (Table 4).

Frequency of Visit

The user of the park ranges from regular to occasional users. The result shows that 26.3 percent of the users came to the park every day (Table 5). Majority of the users came more than 3 times in a week (42.9 percent) while for 25.3 percent of the users the weekly frequency varied between 1-3 days. So, it can be concluded that a good majority of the people are regular users of the park. However, few people (5.5 percent) were found who came very rare (less than once in a month).

The frequency of visit was cross tabulated by the proximity of the users to find out the relationship. The result shows that 41.4 percent of the users, whose travel time to the park was less than 15 minutes, came to the park everyday while another 37.4 percent of them came more than 3 times a week. The chi-square statistics shows that frequency of visiting the park significantly depends on travel time to the park. Those who lived nearby were likely to use the park more than those who need longer travel time (Table 5).

Table 2: Occupation and Income of the Users

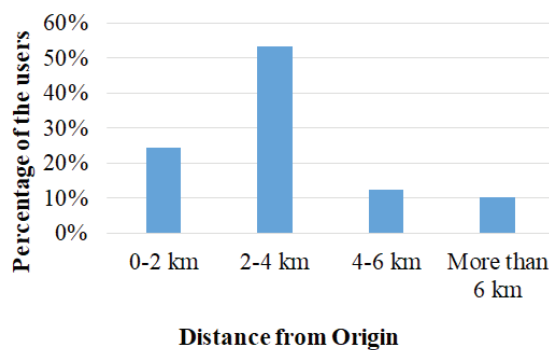| Occupation		Monthly Income	
Businessman	19%	Below $125	16%
Govt. Job	%12	$125-$312	22%
Private Job	24%	$312-$500	27%
Housewife	23%	$500-$750	24%
Student	6%	$750-$1250	6%
Unemployed	2%	Above $1250	5%
Others	3%		

Fig. 3: Distance Traveled by the Users to Reach the Park
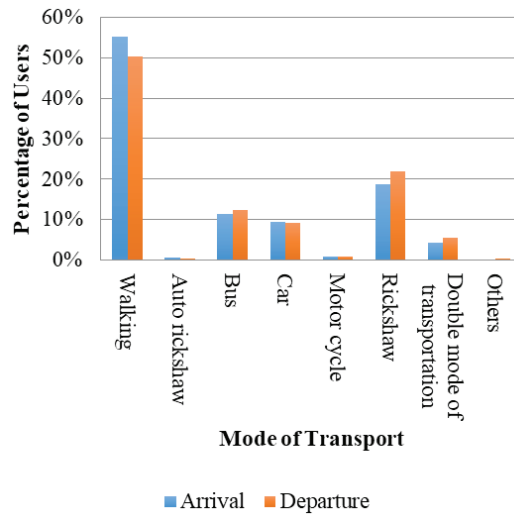
Fig. 4: Catchment Area of Ramna Park.

Fig. 5: Modes of Travelling to the Park.

Table 3: Mean Distance Travelled by Male and Female users

Gender	Mean Travel Distance (km)	Std. Deviation (km)
Male	3.92	3.67
Female	3.36	2.83
*T-test: p=0.091		
*significant at 0.1 level of significance *		

Table 4: Mean Distance Travelled by the users of Different Age Groups

Age Group	Mean Travel Distance (km)	Std. Deviation (km)
15-25	5.42	3.83
25-40	3.83	3.52
40-60	3.76	3.64
60-70	2.62	1.17
70+	2.95	1.13
Total	3.71	3.39
ANOVA Test: p= 0.018**		
**significant at 0.05 level of significance		

Table 5: Relationship between Frequency of Visiting and Proximity

Frequency of visit	Time Takes to Come to the Park (minutes)				Total
	<15	15-30	30-60	>60	
Everyday	41.4%	23%	20.7%	12%	26.3%
More than 3 times a week	37.4%	48.1%	42.4%	28%	42.9%
times a week 1-3	16.2%	25.1%	31.5%	40%	25.3%
Very rare	5.1%	3.8%	5.4%	20%	5.5%
Chi-square: 32.89 P-value: 0.00**					
**significant at 0.05 level of significance					

Purpose of Visiting and Activity Pattern

The users were asked about their purpose of the visiting the park and the activity they usually perform. Three main reasons were identified- health, social and recreation. Most of the users (82.5 percent) came to the park for health purpose while 42.75 percent and 9.5 percent for recreation and social purpose respectively (Figure 6). An overwhelming majority of the users came to park solely for walking (71.5 percent). However, some users coming to park for health purpose informed that they also performed jogging (6.25 percent) and other physical exercises (4.75 percent). Other than health purpose, a considerable number of users (30 percent) came to park for self-relaxation.

Some users (9.5 percent) also came to the park for socializing with friends, neighbors and for being acquainted with new people. There are few social organizations and clubs available in the park; yet very few users visited the park for participating in those activities.

To have a closer look, the purpose of visiting the park was investigated in terms of users' socio-demographic characteristics. The findings of the analysis suggest that the purpose of visiting the park is closely associated with both the gender and age group of the respondents. From the percentage of total responses, it is quite evident that male users (65.69 percent of the total responses) were likely to visit the park more
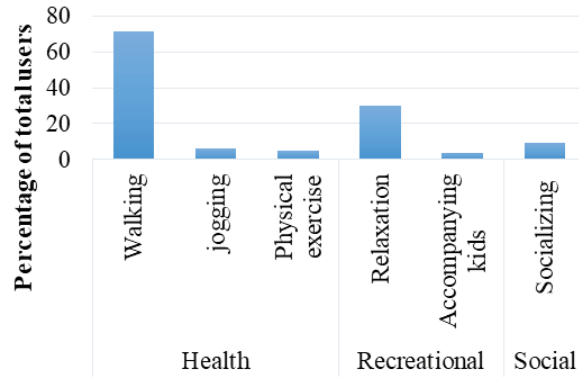
Fig. 6: Purpose of Visiting the Park (percentage of total users)

Table 6: Purpose of Visiting the Park According to Gender (table showing percentage of total responses)

Purpose of Visiting the Park	Gender	
	Male	Female
Health	65.69%	58.33%
Social	6.86%	7.14%
Recreational	27.45%	34.52%
chi-square: 12.086	P-value: 0.007**	
**significant at 0.05 level of significance*		

Table 7: Purpose of Visiting the Park According to Different Age Group (table showing percentage of total responses)

Age Group	Purpose of Visiting the Park				
	Below 25	25-40	40-60	60-70	Above 70
Health	42.86	55.49	67.87	61.33	46.67
Social	7.14	8.09	4.02	12.00	20.00
Recreational	50.00	36.42	28.11	26.67	33.33
Chi-square: 45.51		P-value: 0.00**			
**significant at 0.05 level of significance					

Table 8: Relation between Visiting Partner with Respect to Gender

Relationship with visiting partner	Gender		Total
	Male	Female	
Family Member	13.1%	28.9%	19.0%
Friend	24.7%	22.1%	23.8%
Neighbor	02.4%	10.7%	05.5%
Relative	00.8%	00.0%	00.5%
Others	00.4%	00.0%	00.3%
Visiting park alone	58.6%	38.3%	51.0%
**Chi-Square Test: p= 0.00			
significant at 0.05 level of significance**			

for health reasons and performing physical activities compared to female users (58.33 percent of the total responses). On the other hand, female users (34.52 percent of the total responses) had a higher tendency of visiting the park for recreational purpose compared to male users (27.45 percent of the total responses). Mothers accompanying their kids for recreation could be attributed to such variation. The chi-square value (p-value<0.05) confirms the relationship between gender and purpose of visiting the park (Table 6).

Age of the users is also an important determining factor for the motivation of visiting. The chi-square value suggests a close association between the age group and their purpose of coming to the park. Users of higher age group tend to visit the park more for health and social purpose than lower age group. Aged users have relatively a higher rate of health problems, and therefore they visit the park to keep their body fit. On the other hand, the opposite tendency has been observed in the case of recreational purpose. More percentage of lower aged users visits the park for recreational purpose (Table 7).

To understand the users' activity pattern, an obvious question is whether they come with their friends, family members or alone. While asking the respondents about the accompanying person, it was found that 51 percent of the users came alone. Those who came with other persons were mostly accompanied by friends (23.8 percent), family members (19.0 percent) and neighbors (5.5 percent) (Table 8). However, the percentages vary between male and female users. Chi-square test shows statistically significant association between gender and accompanying person. Higher percentage of male users (58.6 percent) came alone in the park than female users. On the contrary, more female users came with family member (28.9 percent) and neighbor (10.7 percent) than male users. Male users were accompanied by their friends in a greater percentage (24.7 percent) than female users. Conversation with some female respondents revealed that most of them were concerned about personal security issue. Hence, they preferred to be accompanied by family members and neighbors rather than visiting the park alone.

Duration of Staying in the Park
Users were asked how long they usually stay in the park. It was found that most of the users (54 percent) stayed in the park for one to two hours. 32 percent of the users said that they spent 30 minutes to one hour (Fig. 7). Very few users coming to the park spent less than 30 minutes. However, it is interesting that around 13 percent of the users spent more than two hours, some even spent more than three hours in the park. For a better understanding, the duration of staying in the park was examined in terms of age, gender of the respondent, their purpose of visiting and proximity of their living near the park. However, no significant association was found with any of these variables.

Level of Satisfaction of Different Facilities
Individual perception of different facilities is important for further improvement consideration. Six important issues regarding the facilities and management of the park were identified and the users were asked to score them. A five point Likert scale was used to measure users' perceived level of satisfaction ranging from 1 (very poor) to 5 (highly satisfactory). The mean level of satisfaction scores shows the comparative scenario of different facilities. It was found that among the identified six issues, users were least satisfied with toilet facilities (mean score is 2.79). Also waste management service was not satisfactory as perceived by the users (2.81) (Table 9). Most of the users ranked these two facilities below average. On the other hand, most of the users claimed that condition of the sitting arrangement and exercising tools were better than other facilities. A more detailed discussion with the users revealed that condition of the toilet facility was extremely poor because of insufficient number of toilets, lack of water supply, remaining closed sometimes in the day and all over the night, irregular cleaning and filthy odor from the toilet. Exercising tools were not convenient for using by all users
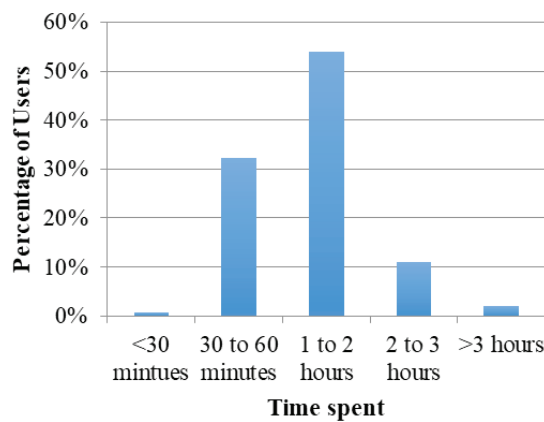

Fig. 7: Time Spent by the users in the Park.

Table 9: Level of satisfaction score of different facilities in the park

Facilities	Mean	Std. Deviation	Rank
Sitting arrangement	3.68	0.72	1
Exercise tools	3.53	0.82	2
Security Services	3.36	0.91	3
Playground space	3.17	0.83	4
Waste management	2.81	0.84	5
Toilet facility	2.79	0.92	6

especially for the aged and female users. There is only one play lot for the children in the park where children of below six years can play. So, the users from six years to 25 years did not have any playground or any source of recreational facility. One of the key features of Ramna Park is the lake. But the users reported that the lake was polluted, and boating was no more available, which deterred some of them visiting the park.

CONCLUSION

With the increasing rate of urban growth, especially in context of big megacities, a key challenge is to motivate the people towards using parks and open space for their physical health, mental well-being and social cohesion. A detailed understanding of the users will help to develop strong insight about their activity pattern and preference of use.

This study shows that people of middle age group (40-60 years) are the main users of the park. On the other hand, people of younger generation (below 25 years old) visit the park less than expected. To attract the younger people, there should be better scope of physical activities. Different clubs and social organizations can play important role for organizing events and regular physical activities to make them more attracted towards the park. Since a good number of women come to accompany their children, installation and improvement playing equipment and play lots can make them more interested in visiting the park more frequently. An important finding of the study is that the catchment area of the park is extended beyond the walking distance and most of the users come to the park within a range of 4 km. A good number of people even come from a distance beyond 4 km. Some of them come by public transportation instead of car. The study also finds a close association between frequency of visit and distance the users travel to come to the park. Most of the users who live within the catchment area are regular user of the park. The study also finds the main purpose and activities of the users and how these vary across their socio-economic characteristics. The above findings regarding the users' characteristics and their activities should be instructive

for better planning and management of the park in the future.

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