

Present Status and Potential Locations of Open Spaces in the Dhaka City Corporation Area: Using GIS Technology

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Abstract

The first plan for the Dhaka city was prepared in 1959. Later Dhaka Metropolitan Development Plan (DMDP) was approved in 1997, and provided the planning policy guideline for Dhaka. Open space is the lungs of any city. It is already recognized that Dhaka has lack of open space which has negative impact on public health, ecology and society. Many problems have been found during deal and conversation with concerned authority to manage this open space properly. In managing the parks and playgrounds the concerned authorities are often confronted with insufficient finance and shortage of trained personnel. There is also lack of proper co-ordination among organizations and institutions and users responsible for the effective operation and maintenance of these open spaces. In this study, an inventory of existing open spaces is prepared from GIS data and field observation. Related data of every existing open space is collected to prepare a GIS based database. Statistical and spatial analysis is performed to derive the status of open spaces based on different parameters. Opinions have been collected from a wide variety of people such as users, nonusers and experts to identify problems related to open space creation, management and maintenance. The present investigation also reveals that the enhancement of the use of different neighborhood, intermediate and large-scale parks & playground in Dhaka City Corporation area would require adequate security, better maintenance and efficient management, landscape development and treatment, various facilities for children. At present the security and better maintenance are required to improve the number of increasing visits of the people.

Keywords: Dhaka, Open Space, GIS, Playground, Maintenance, Geography, Environment.

1.0 Introduction

Open Space is not intensively developed for residential, commercial, industrial or institutional use. The term, "open space," though widely used today, is rather nebulous and can include many different forms, uses, and scales. In the broadest sense of the word, it describes land that is not covered over by buildings. Though open, the land may not necessarily be in a natural or vegetated state. It serves many purposes, whether it is publicly or privately owned. It includes agricultural and forest land, undeveloped shorelines, undeveloped scenic lands, public parks and preserves. It also includes water bodies such as lakes and bays. Open space is being lost at an alarming rate in Dhaka city. When we lose open space, we lose the valuable services that landscape provides including clean air and water, flood control, and recreation opportunities, to name a few. Unplanned transportation is another hazard,

study revealed that pollution level at traffic congestions has considerably improved due to large scale introduction of CNG vehicles in Dhaka city [1]. The quality of the lives of the people in each community in Dhaka depends upon the quality and character of their environment [2]. The study of open space, one of the basic elements of a city system, has considerable importance in Bangladesh. Very few researchers of Bangladesh have made baseline and advanced studies on open spaces, some of them focused on Dhaka. Nilufer studied the allocation, distribution and uses of open space in Dhaka [3]. She also compared standard of open space allocation of Dhaka with that of other countries. Islam (2002) and others examined parks and open spaces in Dhaka city considered their conditions, locations, usage, operation and maintenance [4]. Nahrin and her fellow researchers have also analyzed the existing situation of parks and gardens in old Dhaka [5]. Dhaka, the capital of Bangladesh, a city more than four hundred years old has long been praised by visitors for her greenery and wonderful waterfront. Urban heat effect increases due to huge load of new population in Dhaka [6]. In 1947, Dhaka was calm and quite rural down with less than hundred thousand people living in. But within last few decades it became a noisy and bustling metropolis with more than ten million inhabitants. Dhaka is now considered as one of the most polluted cities of the world [7]. Community facilities have not kept pace with the increase of its population. One of the more acceptable facts about Dhaka is that this city lacks the amount of open space required with inhabitants. Study of Akther et al. [8] reveals that Dhaka cities are enjoying much less open space than required (0.041 acre/1000 persons against 4 acre/1000 persons). Their study also finds that the ratio is declining (0.55 acre/1000 population in 1978). Studies show that open spaces become less attractive to visit. Initiatives are requested to increase green zone with a view to long term benefit [9]. This study tried to find out from the user's point of view, why they feel less attracted to go to open spaces specially parks in Dhaka City Corporation (DCC) Area.

The aim of this study provides a comprehensive idea on the status of open space in DCC areas. It will also explore the possibilities to improve the stock of open space in the city of Dhaka.

The objectives of the present study are stated as follows:

- * To measure the frequency of use and availability of services of space in Dhaka.
- * To study the existing location, operation, management and their maintenance.
- * To identify the major problems and prospects of open spaces.

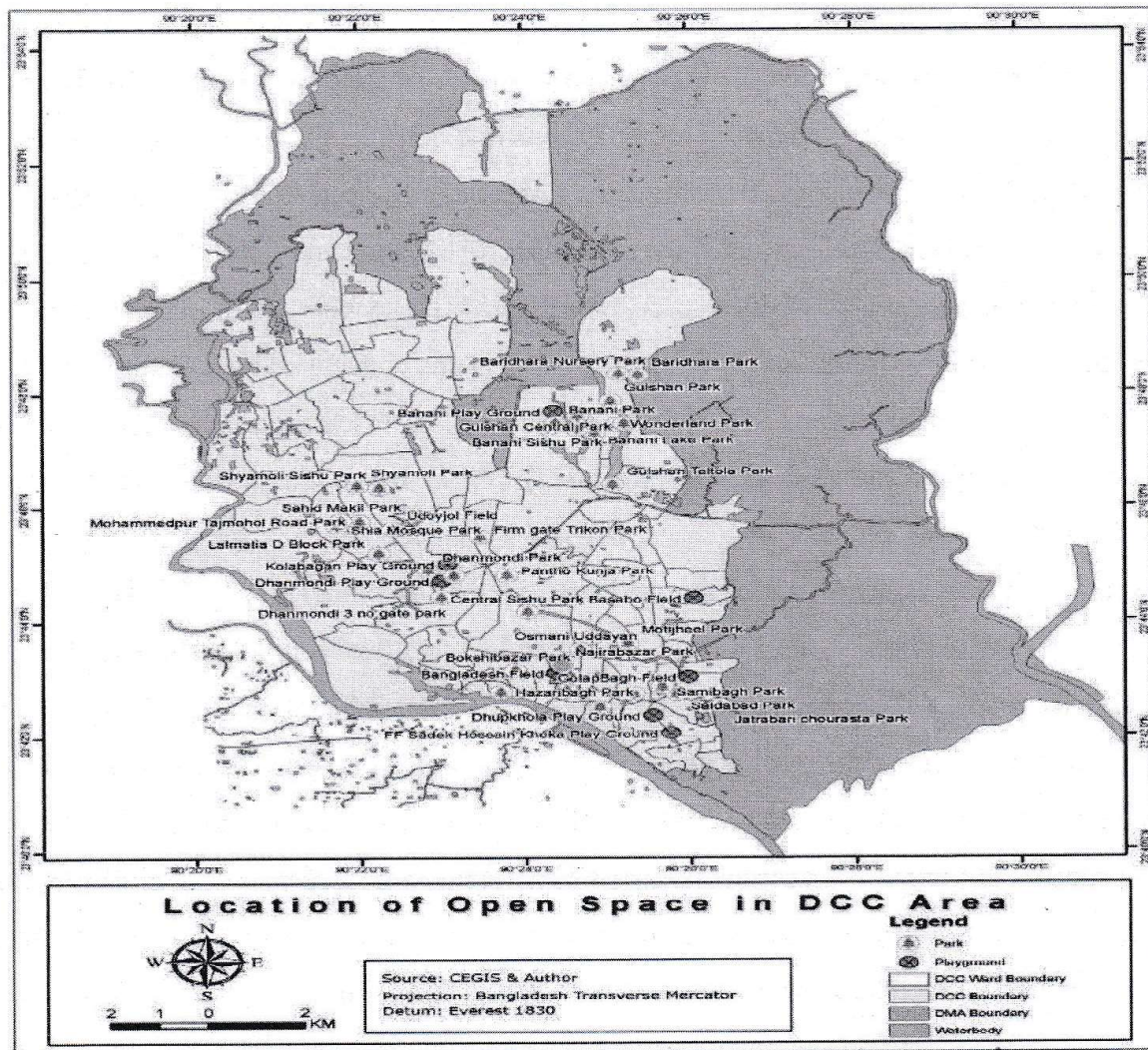


Fig 1. Location of open spaces in DCC area.

2.0 Material and methodology

This presented study was descriptive cross-sectional study in the department of Geography & Environment of University of Dhaka. During the period from June 2009 to December 2010 with a view to find out the major problems and prospects of open space along with attempt to measure existing condition of enlisted open space of the DCC area. At first required data were collected relating to open spaces from DCC headquarters. Forty parks & nine playgrounds were observed during the field survey (See Fig 1). Data collection was done using a self-administering questionnaire [10]. At First an English version of the questionnaire was developed according to the research objective then it was translated into Bengali for field operation. The questionnaire was divided into 3 parts consisting of personal and socio-demographic characteristics, knowledge and attitude of participant regarding the use of open

space and their thought and concept regarding the advancement of existing facilities. The collected data were stored, checked, verified and then entered into the computer. The analysis was carried out with SPSS (Statistical Package for Social Science), version 17.0. For statistical analysis, univariate, and bi-variate analyses was calculated and map, table and graph were used to interpret the results of the study.

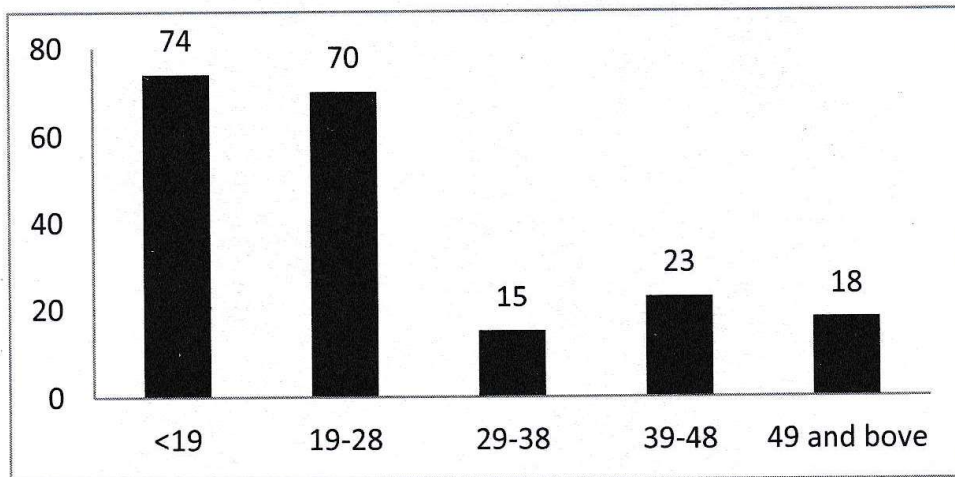


Fig. 2. Frequency of visit by Age group.

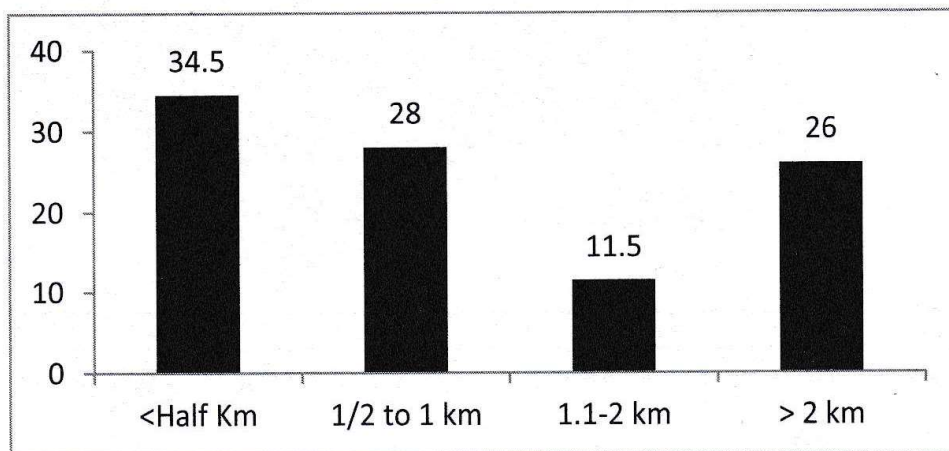


Fig. 3. Percentage of visit with respect to distance to the nearest park.

3. Result and discussion

3.1 Frequency of visit by age group

Majority of the respondents (37%) were below 19 years old (Fig 2). They are basically school going children, the second highest (35%) also students but college going. Very few working (7.5%) class people also go the open space to make refresh their mind.

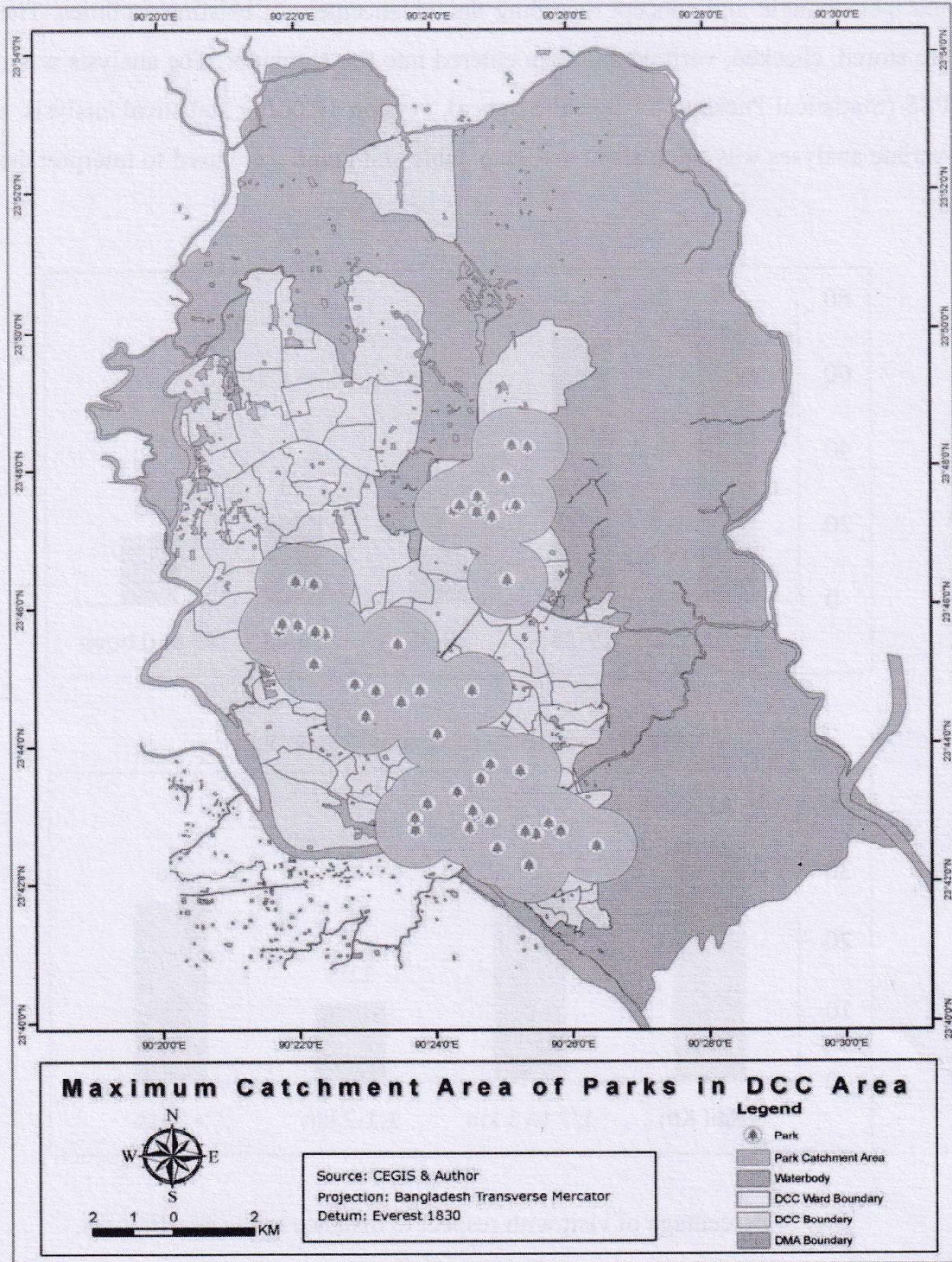


Fig.4. Maximum catchment area of parks in DCC area .

Most of the respondent (34.5%) came from half km away from the facilities. Fig 3 shows that some (26%) people come from more than 2 km away. But they not come regularly; followed by 28% people come from half to one km away. Rest 11.5% participant come from 1.1-2 km away. A map also prepared to show the pattern (Fig 4).

3.3. Frequency of visit: with respect to occupation of the respondents

According to following fig 5, around half of the visitors (48%) who went to the open space were student. Only 5% respondent's occupation was public service and 14% of private service holders never or rarely go to park. Among the business group, only 3 % people go to park but they visit very often.

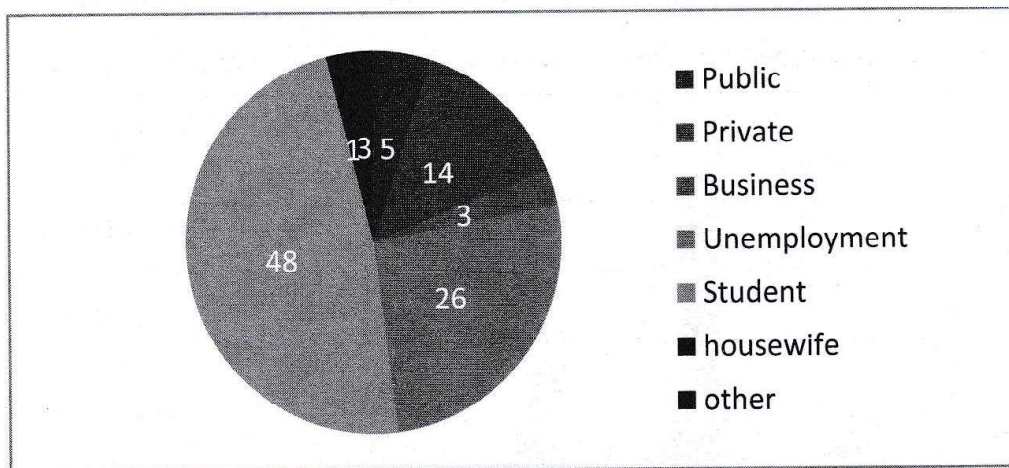


Fig. 5. Frequency of visit with by occupation of the respondents

3.4. Frequency of visit: With respect to gender of the respondents

The diagram (Fig 6) showed that about 18 % female respondents visit the park frequently. 6.3% respondents visit the park once in a week and 8.5% respondents visit the park 1-3 times per week. Out of 47 (23.5%) female respondents only 12 females (25.5%) visit the park rarely and the same the number females never go to the park.

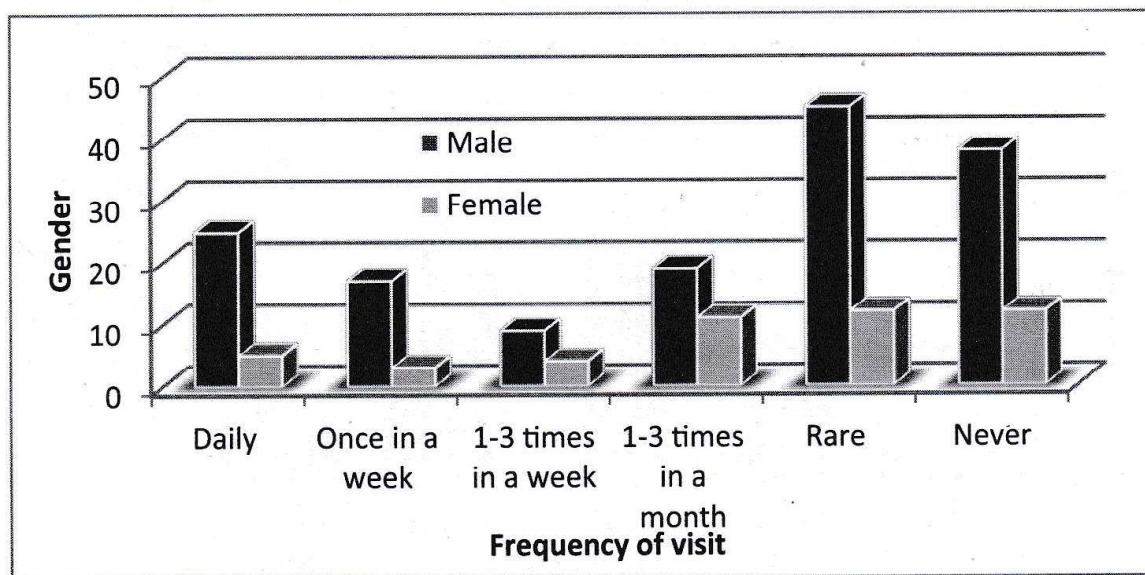


Fig. 6. Frequency of visiting by gender.

3.5 Schedule of visiting: With respect to age group

About 68% of the park visitors visit in the afternoon (Fig 7). About 45% are in the age group of 19-28. It is also true that those who go to the park most of them are in this age group.

The table also shows that most of the respondents, who visit the park rarely, chose the noon period. Some of them (13%) go to the park don't fixed any certain period. They go to the park at any time because they have enough time to go there. Interesting matter is, they are mostly jobless people.

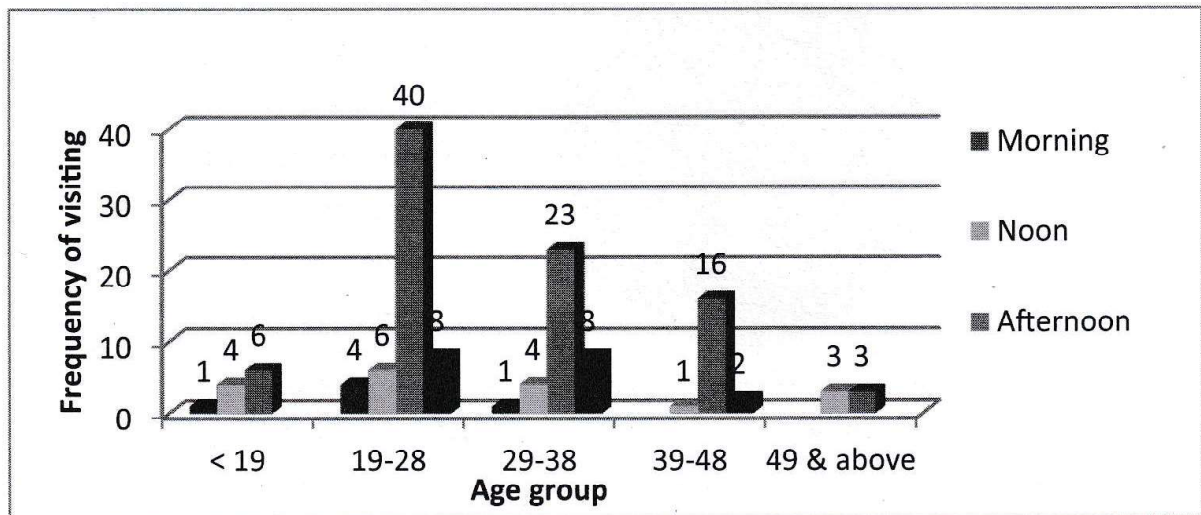


Fig. 7. Schedule of visiting with respect to age group.

3.6 Causes of not using: With respect to age group

About 70% respondents never go to the park due to insecurity (Fig. 8) these problems are associated with local mastan, hijackers, pick-pocketers, drag-addict harassment by hookers and so on. Women feel unsafe both physically and mentally when they visit these open spaces.

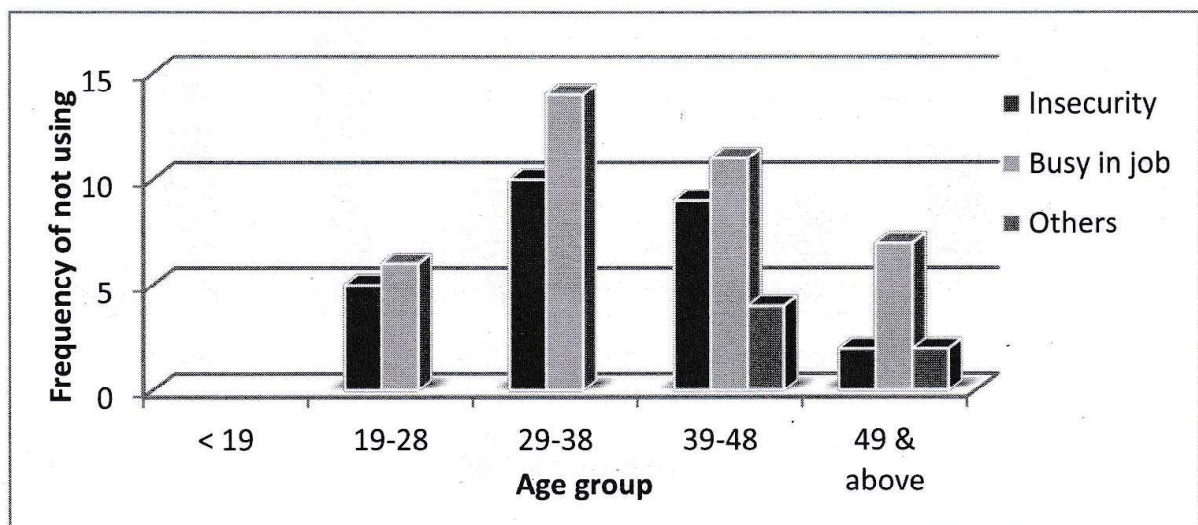


Fig. 8. Causes of not using with respect to age group.

3.7 Proposals of the respondents

31% respondent reveal that in develop a better maintenance system, then existing facilities will by more useful for people (Fig 9). 21.5 % of the respondents mentioned for more security. They are not satisfied with present security system of the parks. For that reason, they never go to the park along with their family. 3% of the respondents asked for improving landscape condition. The respondents who demanded landscape development basically they are environment conscious people.

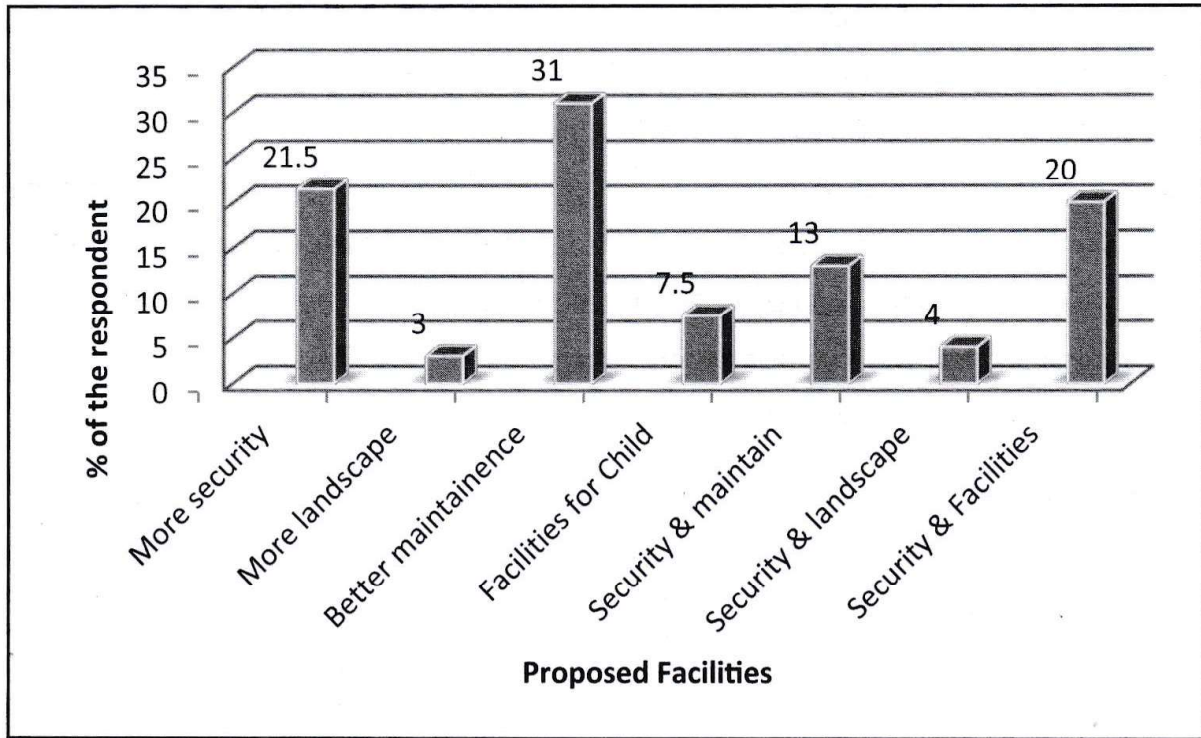


Fig. 9. Proposals of the respondents.

3.8 Observation finding

Open Spaces are created for both physical and Psychological wellbeing of the residents. Many residents use open spaces of the city for physical exercise and jogging purpose. These open spaces are the only source of outdoor recreation for most of the children in Dhaka city. Other than serving the recreational purpose these open spaces are used by low income people for their earning and livings. The overall maintenance of open spaces is not up to standard. The minimum infrastructural facilities necessary for parks and playground are often absent. Many playgrounds are in dilapidated condition, such as Shawamibag park, Bakshi Bazar Children park, Sayedabad Park etc . The problems of security and anti-social activities prevail in many of these Parks. According to Prothom Alo, a vernacular daily, many city parks have been identified as crime zones. These are Karwan Bazar Park (Newage 12 August,2007) English Road Park (Prothom Alo, August 2, 2009) Taz Mahal park of Mohammadpur,

Panthokunza near Sonargaon and Golapbag park (Prothom Alo, August 2, 2009). However, these problems could be overcome through proper management and control but the major threat to open spaces is the continuous pressure of encroachment. Over last few years there are number of incidence of encroachment of open spaces both by public and private bodies. Many of the planned residential areas initially were designed with enough open spaces but later these were transformed to plots and sold out. The reporter of Prothom Alo also identified twelve proposed sites of parks where the proposals have never been implemented by relevant organization and many of these sites are now in the process of transformation for other uses (Prothom Alo, March 4, 2000, pg 12). The incidence of construction of sub-station in Chandrima Uddan is another encroachment of open space, which is a total disregard to existing Dhaka Metropolitan Development Plan (DMDP) regulation. The major parks of the city like Swarwardi Uddaayan, Chandrima Uddayan, Ramna Park, Gulistan Park are not even beyond fear of encroachment. Mahanagar Natto Mancho has been erected on a part of Gulistan park. Together with public and private organizations, private owners are also illegally occupying part of parks or lakes adjacent to their property.

4.0 Recommendation

In Dhaka, parks, playgrounds or open spaces have been disappearing one after another, almost as a matter of course without any protection from the authorities or the expected scale of protest from the city dwellers. This is a city where secondary schools are without playgrounds, and those that possess one are hard put to it to protect their possession from powerful dispossessors.

4.1. Nonstructural measures

4.1.1 Institutional Improvements

4.1.1.1 DCC

According to a DCC estimate, there are 47 parks in the capital city. But most of them are in pitiable condition. It is revealed from the study that DCC has a serious shortage of professionals in planning sector. DCC should improve their capabilities by strengthening their planning department. For this, DCC should implement their proposed organ gram immediately. Separate personnel should be involved to look after the open space planning.

4.1.1.2 Establish open space department

A department with complete responsibility for open space creation, design and maintenance should be established. Geographers, planners, architects, landscape surveyors and gardeners etc. should be incorporated in this department.

4.1.1.3 Trust for open space

A trust can be established by the central government to work for the urban open spaces throughout the country. They will manage fund from alternative sources (Central government, International donation, Public donation etc.) and will help local government to implement their open space related programs & projects.

4.1.1.4 Landscape

Although the condition of landscape in the large parks quite is good, the conditions of the local and neighborhood parks are alarming degraded for not taking proper care about landscape. So, concerned authority should take necessary steps to improve their conditions.

4.1.1.5 Security

Lack of adequate security is the major problem of parks and open spaces. Manpower should be increased for the provision of security.

4.1.1.6 Building construction rules

Building Construction Rules can be a good tool for improving the open spaces between buildings. RAJUK proposed for a new Building Construction Rules in order to improve the openness between buildings. This is a good step to promote private open spaces.

4.1.1.7 Cost recovery

To recover the maintenance cost, ticketing system should ne introduced. But in this respect care should be taken for keeping the price of cost within the limits of mass people. Otherwise, they will lose their interest to visit open space.

4.1.1.8 Regular financing

Because of various political and other pressures, the government often fails to allocate adequate funds for the parks and recreational purposes. So, concerned authority has to face a great shortage of funds. Consequently, they cannot take necessary steps for different improvement programs.

4.1.1.9 Eviction of illegal occupation

Most of the neighborhood parks and playgrounds are occupied by floating people. In some cases, there has developed squatter settlement. Politically powerful persons illegally occupy many neighborhood and intermediate parks. As a result, the total service area decreases. Not only this but also from aesthetical point of view this is very infectious. So, concerned authority should be more alert to prohibit illegal Occupation of parks and open spaces.

4.1.1.10 Age wise facility

To increase the attraction of the visitor's age wise facilities should be provided in the

important large-scale park as visitors are not confined in definite age groups. Different visitors have attraction on different things.

4.1.1.11 Transport facility

Major parks are not very often located within the manageable distance from the mass people. So, transport facility can be provided to attract them at a subsidized price with better and regular service from different location of the city.

4.1.1.12 Land use zoning

Open Spaces should get priority in land use zoning. As there is a serious shortage of open space, zoning should include preservation and conservation of natural open spaces, historical and cultural sites and other environmentally important sites.

4.2 Structural Measures

4.2 .1 Landscapes

The main attraction of any park is landscape. It gives different taste to the users. Plantation is essential for shade and pollution control. Such open green environment attracts human mind. The main elements of landscape are plantation, water body, meaningful sequence of walking ways, hierarchy of open spaces, attractive design features, artificial shedding, topographic condition etc. So, concerned authority should give adequate attention about these features to make the open space more user friendly and their regular maintenance and treatment.

4.2 .2 Utilities

The utility facilities like electricity, drainage, water supply, toilet facility, telephone booths (especially for large scale parks) etc. should provide by the park authority to ensure extensive use of parks.

4.2 .3 Parking facilities

Parking facility is a very important precondition for large-scale parks. A lot of visitors have lost their interest about parks only for lack of proper parking facility. So, adequate parking facility as well as security should be provided.

4.2.4 Access facility

Haphazard access ways create major security problem for large scale parks. So, entry should be in a planned way. In this respect fencing can be very effective.

4.2.5 Games and sports facility

Some users visit the park or open space in search of active recreation. To attract them various types of games & sports facilities for the children as well as adult should be introduced.

5. Conclusion

The government and the city authorities always seemed to have some perverse notions of the city's beautification. In the 21st century it will be futile to criticize the installation of fountains, sodium lights, but why was development and preservation of greenery put in the back burner? One park developed a few years ago at Lake Circus with a walkway fringing the lake is a notable exception for which the authorities may claim credit; but what is the state of nearly fifty parks of the city. From the study, it is clearly evident that Dhaka has a huge shortage of open space.

Like the quantity, the quality of these spaces is also not up to the mark. People are not satisfied with the amenities and facilities provided by the open spaces. The field observation is also discovered this truth. Though some parks maintained by DCC are not bad, but there are some points that should be improved. Statures of playgrounds are critical in terms of maintenance. Most of them have no basic amenities for city dwellers.

All the metropolitan frills, all the appurtenances of modern urban life are rendered meaningless if children must play in the streets and adults have to travel five miles just for the purpose of inhaling a draught of fresh air. Population of the city is galloping, which is an undesirable phenomenon in itself but cannot be a justification for disappearance of parks and open spaces. Planning, city management and maintenance are more to blame. If there is shortage of land, which we do not dispute, then there are other ways to reclaim the land instead of obliterating the existing parks and greenery. There is more land in private possession, legal and illegal, than is good for any city. City planning was not only flawed but also venal, vicious. In the allotment of Dhaka Improvement Trust (DIT) /RAJUK plots individuals obtained more than one allotment by making false statements and with collusion of officials of those agencies. These plots can be recovered for developing parks and other public utilities.

6. References

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