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Quality of Urban Neighborhood Environment: A Case Study of Resident's Perception in Chittagong City, Bangladesh

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Abstract: In this study, an attempt has been made to identify the major problems of urban neighborhood environment in Chittagong city, Bangladesh and to determine the levels of satisfaction as perceived by its resident's. The perceptual data were collected through field survey that was based on structured questionnaire conducted for 300 respondents in a random stratified manner. The ten Zones of the city represented the spatial observation unit for each of which 20 variables were employed in the data analysis. To determine the quality of neighborhood environment a Satisfaction Index was applied. A Chi-square test was also applied to examine the relationship between income groups and the degree of satisfaction. The findings suggest that there are at least five major neighborhood problems in the city i.e., sewerage, electricity, law and order, recreation, slums and squatters as perceived by the sample respondents. On the whole, the quality of neighborhood environment in Chittagong city has been found either largely acceptable or satisfactory with the exception of the aforementioned variables that are neither adequate not equal across the study zones.

Key words: Urban environment, urbanization, degree of satisfaction, environmental perception, neighborhood environment

Introduction

The quality of urban neighborhood environment depends largely on the provision of central services, public utilities, social amenities, community facilities and household conveniences. Public health related environmental parameters like sanitation, sewerage, drainage and solid waste disposal and public utilities like water supply, electricity, natural gas and so on are important physical infrastructure for maintaining the quality of urban neighborhood environment. A well-developed urban system can provide all of these in an efficient way and urbanized nations are most likely to enjoy the best facilities available in the world. However, the impact of urbanization on the quality of urban neighborhood environment has unfortunately not been fully appreciated, especially in the Third World (Islam *et al*., 1997). For example, the Asian cities are witnessing the fastest urbanization in the globe and by 2015, more than half the population of the world is likely to be urbanized (Ali, 2003). Bangladesh with massive population size of over 130 million has already been well urbanized (30 million). Though the level of urbanization in Bangladesh is still relatively low (23.1%), the proportion of people living in urban areas continues to increase at a rapid rate (4% annually) mainly due to rural-urban migration, involving both push and full factors (Islam, 2003). The implications of

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such urbanization (as characteristic features of nearly all urban centers in Bangladesh) are manifested in mass poverty, gross inequality in income, high unemployment and under employment, illegal settlements with primitive facilities, over crowded housing and proliferation of slums and squatters, lack of adequate supply of clean water and electricity, overloaded public transports, traffic congestions, accidents, violence, crime, social tensions, air pollution, water pollution and rampant disease linked to an unhealthy environment. A growing number of urban poor usually suffer from a high incidence of acute respiratory problems including tuberculosis, intestinal parasites and endemic diseases (diarrhoea, dysentery, hepatitis and typhoid) linked to poor sanitation and contaminated drinking water. These are the major causes of illness and death, especially among children (Task Force, 1991). The uncontrolled physical expansion of cities has also serious implications for the urban environment and economy. Unplanned and unchecked development makes provision of housing, roads, water supply, sewers, other public utilities and services prohibitively expensive. Cities are often built on the most productive agricultural land and unguided growth results in the necessary loss of this land. Such losses are most serious in nations with limited arable land, like Bangladesh. Because of the uncontrolled growth of cities in Bangladesh, the quality of urban neighborhood environment is deteriorating day by day.

In the city of Chittagong, various authorities have been making efforts to improve the level neighborhood facilities and services. However, the tremendous population pressure on limited land has far exceeded the capacity of the facilities and services mentioned above. Therefore, there is a genuine need to properly study the resident's perception of urban neighborhood environmental quality in Chittagong City. However, a detailed study on the topic did not come out in Chittagong until 2005.

The main objective of this study was to determine the quality of urban neighborhood environment as perceived by the resident's of Chittagong city.

The specific objectives were to identify the major problems of urban neighborhood environment in Chittagong city; to select the indicators of urban neighborhood environment for the assessment of perceptual quality in the city; to determine the level of satisfaction about urban neighborhood environment as expressed by the resident's of the city and to depict and analyze the geographic patterns of major perceived problems in the city.

Materials and Methods

Study Area

In order to collect field data, the area under Chittagong City Corporation (CCC, comprising of 41 administrative Wards) has been selected as the study area (Fig. 1). Chittagong- the commercial capital of Bangladesh- is the second largest (port) city in the country having the status of Statistical Metropolitan Area (SMA) or Metropolitan city as classified by the Census Commission of Bangladesh. Further, the fourth most urbanized District of the country is Chittagong (50.3%, followed by Dhaka (91.7%), Narayanganj (55.6%) and Khulna 53.3% (Nazem-2003). The total area of the city is about 209.67 sq km (BBS, 2001) with an estimated population of about 3.38 million (Nazem, 2003). It stands on the right bank of the river Karnafuli between 22'-14' and 22'-24'-30" North Latitude and between 91'-53' East Longitude. Topographically, the city lies mostly on the piedmont alluvial plain and to some extent on the old tidal plain. The various land-use types are now under constant threat due to rapid population influx and changing development activities (Rahman *et al*., 2001).

Data Collection and Sampling

For the present study area Chittagong Metropolitan area, perceptual data have been collected from the primary and factual information has been collected from various secondary sources including

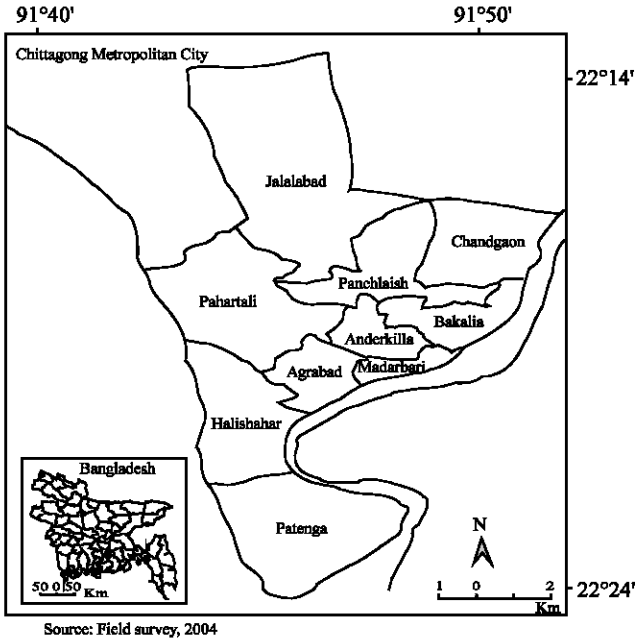

Fig. 1: Study area Chitagang city showing 10 zones

Table 1: Level of households' income in three income groups

Income group	Level of Income (Taka per month)
Upper income	Above 20,000
Middle income	5,000 to 20,000
Lower income	Less than 5,000

Chittagong City Corporation (CCC) and Chittagong Development Authority (CDA). For the primary sources of data, 300 households of Chittagong city from 3 income groups (Table 1) were surveyed using a structured questionnaire, prepared on the basis of 20 selected urban neighborhood environmental indicators during in the year 2004 (Table 2). For the household survey, 41 administrative Wards of CCC were amalgamated into 10 Zones (based on 9 original Zones proposed earlier by CDA (Table 3). This was done for the convenience of collecting data and analyzing the results (Table 4). For each Zone 30 households were surveyed, representing 10 households from each income group [{(10 households x 3 income groups) = 30 households} x 10 Zones = 300 households].

Selection of Individual Households and Respondents

For the selection of individual households, objective stratified sampling was adopted in a random manner. The selection of the individual respondents was based on further stratification i.e., adult, educated and must have been living in the city for at least 5 years. It was decided to take only the educated male heads of household as the sample population. It was thought that it would be rather easier to conduct the highly structured questionnaire survey with enlightened male respondents.

Determination of the Level of Satisfaction Index

Major neighborhood environmental problems have been identified from the sample respondent's perception. The findings have been further analyzed for the assessment of the quality of urban neighborhood environment in Chittagong city. Determination of the level of satisfaction of the

Table 2: Selected Variables of Urban Neighborhood Environment

Name of the slected variables in the study area	
Water supply and availability	Place of worship
Electricity	Educational facilities
Gas	Healthcare and medical
Telephone	Postal service
Garbage disposal, sanitation and drainage	Transport
Sewerage system	Housing condition
Law and order	Banking facilities
Cleaning and maintenance	Slums and squatters
Recreational facilities	Road network
Shopping centers	Employment facilities

Table 3: Study Area Neighborhood of 10 Survey Zones

Zone No.	Zone Name	Ward No.	Ward Name
1	Jalalabad	1	S. Pahartali
		2	Jalalabad
2	Panchlaish/sholashahar	3	Panchlaish
		6	E.sholashahar
		7	W.sholashahar
		8	Sulakbahar
3	Chandgaon/ Mohra	4	Chandgaon
		5	Mohra
4	Chawk Bazar/bakalia	16	Chawk Bazar
		17	W.bakalia
		18	E.bakalia
		19	S.bakalia
5	Lal Khan Bazar/ Anderkilla	14	Lalkhan Bazar
		15	Bagmoniram
		20	Dewan Bazar
		21	Jamal Khan
		22	Enayet Bazar
		32	Andarkilla
6	Madarbari/patharghata	29	W.madarbari
		30	E.madarbari
		31	Alkaran
		33	Firingee Bazar
		34	Patharghata
		35	Boxir Hat
7	Agrabad	23	N.pathantooly
		24	N.agrabad
		27	S.agrabad
		28	Pathantooly
		36	Gosaildenga
8	Pahartali/kattali	9	N.pahartali
		10	N.kattli
		11	S.kattli
		12	Saraipara
		13	Pahartali
		25	Rampur
9	Halishahar	26	N.halishahar
		37	N.midl.halishar
		38	S.midl.halishar
		39	S.halishahar
10	Patenga	40	N.patenga
		41	S.patenga

**N=North, S=South, E=East, W=West. Source: CDA(Zone Prepared by Researcher)

Table 4: Perception of neighborhood environmental quality by zones in chittagong city (in percentages)

	Zone 1			Zone 2			Zone 3			Zone 4			Zone 5		
Variables	Sat	Acc	Unsat	Sat	Acc	Unsat	Sat	Acc	Unsat	Sat	Acc	Unsat	Sat	Acc	Unsat
Water	20	60	20	70	10	20	60	30	10	20	20	60	40	30	30
Electricity	10	60	30	20	20	60	70	20	10	20	20	60	30	10	60
Gas	70	20	10	70	30	0	100	0	0	90	10	0	90	10	0
Telephone	60	10	30	70	20	10	90	0	10	60	30	10	90	0	10
Sewerage	0	0	100	0	0	100	0	10	90	0	30	70	0	10	90
Sanitation	70	10	20	60	20	20	50	40	10	30	40	30	50	20	30
Cleaning	60	20	20	40	40	20	50	30	20	20	60	20	50	10	40
Recreation	10	70	20	0	40	60	20	20	60	20	20	60	30	60	10
Education	60	30	10	60	20	20	40	30	30	70	30	0	70	20	10
Medical	60	20	20	50	20	30	40	20	40	60	30	10	70	20	10
Housing	60	20	20	70	30	0	70	20	10	60	30	10	70	30	0
Slum	70	0	30	10	20	70	60	40	0	20	40	40	0	60	40
Postal	70	20	10	40	40	20	100	0	0	60	60	40	60	40	0
Shopping center	50	20	30	50	20	30	50	30	20	70	30	0	70	30	0
Worship	70	30	0	70	30	0	90	10	0	70	30	0	70	30	0
Road network	70	30	0	60	20	20	60	30	10	40	30	30	50	40	10
Low and order	20	60	20	20	40	40	50	20	30	20	30	50	10	20	70
A Public trans	70	20	10	40	30	30	80	20	0	30	40	30	70	30	0
Employment	30	10	60	30	40	30	80	20	0	30	30	40	30	60	10
Banking	30	50	20	50	20	30	20	20	60	20	30	50	70	20	10

	Zone 6			Zone 7			Zone 8			Zone 9			Zone 10		
Variables	Sat	Acc	Unsat	Sat	Acc	Unsat	Sat	Acc	Unsat	Sat	Acc	Unsat	Sat	Acc	Unsat
Water	40	20	40	10	50	40	70	30	0	40	20	40	20	20	60
Electricity	30	10	60	10	30	60	10	20	70	0	20	80	30	40	30
Gas	80	20	0	100	0	0	80	20	0	70	30	0	70	20	10
Telephone	70	20	10	80	20	0	70	20	10	70	20	10	60	20	20
Sewerage	0	30	70	10	10	80	20	0	80	0	10	90	20	30	50
Sanitation	60	10	30	20	20	60	20	40	40	60	30	10	60	20	20
Cleaning	20	40	40	10	60	30	10	70	20	20	60	20	30	40	30
Recreation	20	20	60	30	60	10	20	10	70	20	20	60	80	20	0
Education	80	20	0	70	30	0	60	20	20	20	30	50	20	40	40
Medical	70	30	0	80	20	0	20	60	20	40	30	30	0	60	40
Housing	70	0	30	40	40	20	70	20	10	60	30	10	40	30	30
Slum	10	20	70	10	60	30	40	0	60	0	80	20	60	20	20
Postal	70	30	0	90	10	0	70	20	10	70	20	10	0	40	30
Shopping centers	70	30	0	100	0	0	60	40	0	70	20	10	20	60	20
Worship	90	10	0	100	0	0	80	20	0	90	10	0	60	30	10
Road network	20	20	60	100	0	0	70	10	20	70	30	0	40	30	30
Law and order	20	40	40	10	30	60	30	0	70	20	20	60	30	60	10
Public trans	10	70	20	30	60	10	70	30	0	40	40	20	40	30	30
Employment	20	60	20	40	20	40	20	60	20	70	10	20	30	40	30
Banking	60	20	20	100	0	0	70	20	10	90	0	10	40	30	30

Note : Sat = Satisfied, Acc = Acceptable, Unsat = Unsatisfied. Source :Field Survey-2004

Table 5: Satisfaction index of neighborhood environmental variables in the three income groups

	Degree of satisfaction			
Income groups	Satisfied respondents (f_s)	Unsatisfied respondents (f_d)	Total Respondents (N)	Satisfaction Index (I_s)
High	946	523	2000	0.21
Middle	815	638	2000	0.08
Low	490	990	2000	-0.25

Source: Field Survey, 2004

sample respondents was based on 3 points scale (satisfied, acceptable and unsatisfied). To determine the level of satisfaction as perceived by the sample respondents, a satisfaction index was adopted following the method used by Yea and Lee (1975). This was done to make the study more or less consistent with other studies of similar nature conducted in Bangladesh in the past. In this regard, a negative Index of Satisfaction has been taken into account as low quality of urban neighborhood environment. The highest value of this index is +1 and the lowest value is -1.

$$\text{Formula of Satisfaction index, } I_S = \frac{f_s - f_d}{N}$$

Satisfaction Index Analysis and results

It was observed that Satisfaction Index value in high income group +0.21, Middle income group +0.08 and Low income group -0.25, respectively (Table 5). With respect to the satisfaction index, it was found that the respondents of high-income group are very much satisfied with neighborhood environmental variables. On the other hand, low-income group of people were not satisfied due to various socio economic conditions. For the sake of this study, perception of the upper income group has, therefore, been taken into consideration. Thus, it is only a limited elite population perception study

Determination of Relationship; The Chi-square Test

For the sample survey, the income groups used by Islam (1990) have been adopted for the study, however, with slight modifications (to allow the normal increase of monthly household income over time). To determine the relationship between income groups and degree of satisfaction of urban neighborhood environmental variables, a Chi-square test has been applied following the technique used by Kothari (1997). The hypothesis that have been formulated are as follows:

Hypothesis (H_1)

There is a direct relationship between income groups and the degree of satisfaction with regard to urban neighborhood environment variables.

To determine the result of Chi-square test the following formula has been used.

$$\chi^2 = \frac{(O - E)}{E}$$

Here, χ^2 = Chi-square

$\sum$ = Summation

O = Observed Frequency

E = Expected Frequency

Table 6: Results of Chi-square test with the relationship between various income groups of neighborhood environment and degree of satisfaction (Observed Table)

	Degree of satisfaction			
Income group	Satisfied	Acceptable	Unsatisfied	Total
High	946	531	523	2000
Middle	815	547	638	2000
Low	490	520	990	2000
Total	2251	1598	2151	6000

Source: Field Survey, 2004

Level of Significance: 0.01

The Degrees of Freedom (df): $df = (r-1)(c-1)$

$= (3-1)(3-1)$ Where, r =3 (row) and c = 3 (*column*)

$= 2 \times 2 = 4$

$\chi^2 = 312.756$ (calculated value).

For the present study, the calculated value of $\chi^2 = 312.756$. The critical value of χ^2 at 0.01 level of significance with df = 4 is 13.28. Since the calculated value of χ^2 (312.756) is greater than the critical value (13.28), the hypothesis is accepted that the quality of urban neighborhood environment is directly related to income groups. In other words, higher income goes with the better neighborhood environmental facilities (Table 6).

Results and Discussion

Characteristics of the Respondents

Of the sample respondents, 32, 28 and 24 % were found in the age group of 31-40, 41-50 and 51-60 years age group, respectively. About 44% of the respondents reported as engaged in businesses and about 31% were engaged in the private sector. On the other hand, majority of the respondents (64%) reported to have graduation degrees and about 33% reported to have SSC/HSC.

Major Neighborhood Environmental Problems

Identification of major neighborhood environmental problems in Chittagong city was based on questionnaire survey. Quality of the environment has been measured from the value of satisfaction index. Among 20 indicators, 5 have shown negative and 3 have shown low positive on the satisfaction index. According to rank, the five major neighborhood problems that were identified by the sample respondents are sewerage -0.77, electricity -0.29, law and order -0.22, recreation -0.16, slums and squatters -0.1 were found, respectively (Table 7).

In Chittagong city, about 82% of the respondents have remained unsatisfied (-0.77) with sewerage facilities (Table 7). This is the top most neighborhood environmental problem in the city that neither has any pipelines nor any sewerage treatment plant. About 443 miles of mostly open drains that are connected with 5 canals are now carrying all types of wastes (Khan *et al.*, 1996).

Supply of electricity was placed in second position according to the satisfaction index (-0.29) indicating as the second major problem in the city. About 52% of the respondents have found dissatisfied with this service (Table 7). In Chittagong city, electricity supply rests on Bangladesh Power Development Board. At present, the daily supply falls short by 30 MW and frequent load shading has been a regular phenomena. The poor supply of electricity and load shading is higher in summer then in winter in this city. Street lighting system is adequate for middle of the city but inadequate for out of the city.

Table 7: Major urban neighborhood environmental quality in Chittagong City

Types	Unsatisfied responds(%)	Satisfaction index	Rank
Sewerage	82	-0.77	1
Electricity	52	-0.29	2
Law and Order	45	-0.22	3
Recreation	41	-0.16	4
Slums and Squatters	38	-0.1	5
Water Supply	32	0.07	6
Sanitation	27	0.21	8
Employment	27	0.11	7

Source: Field Survey, 2004

The third major problem perceived by the respondents is law and order situation (-0.22) in the city. About 45% of the respondents reported unsatisfied with this arrangement (Table 7). People are always scared about terrorist activities of musclemen in Chittagong city. Twelve police stations are now serving a population size of about 4 million.

Recreation facility (-0.16) was identified as the fourth major problem in Chittagong city. About 41% of the respondents reported unsatisfied with this facility (Table 7). There is hardly any open space in the center of the city. Recreation facilities have been on decrease with the increase in population of the city. There are now only 10 play grounds, 3 children parks, 10 auditorium, 30 community centers, 1 natural lake with adventure land and 1 sea beach for the entire city

Other neighborhood environmental problems in the city are slums and squatters (-0-.1). About 38% of the respondents have perceived this problem as fifth major (Table 7). Between 17-29% of the total population lives in slums and squatters where living environment is quite unsatisfactory. The population of slums and squatters are worst sufferers from all neighborhood facilities. More than one-third of the of the sample respondents reported neighborhood condition as unsatisfied because of this problem.

Geographic Variation of Selected Neighborhood Indicators

The variables that are found negative on the Satisfaction Index are only taken into consideration to depict the geographic patterns of variation in Chittagong city. The 10 zones of the city comprise the cases for each of which 5 major neighborhood variables were employed in data analysis.

Most of the respondents were unsatisfied with the quality of sewerage system in this city, which is reflected from the spatial variation. Among the 10 zones, zone 01 (Jalalabad) and zone 02 (Panchlaish/Sholashahar) have the highest value of negative index -1.0 (Table 8) and is identified as the low quality zones (Table 9). Zone 10 (Patenga) has shown the low negative value suggesting a sewerage system here that is connected with the Karnafuli river. Other zones of the city are loaded moderately on the satisfaction index.

With respect to electricity supply, zone 8 (Pahartali/Kattali) and zone 9 (Halishahar) has got the highest value of dissatisfaction -0.60 to -1.0 (Table 8) and identified as low quality of electricity supply. The electricity demand of this zones has fallen short by 20 MW Power and Development Board (PDB) and hence there is regular load shedding. This zones includes 10 wards where electricity

Table 8: Ranking of spatial variation of urban neighborhood environment

	Zone									
Variables	1	2	3	4	5	6	7	8	9	10
Sewerage	-1	-1	-0.9	-0.7	-0.9	-0.7	-0.7	-0.6	-0.9	-0.3
Electricity	-0.2	-0.4	0.6	-0.4	-0.3	-0.3	-0.5	-0.6	-0.8	0
Law and Order	0	-0.2	0.2	-0.3	-0.6	-0.2	-0.5	-0.4	-0.4	0.2
Recreation	-0.1	-0.6	-0.4	-0.4	0.2	-0.4	0.2	-0.5	-0.4	0.8
Slums and Squatters	0.4	-0.6	0.6	-0.2	-0.4	-0.6	-0.2	-0.2	-0.2	0.4

Source: Field Survey, 2004

Table 9: Index for spatial pattern of urban neighborhood environment

Value	Meaning
0.60 to 1.0	High quality
0.20 to 0.59	Upper medium quality
-0.19 to 0.19	Medium quality
-0.20 to -0.69	Lower medium quality
-0.60 to -1.0	Low quality

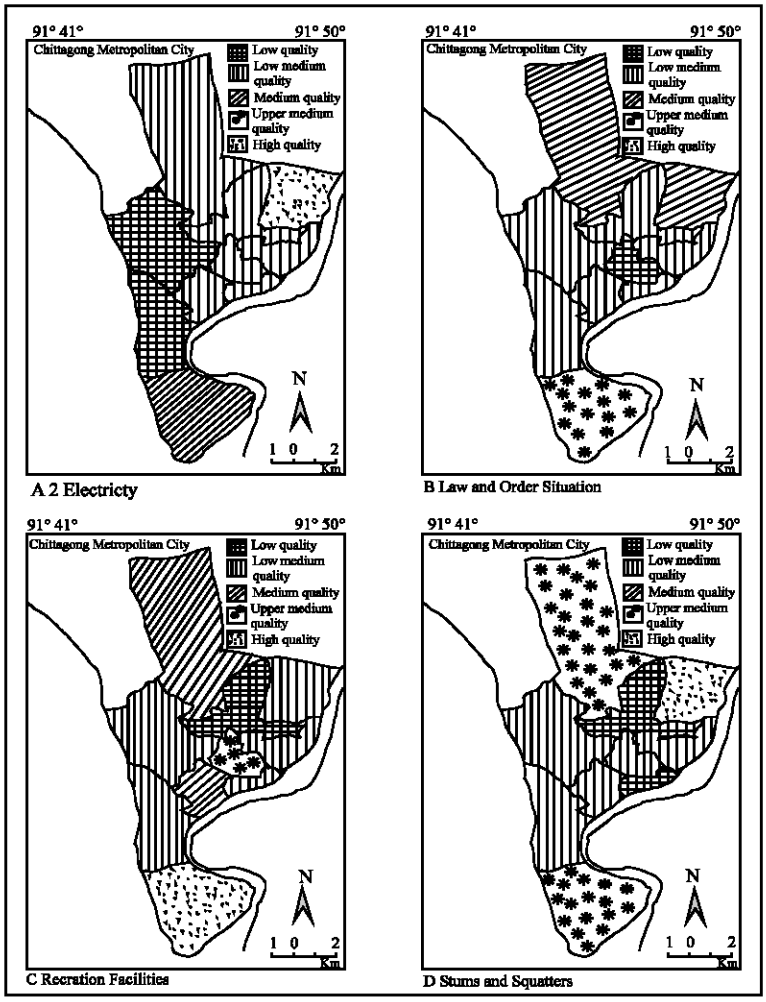

Fig. 2: Geographic variation of degraded urban neighborhood enviroment

supply comes from only Halishahar and Pahartali electric station. On the other hand, zone 03 (Chandgaon/Mohra) and 10 (Patenga) have shown positive values on Satisfaction Index and is identified as upper quality and medium quality, respectively (Table 9 and Fig. 2A). These zones are important for industries, upper-class residential areas, water treatment plant, sea and airport etc. So these zones are showing in upper quality (Table 9). Other 6 zones, zone 01 (Jalalabad), zone 02 (Panchlaish/ Sholashar, zone 04 (Chawkbazar/Bakalia), zone 05 (Lalkhanbazar/Anderkilla), zone 06 (Madarbari/Patherghata) and zone 07 (Agrabad) are showing the lower medium quality of electric supply (Table 9 and Fig. 2A).

Degradation of law and order situation in major metropolitan city in Bangladesh is now a hard talk due to insufficient police activities. In this city have only one police head quarters and 12 police stations for 40 million people. Zone 5 (Lalkhanbazar/Anderkilla) has shown the highest (-0.6) negative Index of Satisfaction, reflecting low quality (Table 9 and Fig. 2B). In these zones include 6 wards and have 2 police station (Kotoalli and Kulshi). Only three zones, zone 1 (Jalalabad), zone 03 (Chandgaon/Mohra) and 10 (Patenga) have shown the positive index of satisfaction (Table 8) and

identified as the upper medium and medium quality of service (Table 9 and Fig. 2B). Other 6 zones show low medium quality (Table 8 and 9).

Recreation facilities (indoor and out door) are not well sufficient in Chittagong city. Only 4 zones have shown the positive index of satisfaction (Table 8). Only the authorized play ground (M. A. Aziz Stadium), Children park etc are located in zone 5 (Lalkhanbazar/Anderkilla) and shows upper medium quality (Table 9 and Fig 2C).In Zone 7 (Agrabad) has shown a positive index of satisfaction may be because of 3 cinema halls, Karnafuli children park, Museum etc. and is identified as upper medium quality (Table 9 and Fig .2C). In Zone 10 (Patenga) has also shown a positive Index of Satisfaction (0.8) probably because of the sea beach and is identified as upper quality (Table 9 and Fig. 2C). Zone 02 (Panchlaish/Sholashahar) has shown the lower quality of satisfaction due to poor recreational facilities (Table 8). Such as insufficient parks, play ground, open spaces and indoor games. Zone 08 (Pahartali/Kattali) has shown the negative index of satisfaction due to poor recreational facilities and is identified as low medium quality (Table 9 and Fig. 2C). The other 5 zones, including zone 01(Jalalabad), zone 03 (Chandgaon/Mohra), zone 04 (Chawkbazar/Bakalia), zone 06 (Madarbari/Patherghata) and zone 09 (Halishahar) have shown the medium to lower medium quality on indication of fewer parks and play ground (Fig. 2C).

Slums and Squatters are common in zone 04 (Chawkbazar/Bakalia), zone 05 (Lalkhanbazar/Anderkilla), zone 06 (Madarbari/Patherghata), zone 07 (Agrabad), zone 08(Pahartali/Kattali) and 09 (Halishahar). Zone 02 (Panchlaish/Sholashahar) and Zone 06 (Madarbari/Patherghata) have shown the negative index and is identified as lower quality of satisfaction (Table 9 and Fig. 2D) on indication of highly degraded condition. These two zones have major slums and squatters area of the city. Other zones show lower medium quality (Fig. 2D).

Conclusions

The study showed the status of various quality of existing urban environmental aspects, neighborhood facilities such as water supply, electricity, gas, telephone, sanitation, sewerage, garbage disposal, health, education etc. The different facilities show inequality and inadequacy among the various zones in Chittagong City. Of the 10 zones southern and northern parts of Chittagong Metropolitan City seem to be particularly poor in terms of neighborhood facilities. But central part of the city shows better facilities. The quality of urban environment is found associated with the income of household heads and it has been statistically justified with the use of Chi-square (X^2) test, that there is a relationship between the income and degree of satisfaction with regard to environmental variables. There is a genuine need to address the overall environmental problems in Chittagong City. The municipal authority should take a lead in organizing a concerted and coordinated effort with other governmental and non-governmental agencies in solving the problem of the city as soon as possible. The community people should also be mobilized in such efforts, because people's participation is very much fruitful in improving the environmental situation.

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