Urban Quality of Life: A Case Study of Guwahati

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Abstract This paper studies quality of life (QOL) in urban environment. The term environment has been used in broader sense, which includes physical, social and economic environment. A framework has been proposed which posits that QOL comprises objective condition of living and satisfaction from such living condition constitutes QOL. Such objective condition refers to objective QOL and satisfaction refers to subjective QOL. Dimension of QOL has been found to be multi dimensional. It has been found that both objective and subjective condition is important dimension of QOL. But correlation between objective and subjective QOL has been found not to be high. At the same time it has been found that satisfaction from condition of traffic is the lowest among all satisfaction variables.

Keywords Subjective QOL · Objective QOL · Environment

1 Introduction

Enhancement of quality of life (QOL) has remained either explicit or implicit goal of public policy in almost all societies for several centuries. But regardless of the fact, QOL has come into popular usage since the late 1960's only, as an extension of the set of measuring instruments to gauge the impact of development policies and efforts (Beukes 1997). It has been playing an increasingly important role in social science research as it has been realized that economic growth and development do not necessarily result in improvements in the lives of the inhabitants of a country. Therefore, research and development have started giving ample attention to the concept as an attempt to study the elements which determine QOL and to propose mechanisms which could contribute to its improvement (Lever 2000).

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QOL has been the focus of numerous studies but a universally acceptable definition has not been arrived yet. 'Quality' implies the degree of excellence of a characteristic, but the concept of the QOL may mean different things to different people. To some, it may mean how happy they are and to others, it may mean the level of economic status, education, health or security. Many researchers agree that the concept of QOL is too broad to describe. It is impossible to develop one universally acceptable definition of the concept. QOL is a multidimensional concept and it is context dependent. QOL relates to description and evaluation of the nature or conditions of life of people in a certain country or region. Life quality is determined by exogenous forces, with respect to an individual or a social group, forces like production technology, infrastructure, relations with other groups or countries, institutions of the society, natural environment, and also by endogenous factors including interaction within the society and values of a person or a society (Kolenikov 1998). The effect of these factors is not necessarily constant over time; for instance, environmental issues were paid relatively small attention a century ago while today ecology is undoubtedly one of the main concerns of the people.

2 Objective and Subjective QOL

In QOL research, the two dimension of life quality—objective and subjective—are assumed to be distinct identities (Shin et al. 2003). Objective dimension represents the external condition of life. It refers to reports of factual condition and overt behaviour. Objective indicators, e.g. educational level, are often aggregated at the national level. Objective indicators are, at times, grouped into composite indices, which allow national and international comparisons. Objective indicators are measures based on frequency and they are external to an individual. These are tangible condition such as physical environment, economic or technical factors. Social indicators are frequently used as objective measure of QOL. For example, variables such as infant mortality, doctors per capita and longevity are assessed in health related QOL and homicide rates, police per capita and rates of rape are assessed to detect crime related QOL (Diener and Suh 1997). But such objective indicators are very often imperfect. It may suffer from both under reporting (e.g. crime rate) or over reporting (e.g. income). Moreover, selection of variables for objective indicators may involve subjective decision making. Objective indicators may not accurately reflect people's experience of well-being. Individuals' sense of well-being is an experience that is far more complex and determined in a number of ways than assumed by descriptive social indicators based on external circumstances in a society. Therefore, it is important to take into account subjective well being of people concerned.

Subjective QOL stands for measurement of attitudes. Subjective indicators represent the individual's appraisal of objective conditions of life. The precise meaning of subjective dimension depends on the context in which it is used. Parallel to the attempts to use objective characteristics for the analysis of the QOL, subjective indicators have gained ample attention. The basic premise of subjective well being research is that in order to understand the well-being of an individual, it is important to directly measure individual's cognitive and affective reactions to her/his whole life, as well as to specific domains of life. Satisfaction refers to individuals' cognitive and affective evaluations of their lives (Diener and Re 2000). While working on urban livability, subjective dimension of QOL refers to perceived well-being, livability, health, etc. Subjective indicators are mostly based on, among others, psychological responses, such as life satisfaction, job satisfaction and personal happiness. For example, when objective indicators are used, respondents are not

asked to evaluate whether their living conditions are good or bad. They are simply asked to report their living conditions according to some given measures (Matikka 2001). In addition, an economist may consider cost of living and housing in that area by using objective indicators. But subjective assessment will try to derive how satisfied the people are with their living conditions.

Subjective QOL and subjective well-being and happiness are often used interchangeably. Subjective well-being consists of three interrelated components: life satisfaction, pleasant affect, and unpleasant affect. Life satisfaction is defined as a cognitive evaluation, whereby one's current circumstances are compared with internally imposed standards. Affect refers to pleasant and unpleasant moods and emotions. Both affect and reported satisfaction judgments represent people's evaluations of their lives and circumstances. Happiness, on the other hand, emphasizes the affective element involved in an individual's evaluative reactions to his or her life, and has been conceptualized as a balance between positive and negative affect. A later conceptualization of happiness views it as consisting of three main components: positive affect, satisfaction, and the absence of distress. However, by including a cognitive component (i.e. satisfaction), it moves away from earlier definitions of happiness, which focus on affect. Therefore, this conceptualization should be termed subjective well-being, which has been defined as consisting of three components—positive affect, negative affect and the cognitive component, life satisfaction and objective QOL can be defined as the sum of satisfaction with domains (Misajon 2002).

3 Conceptual Framework

This study explores life quality in the living environment. It places QOL as the central focus while taking into account the interaction between man and their urban environment. In this study, environment refers to a local urban environment where people are living. Such urban environment is human built having high pressure of population. The quality of the urban environment as a living space for the peoples of the world has emerged as an issue of fundamental concern for academic researchers, policy makers and citizens for the first time in the history of humankind as majority of the world's population lives in urban places. Whether developed or developing countries, urbanization is a complex socio-economic process closely linked with the scientific and technological process of societies and it has deep repercussions on all aspects of life (Fakharuddin 1991). QOL refers to the well being or ill being of people and the environment in which they live. Therefore, QOL depends on quality of environment. There are physical, biological, psychological, economic and social needs in a man's life. These needs are met by resources from environment. QOL from the standpoint of environment is the degree to which the environment has capacity to provide resources necessary to meet needs of human life (Bubolz et al. 1979). The demand for environmental resources is always growing but there is serious degradation in the capability of the environment to provide these resources. QOL is affected by increasing gap between demand and supply of these resources.

The process of conceptualization of QOL is a complicated process. No doubt it has attracted the attention of policy makers but lack of clear conceptualization is a hindrance to its implementation in decision-making process (Rogerson 1995). People-environment relations are multidimensional and complex. No single discipline or perspective can understand and explain these relations in a comprehensive way. Moreover, such multidimensionality has to be reflected in the concepts and measurement of QOL (Baschak and Brown 2003). If QOL can be defined in several ways, it is necessary to explain the content

of the concept precisely in every single study and consider the context of the concept in every single group that is a target of the study. Several preliminary decisions must be made before researcher explains the concept of QOL that underlies his or her study. The starting point of any concept is the aim and strategy of the researcher. In both cases researcher utilizes hypothetical reasoning or previous, empirically produced results in their QOL model. Conceptual models then serve as a framework of the study or the models can be tested by applying multivariate statistical analysis (Matikka 2001).

It has been realized from review of literature that central focus of conceptual models also varies among issues ranging from human ecology, capability approach to neighbourhood satisfaction. Theoretical and empirical relation between environment and QOL is far from being established. Some concepts are primarily related to person, whilst some others are related to environment. There are several ways to conceptualize the relationship between QOL and environment. But an integrated concept or model of QOL and ways of its measurement is always desired.

There appears to have agreement that in defining QOL, there are two fundamental sets of component and process operating: those which relate to an internal psychological–physiological mechanism producing a sense of satisfaction or gratification with life either at an individual level or collectively for communities and other social groups; and those external conditions which trigger the internal mechanism (Rogerson 1995). Thus any comprehensive evaluation of the QOL should include both subjective as well as objective aspects. Moreover the least consensus that can be arrived from the above analysis of the models is that the physical, economic and social environment forms the core of any QOL study. Any multidisciplinary conceptual framework of physical, social and other aspects of the daily life environment in relation to QOL would allow for a more theory based choice of indicators (Garb et al. 2004). Considering all issues found in the relevant QOL studies, a framework has been provided to study QOL. This proposed framework for the present study is influenced by models mentioned above. This framework has tried to set up relation between QOL and living environment (Ulengin et al. 2001) and relations among different component has been established by an empirical study.

This conceptual framework as shown by Fig. 1, places QOL as the central focus while taking into account the interaction between man and their urban environment. In this study, environment refers to a local urban environment where people are living. Such urban environment is human built having high pressure of population and it takes into account the interface between man and environment.

In this study, environment has been considered in a broader sense. Environment in a broader sense considers physical and psychosocial aspects besides considering chemophysical aspects of environmental pollution (Kamp et al. 2003). Environment has been viewed as the sum total of physical, economic and social attributes of urban areas where people are living. The attributes from environment have been selected to represent the characteristics of city where people are living.

This framework combines objective circumstances of living condition and appraisal of what people feel themselves in their mind for such living condition together. In this conceptual framework, external condition of physical, economic and social environment comprises objective QOL and satisfaction from such condition comprises subjective QOL. Satisfaction is an assessment of perceived discrepancy between one's aspirations and achievement. Life satisfaction as a cognitive judgmental process is dependent upon a comparison of one's circumstances with what is thought to be an appropriate standard (Brown et al. 2004). Several studies have shown that there is poor correlation between objective and subjective dimension of QOL. Only objective condition alone is not
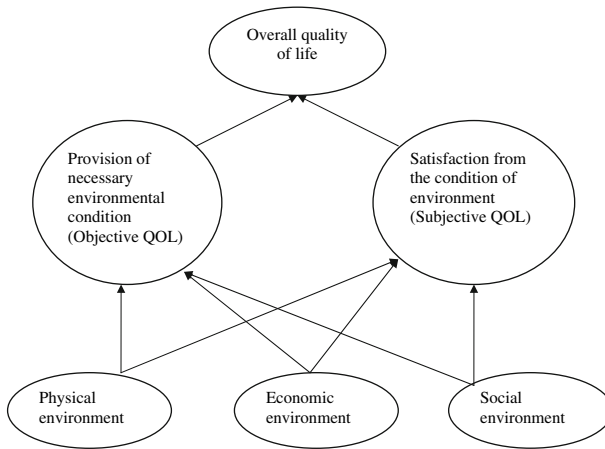
Fig. 1 Conceptual framework showing relation between environment and QOL

sufficient alone to measure QOL because quality is a subjective phenomenon. Objective indicators can be used to make reasonably valid inferences of environmental condition but one should be aware of using them to make inferences about subjective perception of QOL. On the other hand subjective indicators cannot represent the environmental condition in which people live. There may be problem of reliability with subjective reporting. Just as one cannot infer subjective quality from objective measure of condition, so one cannot infer environmental condition from subjective measure of quality. Therefore, it is strongly recommended that both objective and subjective indicators should be incorporated in QOL studies. If a study utilized both objective and subjective indicators, it probably could arrive at more reliable and valid inferences about the level of quality of living in that environment (Milbrath 1979). It could also identify arenas of possible action.

The scheme developed here is not a theory. Rather it is a proposed framework for empirical research, which may provide a criterion for its viability as a unifying scheme for the study of QOL. This is a bottom- up approach. This approach involves a synthesis of well specified, concrete environmental attributes. Specific environmental attributes are combined together like economic, social and physical environment as to create fewer specific general attributes.

3.1 Objectives

The objectives of the present study are:

(1)   To explore underlying dimension of overall QOL and
(2)   To compare objective and subjective QOL.

3.2 Hypotheses

From the literature available on the topic, the following hypotheses have been formulated.

(1) Objective condition and subjective satisfaction together comprise the dimensions of QOL.
(2) Objective and subjective QOL correlates poorly.

These two null hypotheses will be tested with an empirical study.

4 Methodology

The study has been conducted in the city of Guwahati, which is a premier city in the North East India. The rate of urbanization is the highest among the cities of the north east India. This empirical investigation was mainly based on primary data. To collect primary information sample survey was conducted in the area under the jurisdiction of Guwahati Municipal Corporation (GMC) at household level. At present there are 60 wards under GMC and the wards comprise the core and the periphery of the city. Purposive sampling was applied at two stages for collecting primary information. In the first stage of purposive sampling, 10%of the total wards i.e. six wards were taken for consideration. Wards were selected from municipal corporation area purposively to represent heterogeneity of the city as far as possible. For selecting wards three distinct features were taken into consideration such as traditional (old) residential area, commercial area and newly established residential area. For each category, two wards were taken and altogether it makes six wards. In the second stage, the households were picked up in such a way to represent different income group. Information was collected from the head of the household with the help of a structured questionnaire. Interviews were conducted during holidays. In absence of the household, the other half or any adult family member was communicated.

Keeping in view time and resource constraints, 3% of the total households from each ward was interviewed. Thus, the number of households to be surveyed was 379. Except for the character of the wards considered here, wards are more or less homogenous in terms of topography and demographic feature within itself. This ensures that small size of 3% sample can be expected to be representative of the population. Households are selected purposively so that various income strata have been adequately represented.

While preparing the questionnaire, no prescribed format was followed for preparation of the questionnaire. But standard pattern prescribed by Christakopoulon et al. (2001), the WHOQOL GROUP (1995), various Living standard measurement surveys (Whittington 2000) etc. were consulted to frame the basic structure of the questionnaire. These questionnaires were adapted in the context of local environment of Guwahati and maneuvered to suit the requirement of statistical methods. The questionnaire comprises questions on demographic information, objective dimension and subjective dimension. The questions in the objective part deals with objective living condition whilst it has been tried by the questions in the subjective part to evaluate the perceived level of satisfaction from such condition of living environment. The questions pertaining to both objective and subjective dimensions are further subdivided into physical, economic and social environment.

The questions used to capture objective QOL are close ended questions having five probable replies. There are 27 variables in the objective dimension. Subjective QOL was captured in terms of satisfaction from environment. The respondents were asked on a five point Likert scale whether they are very satisfied, satisfied, neutral, dissatisfied or very dissatisfied with different components of their living environment. The interview in the subjective dimension began with the question "What do you feel about your overall quality of life?"(QOL_1). At the end the same question (QOL_2) was repeated. It was done to

examine whether responses about overall life satisfaction was consistent in that living environment.

After preparing the draft, the questionnaire was administered in some localities. Ambiguity found in some questions has been refined and final draft has been prepared. Factor analysis has been used to find the underlying dimension of QOL. The internal consistency of the subjective part of the questionnaire was checked by Cronbach alpha.

5 Results and Discussion

The underlying dimension of QOL is shown by results of factor analysis in Table 1. The number of factors suggested by the eigenvalue criterion is 11. But for better interpretation of the factors, seven factors are taken into consideration, which altogether explains 53.18% of the total variance. The first factor explains 21.08% common variance alone.

First factor: This factor shows high loading on variables from all domains of environment. It is a general factor.

Second factor: This is a factor of satisfaction from urban amenities and urban infrastructure.

Third factor: This factor is related to quality of physical environment.

Fourth factor: It is a water factor pointing to water as an indispensable part of life.

Fifth factor: They can be labeled as satisfaction factor.

Sixth factor: Visit to police station, use of credit by family and feeling of insecurity have negative loadings. As feeling of insecurity increases, visit to police station also increases. On the other hand there is inverse relation between additional income and use of credit. Use of credit decreases as there is increase in additional income. This factor represents socio-economic condition.

Seventh factor: All these variables are negatively correlated with the seventh factor. This factor can be labeled as satisfaction factor.

Factor analysis reduces 34 variables into seven identified patterns. Quality of physical environment, urban amenity, socio economic condition and satisfactions from such condition are underlying dimensions of QOL. The factors of life quality are multidimensional. Factor analysis generated both objective and subjective factors. It led to accept the hypothesis that "Objective condition and subjective satisfaction together comprise the dimensions of QOL".

5.1 Subjective QOL and its Dimension

By subjective QOL, it has been tried to measure the level of satisfaction from physical, economic and social environment. It is not a state of simply being merry without having any deeper concerns. The central elements of well being, a sense of satisfaction with one's life and positive affective experience, are derived from the context of one's most important values and goals (Diener and Suh 1997).

There are all together 10 variables in subjective QOL domain. In the beginning of evaluation of subjective QOL, the respondents were asked how satisfied they were with their lives in that environment (QOL_1). But having asked about level of satisfaction from physical, economic and social environment, the respondents were again asked about their overall QOL (QOL_2). This was done to check if there was change in their views about

Table 1 Factor loading matrix for overall QOL

Variables	Factors						
	1	2	3	4	5	6	7
Consumer durable goods in household	.801						
Saving of family	.767						
Satisfaction from own economic condition	.736						
Income security at least for 45 days	.721						
Sanitation	.715						
Satisfaction from conditions of housing	.714						
Ownership of residence	.655						
Frequently done leisure activity	.612						
Room per person	.574						
Drainage system	.503						
Efficiency of transport system	−.319						
Satisfaction from health facility in locality		.815					
Satisfaction from local administration		.782					
Satisfaction from availability parks and green areas		.528					
Mode of travel		.473					
Solid waste disposal system		.428					
Air effect			.675				
Air quality			.654				
Respondent affected by noise			.600				
Water supply duration				−.922			
Source of water				−.769			
Water cleanliness				−.337			
Satisfaction from sense of personal security					.716		
Satisfaction from cost of living					.663		
Interaction with neighbour							
Visit to police station						−.483	
Involvement with society						.459	
Additional Income of family						.446	
Use of credit by family						−.363	
Insecurity at home						−.324	
Availability of open space within 1 km						.306	
No. of times respondent visits doctor							
Availability of shops							
Satisfaction from condition of traffic							−.656
Satisfaction from level of environmental pollution in city							−.568
Area affected by water logging							−.353
Eigenvalue	7.588	2.696	2.400	2.017	1.592	1.533	1.319
Percentage of variance explained	21.078	7.488	6.667	5.604	4.422	4.257	3.664

Extraction Method: Principal Axis Factoring

Rotation Method: Oblimin with Kaiser Normalization

Table 2 Satisfaction with QOL

Category	Satisfaction with QOL_1 (Percentage)	Satisfaction with QOL_2 (Percentage)
Very dissatisfied	2.2	3.3
Dissatisfied	22.2	28.6
Neutral	15.0	26.1
Satisfied	51.9	41.4
Very satisfied	8.6	0.6
Mean value	3.43	3.07
Standard deviation	0.999	0.923

overall life satisfaction after realizing how satisfied they are with different domains of life. The summary and changes in response are clear from Table 2.

When respondents were asked about QOL_1, It has been found that the percentages of very dissatisfied and dissatisfied people with overall QOL are only 2.2 and 22.2 respectively. Percentage of respondent who are neutral about their QOL is 15. Respondents who are very satisfied with QOL are 8.6%. In general majority of the respondents (51.9%) are satisfied with life.

But when the same question was repeated towards the end of the interview, it was found that respondents who are very dissatisfied increased from 2.2 to 3.3%. Dissatisfied and neutral respondents increased by 6.4 and 11.1% respectively. But percentage of satisfied and very dissatisfied people decreased by 10.5 and 8 respectively. There is also decline in mean value of satisfaction from 3.43 to 3.03. It clearly showed that respondents changed their opinion about satisfaction after going through a set of question about satisfaction from environment. The mean values of satisfaction from variables of different domains are shown in Table 3.

Satisfaction from condition of traffic is the lowest among all. It was preceded by satisfaction from level of environmental pollution and satisfaction from availability of parks and green areas. It clearly reflects the poor traffic and environmental condition of Guwahati. Mean value of satisfaction from cost of living is also low.

To see what extent these variables are correlated with overall QOL, correlation coefficient has been derived between QOL_1 and QOL_2 with other eight variables associated

Table 3 Basic statistics of environmental satisfaction

Domain	Variable	Mean value	Standard deviation
Physical environment	Satisfaction from condition of housing	3.43	1.06
	Satisfaction from availability of parks and green areas	2.89	0.92
	Satisfaction from the level of environmental pollution in the city	2.25	0.75
Economic environment	Satisfaction from your own economic condition	3.12	1.17
	Satisfaction from cost of living	2.77	1.11
Social environment	Satisfaction from sense of personal security	3.03	0.86
	Satisfaction from condition of traffic	2.18	0.64
	Satisfaction from health facility in the locality	3.06	1.06
	Satisfaction from welfare services provided in the locality	2.91	1.07

Table 4 Correlation coefficient between QOL and domain satisfaction

Variables	Overall QOL_1	Overall QOL_2
Satisfaction from condition of housing	.728**	.733**
Satisfaction from availability of parks and green areas	.326**	.346**
Satisfaction from the level of environmental pollution in the city	.176**	.215**
Satisfaction from your own economic condition	.745**	.760**
Satisfaction from cost of living	.477**	.644**
Satisfaction from sense of personal security	.191**	.379**
Satisfaction from condition of traffic	.113*	.136**
Satisfaction from health facility in the locality	.495**	.448**
Satisfaction from welfare services provided in the locality	.460**	.468**

** Correlation is significant at the 0.01 level (1-tailed)

* Correlation is significant at the 0.05 level (1-tailed)

with subjective QOL. The results are shown below in Table 4. All the correlation coefficient has been found to be statistically significant. Satisfaction from condition of housing and satisfaction from own economic condition have been found to be strongly correlated with satisfaction from overall QOL. It shows that financial condition plays an important role. Correlation coefficient between satisfaction from level of environmental pollution, satisfaction from sense of personal security and satisfaction from condition of traffic with QOL is comparatively lower but still they are statistically significant. These variables except for the variable 'satisfaction from health facility in the locality' have stronger correlation with QOL_2 than QOL_1. It means that QOL_2 was a more sensible answer in the context of that living environment.

To find out the underlying dimension of subjective QOL, factor analysis has been applied again. There are three factors whose eigenvalue are greater than one. The first factor is the most important factor, which explains 39.91% of common variance. The internal scale reliability of the items have been found to be as high as 0.87 (Cronbach's alpha). From Table 5 following factors have been found.

First factor: This factor can be labeled as satisfaction from various public services and amenities available in the locality.
Second factor: All the variables are negatively correlated with the factor. Satisfaction from cost of living and satisfaction from own economic condition is directly related. It can be described as a general factor combining variables from physical, economic and social environment.
Third factor: This is a factor of environmental quality which reflects the liveability of urban environment.

Factor analysis shows that satisfaction from public services is the first factor followed by a general and a liveability factor.

5.2 Underlying Dimension of Objective QOL

Factor analysis was run to find the underlying dimension of objective QOL. Eigenvalue criterion gave eight factors having eigenvalues greater than one. From Table 6 it has been

Table 5 Matrix of factor loading for QOL and satisfaction

Variables	Factors		
	1	2	3
Satisfaction from health facility in locality	.863		
Satisfaction from welfare service by local administration	.819		
Satisfaction from availability of parks and green areas	.566		
Satisfaction from cost of living		−.869	
Satisfaction from own economic condition		−.780	
Satisfaction from conditions of housing		−.488	
Satisfaction from sense of personal security		−.310	
Satisfaction from level of environmental pollution in city			.871
Satisfaction from condition of traffic			.541
Eigenvalue	3.59	1.69	1.20
Percentage of variance	39.92	18.88	13.45

Extraction Method: Principal Axis Factoring

Rotation Method: Oblimin with Kaiser Normalization

found that the first factor explains 19.26% of total common variance. These factors are mentioned below.

> *First factor*: The first factor of objective QOL can be labeled as standard of living and amenities available in the house.
> *Second factor*: It is a water factor. It shows that water is an important ingredient.
> *Third factor*: The third factor is also named as environmental pollution.
> *Fourth factor*: The variable 'Interaction with neighbour' is negatively loaded. It shows that there is lack of communication among the residents. This is a social factor.
> *Fifth factor*: Both the variables are negatively loaded. This factor can not be given any name.
> *Sixth factor*: This factor can be labeled as one representing infrastructure of socio physical environment.
> *Seventh factor*: Visit to police station and insecurity at home is directly related. Similarly use of credit is directly related to additional income of the family. This factor can be identified as socio economic environment.
> *Eighth factor*: This factor represents condition of social environment.

From the study of objective QOL, it has been found that the first factor is standard of living. Other factors are water, social condition, socio economic and socio physical environment. The underlying dimension of subjective QOL showed that satisfaction from services is the first factor explaining the highest percentage of common variance. This is followed by a general factor and a factor of liveability of environment. But underlying dimension of objective QOL makes it clear that standard of living is an important dimension of QOL.

Table 6 Factor loading matrix for objective QOL variables

Variables	Factors							
	1	2	3	4	5	6	7	8
Consumer durable goods in household	.856							
Saving of family	.790							
Sanitation	.754							
Income security at least for 45 days	.751							
Ownership of residence	.688							
Frequently done leisure activity	.590							
Room per person	.541							
Drainage system	.530							
Water supply duration		.915						
Source of water		.801						
Water cleanliness		.325						
Air effect			.703					
Air quality			.645					
Respondent affected by noise			.595					
No. of times respondent visits doctor								
Interaction with neighbours				−.679				
Area affected by water logging					−.514			
Availability of shops					−.309			
Mode of travel						.632		
Solid waste disposal system						.328		
Involvement with society							.641	
Visit to police station							−.460	
Additional income of family							.453	
Use of credit by family							−.446	
Insecurity at home							−.359	
Availability of open space within 1 km								.437
Efficiency of transport system								.383
Eigenvalue	5.393	2.372	1.977	1.599	1.488	1.232	1.191	1.102
Percentage of variance	19.260	8.470	7.061	5.711	5.314	4.401	4.255	3.937

Extraction Method: Principal Axis Factoring

Rotation Method: Oblimin with Kaiser Normalization

5.3 Correlation Between Objective and Subjective QOL

It has been hypothesized that correlation between objective and subjective QOL is poor. To test the hypothesis, indexes for objective and subjective QOL have been derived for every individual household by applying Principal Component Analysis and the correlation coefficient between objective and subjective QOL indices has been derived. The correlation coefficient is 0.36 (significant at the 0.01 level of significance). The correlation coefficient between objective and subjective QOL is not high. The finding is similar with that of Chan et al. (2002). Therefore, the hypothesis which states that objective and subjective dimension of QOL correlates poorly can be accepted.

6 Conclusion

While studying urban QOL, it was found that dimensions of QOL are well knit with economic, social and physical environment. Both objective condition and subjective satisfaction from such condition construct QOL. Objective condition mainly refers to standard of living along with other environmental amenities. At the same time, dimension of subjective QOL indicates satisfaction from all available public services and environmental quality. Overall, QOL factors comprise the living environmental condition and satisfaction from such condition.

Therefore, improvement of QOL in the city requires Guwahati to be converted into a model city. It needs to improve condition of living, which comprises elements of physical, economic and social environment. The lowest level of satisfaction comes from condition of traffic. Condition of traffic is really terrible because roads are narrow and less in number but number of vehicle is very high. It also requires to control the level of pollution which is a major problem of the city life. A lot has been proposed for development of the city. But most of the time it has been proved to be a cry in the wilderness. At present much has been talked about a draft master plan up to 2,025, prepared by GMDA for development of Guwahati. But in that plan, nothing has been mentioned about improving QOL of the citizen. There is no other agency apart from government to ensure such development. Therefore, whatever the nature of the plan, the government should rise above narrow political impulse and all violations that occur in the process of making Guwahati a model city should be dealt with a firm hand.

References

Baschak, L. A., & Brown, R. D. (2003). An ecological framework for the planning, design and management of urban river greenways. *Landscape and Urban Planning, 33*, 211–225.

Beukes, E., & Colff, A. V. (1997). Aspects of the quality of life in black townships in a South African city: Implications for human development. *Social Indicators Research, 41*, 229–250.

Brown, J., Bowling A., & Flynn, T. (2004). Models of quality of life: A taxonomy, overview and systematic review of the literature. European Forum on Population Ageing Research.

Bubolz, M. M., Eicher, J. B., Evers, S. J., & Sontag, M. S. (1979). A human ecological approach to quality of life: Conceptual framework and results of a preliminary study, *Social Indicators Research, 7*, 103–136.

Chan, A., Ofstedal, M. B., & Hermalin, A. I. (2002). Changes in subjective and objective measures of economic well-being and their interrelationship among the elderly in Singapore and Taiwan. *Social Indicators Research, 57*, 263–300.

Christakopoulon, S., Dawson, J., & Gari, A. (2001). The community well-being questionnaire: Theoretical context and initial assessment of its reliability and validity, *Social Indicators Research, 56*, 321–351.

Diener, E., & Suh, E. (1997). Measuring quality of life: Economic, social, and subjective indicators. *Social Indicators Research, 40*, 189–216.

Diener, E., & Re, L. (2000). Subjective emotional well being. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (2nd ed.). New York.

Fakhruddin, M. (1991). *Quality of urban life*. Jaipur: Rawat Publication.

Garb, Y, Kamp, I. V., Kuijpers, M., Ourednicek, M., & Sykora, L. (2004). Special deconcentration of economic land use and quality of life in European metropolitan areas, Quality of Life Indicators Report (D02). Available at http://selma.rtdproject.net, accessed March 14, 2007.

Kamp, I. V., Leidelmeijer, K., Marsman, G., & Hollander, A. D. (2003). Urban environmental quality and human well being– Towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning, 65*, 5–18.

Kolenikov, S. (1998). The methods of the quality of life assessment. Master thesis. NES, Moscow. Retrieved from http://www.komkon.org/~tacik/science/skolenik_nes_thesis.pdf, accessed February 28, 2007.

Lever, J. P. (2000). The development of an instrument to measure quality of life in Mexico City. *Social Indicators Research, 50*, 187–208.

Matikka, L. M. (2001). Service oriented assessment of quality of life of adults with intellectual disabilities. Dissertation of Finnish Association of Mental Retardation (Electronic version), from http://acta.uta.fi, accessed April 7, 2007.

Milbrath, L. W. (1979). Policy relevant quality of life research. *Annals of the American Academy of Political and Social Science, 444*, 32–45.

Misajon, R. A. (2002). The homeostatic mechanism: Subjective quality of life and chronic pain. Unpublished Ph.D. Thesis, Deakin University, Australia.

Rogerson, R. J. (1995). Environmental and health-related quality of life: Conceptual and methodological similarities, *Social Science Medicine, 41*(10), 1373–1382.

Shin, D. C., Rutkowski, C. P., & Park, C. M. (2003). The quality of life in Korea: Comparative and dynamic perspectives. *Social Indicators Research, 62, 63*, 3–36.

Ulengin, B., Ulengin, F., & Guvenc, U. (2001). Living environment preferences of the inhabitants of Istanbul: A modified hierarchical information integration model. *Social Indicators Research, 57*, 13–41.

Whittington, D. (2000). Environmental issues. In M. Grosh & P. Glewwe (Eds.), *Designing household survey questionnaires for developing countries*. World Bank LSMS Survey.

WHO-QOL Group (1995). The World Health Organization Quality of Life Assessment (WHOQOL), Position Paper from the World Health Organization. *Social Science Medicine, 41*(10), 1403–1409.