INTRODUCTION
The purpose of this research study is to analyse the quality of life in the various residential areas of Aligarh city in Uttar Pradesh. The unit of residential area is the ward. Wards are administrative divisions but they are not arbitrarily made. These wards are made with due cognisance of historical, social, ethnic and economic realities and therefore, are fairly homogenous in character and are quite meaningful for analytic study. The study was conducted during the period of 1995-1996. The area of study is Aligarh city as demarcated by Aligarh Municipal Cooperation consist of the old city and Civil Lines. The social environment with the help of certain selected indicators have determined the quality of life of these wards.

The basic problems in the life of urban people migrating in large numbers from rural areas in search of amenities of life and livelihood is tremendously important but regretfully, neither any satisfactory study nor any methodology has so far been developed in India. This study, is therefore an original exercise in understanding the quality of life in a city.

SIGNIFICANCE AND RELEVANCE OF THE PROBLEM

This is a study of Aligarh City in which the writer has tried to investigate the quality of life or of the people in different residential areas of the city with reference of various social criteria.
The topic has been selected because of the relevance of the topic in the life of urban people. The quality of life, or in other words, the well-being of people as related to their habitat is one of the major issues of our times. A good city, well designed to the human scale and planned to enhance human happiness and values can promote not only economic but also social goals. 'One of the major problems is now to create a physical structure that meets the demands of all its inhabitants, including individuals, groups, enterprises and others. To carry out effective city planning, it is necessary to specify the needs of each group as well as the sources of satisfaction, stress and maladaptation and then finding ways of translating these requirements into the living environment. A study based on well-being of the people is very important as it helps us to spot out the areas of deprivation and need and suggest certain remedial measures.' The topic has also been selected because there have not been many studies on human well-being in different Indian cities and the factors that contribute to increasing well-being in cities. A survey of the different cities in India would be very revealing.

Though India is a rural country, size of India's urban population (232 million, 1991 census) is one of the largest in the world. It is about 27 per cent of the
total population. India's urbanization is characterised by rapid rate of natural growth and migration from rural areas. The growth rate during 1981-1991 was 23.5 per cent. Nearly 1.7 million people migrate from rural areas to the cities every year in search of employment and other related economic activities. This has put strain on the urban resources and has resulted in urban and social environment degradation. Strains is particularly evident on housing, sanitation, water supply, transport and electricity supply. About 1/5 of Indian population lives in slums. Half of the households reside in dwellings measuring less than 20 sq.m. About 1/3 live in unsanitary conditions and nearly 1/3 do not have safe drinking water.

The study of quality of life or in other words the quality of social environment becomes a new and promising field of Geography.

‘Different areas of Indian cities offer pronounced contrasts of well-being and degradation, of purity and pollution and of fulfillment and deprivation. The quality of life, therefore, varies a great deal over urban space. The pattern of this variation and its underlying dynamics is a fruitful field of study both as an academic exercise and as an exercise having applied value.' India being a very vast country with a variety of population, who believe and practice in several
religions and have different faiths and customs. The area under study has been chosen is representative of most of the cities of India particularly North India. Urbanization is global phenomenon as realised in the growth of population living in towns particularly in big cities. Being a complex socioeconomic process closely related with scientific and technological progress of societies, it has deep repercussions on all aspects of their life.

The pattern of urban settlement in developed and underdeveloped countries have very distinct contrast. In Industrialised countries the urban population is very much organised,¹ where every individual by and large have the basic requirement, fulfilled, while on the other hand the dilation in urban population in developing countries is very different, here there is a un-organised inflow of population, which leads severe strains and stresses on the available infra-structure.² This leads to growth of *Jhuggi-Jhopri* (Squatter Settlement) clusters even in the best cities, severe unemployment and rise in crimes. The basic amenities such as housing, public transport, communication, power etc. are under severe stress and it fails to cater the entire population of any city.
The condition of living and the magnitude of urban population in developing countries is very vividly narrated by McGee:

The rapid growth of the third world cities is evident everywhere in their physical appearance... housing, and city populations are forced into squatter settlements of filmsy miserable huts constructed of makeshift materials which occupy any vacant land in the interstices or fringes of the city... The attempt to build up community and civic pride breaks down under the impact of population growth and "shared poverty" into a condition of urban anarchy. The end product is that the cities of the third world become wastelands conglomerations of millions of individuals".³

In the cities the contrast of poverty-affluence, misery-happiness and pollution-purity have a clear characteristic distribution. 'Poverty, misery and pollution forms the inner core of the city and the fringes. The core portion have small housing, lack of open spaces and very depleted infrastructure of civic amenities. This leads to very hazardous effects in particular on health of the inmates.' The quality of life may be described in just one word "SUBHUMAN" in this area. As a consequence occurrence of disease and death is
high in these areas which is further intensified by inadequate diet and lack of medical care due to the widespread poverty.4

On the other end of the scale, affluence, happiness and purity is found in civil lines. There one finds platial bungalows/houses lush green patches, effective drainage system, open spaces, fresh air. The services of the municipal boards can be felt. These areas get un-interrupted power supply, wide metalled roads, water supply, proper sanitation. As this area is inhabitant of powerfull classes in terms of caste, money, education etc., so this pocket of population have a big say in the administration of the city. Owing to their superiority to the other population of the city they enjoy lion’s share of the facilities provided by government. This set-up may be seen by and large in all cities of India.

India is a developing country like all developing country it has very acute financial crises. The unplanned inflow of population to cities leads to over loading on the existing infrastructure. Due to financial crises the government and local bodies are unable to provide the augmentation of infrastructure in accordance to the inflow of population to cities, this results to many socio-economic problems.
Thus the heavy inflow of population to cities and metropolis in particular have contributed grossly in making all the existing facilities appreciably inadequate.

These problems are causing crises in urban sectors and therefore it calls for sincere thinking, planning and systematic execution of plans to counter the existing ground problems of urban populace. To get the clear shape of problems extensive planning and study is required.

The problem chosen by the writer is of great significance and is one which is relevant to the country. In urban places interaction with environment is most serious and complex. The cities therefore are the places where the quality of environment is seriously affected. A little less than half of the world population, two billion, live in urban places and are affected by city environment. The study is also important because number of cities is increasing. In 1988 there were about three thousand, million cities. The area under cities is continuously increasing. It becomes necessary that one should know the environment and quality of life in urban places where such large mass of human beings is living. This work will reflect the problems of Aligarh city resides in particular and the problems of urban population of India in general.
STUDY AREA

Aligarh city is located in the western part of Uttar Pradesh. It is situated along the Delhi - Calcutta railway line, 126 kms from Delhi and 1,408 kms from Calcutta. Aligarh city is located at 27°53' north latitude and 78°04' east longitude. The city is located in the Lodha block of koil teshil and it lies almost in the centre of Aligarh district which is one of the highly developed prosperous and agriculturally advocated district of the western Uttar Pradesh. Aligarh has grown to big city from very humble beginning due to its site and situation. The city covers an area of 34.98 sq kms, of which only 61 per cent is developed. Of the developed area 49.1 per cent used for residential purposes, 28 per cent for transport, 9.4 per cent for industrial and commercial purposes, 7 per cent for public utility, 2.1 per cent is under parks and open spaces and only 0.4 per cent is used for recreational purpose. The city is divide into 40 wards, spread over 158 mohallas and has 69,797 households.

The total population of Aligarh city (estimated to be nearly 0.6 millions, 1997), doubles every twelve years due to 6 per cent growth rate of the population. Of this, 2 per cent is probably natural growth while the rest 4 per cent is made up immigrants from the villages. The population increases by nearly 36,000 people.
annually, who need additional food, clothing, housing, water, sanitation, health care, employment, Electricity and Transport etc.

OBJECTIVES

In the present work an attempt has been made to study the "Residential structure and quality of life of Aligarh". The city has been selected as the study area because earlier work on various aspects of quality of life has been conducted in large metropolitan cities only and little attention has been given to smaller cities. Smaller cities could be described as 'Temples of Modern India'. Contrary to the popular notion that India has a few over crowded but commercially hyperactive metros surrounded by a vast country side dotted with pelite idyllic villages, the country probably boasts of the most thriving small city culture in the world. More than 70 per cent of urban population reside in small cities. These small cities are no longer small by international standards they would qualify to be big cities. If not mega cities they are also fast developing big problems and these problems should be classified and studied thoroughly.

The present study has certain research objectives:

1. To study the physical environment-physical features, drainage, climate and soil and how these factors have helped in making the particular environment and also
study the history and recent expansion of Aligarh city till present.

2. To assess the quality of life and study the general characteristics of the 40 wards of the study area - population density, average number of families per house, average number of person per household, literacy rate and income.

3. To assess the residential structure of Aligarh city - socioeconomic status, family status, housing status, and ethnic status of the sampled households in the different wards of the city.

4. To assess the factors which governs the quality of life or social environment - measured in terms of material and housing condition, territorial stress, amenities and infrastructure, education and recreation, health and survival of the sampled households in the different wards of the city.

5. To assess the social environmental problems among different socio-economic groups of the sampled households and the respondents view towards its improvement.

**HYPOTHESES**

The following hypothesis have to be tested:

1. Socio-economic status contributes a great deal towards the Residential Structure and Quality of Life.
2. Lower the socio-economic status poorer the Residential Structure and Quality of Life measured in terms of Family status, housing status, material and housing condition, over crowding and congestion. Amenities and infrastructure, health and survival, education and recreation. Higher the socio-economic status better will be the residential structure and quality of life measured in terms of family status, housing status, material and housing condition, overcrowding and congestion. Amenities and infrastructure, health and survival and education and recreation.

3. Religion plays an important role in the segregation of residential spatial pattern in the study area.

4. Residential structure and quality of life is related with the old city, civil lines and outskirts of the city.

DATABASE

The data were collected both from primary and secondary sources. The study is mainly based on primary sources. Data from primary sources have been collected through

(i) city survey
(ii) household survey
(iii) interview with respondents
(iv) discussion with residents of different Mohallas (A mohalla in the north Indian city is equivalent to the concept of neighbourhood or local community in the western city) and government official. 

The field work was done by the writer during the year 1995-96. for getting accurate information the mohallas and sampled households were visited frequently. A questionnaire (Appendix A) was designed to collect relevant information related to housing condition, socio-economic level, family size, health, cultural level, amenities and infrastructure, material condition of the household, building standard, territorial stress, and spatial congestions. Sufficient care was taken to make the questionnaire communicable to the respondents. The respondents for household questionnaire were the heads or important persons of the household.

Data from secondary sources have been collected principally from the following government office of Aligarh city.
1. National Informatics Centre (NIC), Anupshahar Road, Aligarh.
2. Municipal Board, Bara Dowari, Udai Singh Jain, Road, Aligarh.
4. Election Office, Collectorate Road, Aligarh.
METHODOLOGY

The data for studying the household characteristics as well as conditions of dwelling which form the immediate environment in which population lives were drawn with the help of a questionnaire (Appendix A) from a comprehensive household survey of the 40 wards of Aligarh city. A household has been defined here as consisting of all the persons who occupy the housing unit collectively and join together in making arrangements for providing all the basic necessities.

The survey conducted was a purposeful one. About 32 to 132 households were sampled from the different wards. This was because of the differences in the size and number of households in the different wards. Stratified random sampling has been done, keeping in mind that a household selected were a good representation of persons belonging to different socio-economic groups. In this way, 2, 268 households (3.25 per cent of the total households in the study area) were sampled.

Techniques of Analysis

Appropriate operational technique for analysis are found in two research traditions in Geography. Multivariate regionalization and factorial ecology. The methodology of multivariate regionalization and factorial ecology. The methodology of multivariate
regionalisation has developed and spread rapidly after the publication of Gin’sburg's *Atlas of Economic Development*.

Many an earlier attempt has employed simple additive techniques involving ranking and classification of indicators according to some theoretically determined criteria. Later this methodology has been modified under social indicator’s approach that reacted sharply to the over emphasis on economic criteria as the measure of human well-being. As a result, more and more social indicators have been incorporated in the regional analysis of the development. Since the relationships among these varied indicators have been incorporated in the regional analysis of the development. Since the relationships among these varied indicators of development have become uncertain by now, procedures of standardisation have been adopted so that transformation of indicators may entail their addition into various categories of the development. Smith provides an excellent example of this procedure.

Methodology of factorial ecology developed in early 1960’s has come out of an older tradition of social area analysis in urban geography. Social area analysis defines theoretically the categories by which differences in the population groups can be analysed over the city space. These constructs as defined by
Shevky and Bell are social rank (economic status), urbanisation (family status) and segregation (ethnic status). According to them, these constructs reflect societal change from one scale to another scale. On the other hand, factorial ecology employs a variety of mathematically rigorous methods of factor analysis to reduce a large number of socioeconomic and environmental indicators into a few underlying dimensions. Unlike the methodology of multivariate regionalisation and social area analysis which structure variables according to some theoretical constructs, it allows the constructs to emerge from the interrelations of the variables themselves. It starts with the matrix of intercorrelations of original variables from which such a set of smaller number of variables is derived that reproduce original relationships with the restriction that derived variables are inadequate (orthogonal) of each other. By combining standardised original variables and their loadings on computed variables (factors), original variables may be aggregated to exhibit regional distribution of the new variables.

The methods of classification of variables into major dimensions in the two traditions have their relative advantages. The additive methods involve simple calculation and there is little ambiguity involved as all the subjective elements are usually known and made
explicit. Moreover, since they imply no assumption of orthogonality of categories or dimensions, relationships among them may be evaluated and analysed. Such methods of classification are quite valid, if theoretical constructs are acceptable and addition of the variables is legitimate. However, assignment of equal rank difference to varying magnitude of a variable results is considerable loss of information. Standardisation procedure usually that of normalisation of distribution overcomes such of the loss of information. Nevertheless, simple addition without giving consideration to the significance of the constituent indicators of a category cannot represent a major part of the reality. This problem is largely solved by the factor (category) are their weights which are derived from their factual interrelationships. But factor analysis procedure starts with a solution which is not mathematically unique. Therefore, there is no assurance that factors obtain would conform with the theoretically relevant or most important aspects of the reality. Generally, apart from the first factor that is understood as an overall index, all other factors remain in interpretable. Hence, factors are subjective to rotation to some uncritical criteria to make the factor structure more interpretable. But at this stage problem becomes more complex. Factor loadings though remain orthogonal,
factor scores do not. Thus at the final stage of this analysis ambiguity is involved in the interpretation of regional patterns of various dimensions.

Social change and associated ecological processes in the developing city are relatively little understood. Application of any set of theoretical constructs developed in the western world may lead to false findings and erroneous conclusions. Transformation of societies is the historical and cultural interpretation of the processes of change and does not follow the same course. For instance, constructs of social area analysis as developed by Shevky and Bell are based on the historical interpretation of the process of change as it occurred in the western world. Shevky and Bell conceived of social change as a concomitant of increasing societal scale which in itself resulted from change in the structure of productive activity from agriculture to manufacture, and from manufacture to commerce, communication, transport and services. But in developing countries hypertrophy of urban territory sector does not conform with the urban levels of social and economic achievements. In case of India, Schwartzberg does not find any strong relationships between level of development and the size of territory development. Moreover, despite an observed trend towards homogenising personal life in cities, it is
noted that transformation of a traditionally caste ridden society in India into a modern confused and cannot be fully explained with reference to any conventional theoretical model. In the conditions of little understood specification of urbanisation in the developing countries it is, therefore, safe to use such techniques of analysis which themselves develop analytical concepts and categories. Hence, the present study has employed the technique of factor analysis to derive 'meanings' from virtually 'in constructed variables.

Factor Analysis Employed

This technique has been initially developed by psychologist early in the present century as a means of analysis the results from intelligence tests and later used by other disciplines, is a method of studying simultaneously the complex inter-relationships between many variables, as measured for many different observations and summarising salient features of relationship in the form of a few best patterns called factors. Although studies of a geographic nature were under taken at an early data by sociologists. The technique has been used only recently by geographers. The technique of factor analysis has been applied selecting variables. These variables are selected
keeping in mind the personality of the area and theoretical constructs of factors.

Two separate factor analysis were conducted. The first analysis included 38 variables relating to the residential structure as described by social, economic household, housing and ethnic characteristics of the population of 40 wards of Aligarh (Appendix B). The second analysis was performed on 35 variables reflecting material, cultural and spatial status of the same ward (Appendix D).

Computation for this analysis were carried on Aligarh Muslim University Computing System Alpha 3000/400S. The programe of the factor analysis available in the stored standard subroutine package gives a principal components solution.

The steps of computation are summarised below:

(1) Initial computation is based on transformation of the original data matrix D for ‘n’ observations on ‘m’ variables into a standard score matrix Z of nx m order.

(2) From the standard score matrix Z an n x m order correlation coefficient between each variable and every other variable.

(3) This correlation matrix was resolved into a factor loading matrix A of m x r, where r was the number of factors extracted. The programe employed can
extract as many principal components as the number of variables, therefore, in the first instance all the factors were extracted. A histogram of cumulative factor was constructed by inspecting the rate of change in the explanation of variation by factors, the number of factors to be retained was determined.

(4) Since the original variables retained were not met readily interpretable, the factor loading matrix A was rotated according to the normal matrix criterion to reproduce a new: factor loading matrix. The criterion employed rotated the factor matrix to such a position where a minimum possible number of variables loaded high on each factor. The factor structure, thus become simpler and more easily interpretable.

(5) The mathematical manipulation of the standard score matrix of n x m order and factor loading of n x m order and factor loading matrix of n x r order (and the eigen values), a factor score matrix of n x r order was obtained. These factor scores F (normalised to zero mean and unit variance) provide a measure of position for each observation. On the new factors Eigen values are the sum of squared
factor loadings for each factor and indicate the amount and proportion of the total variance in the original data accounted for each factor.

The sum of the squared factor loading across each row of the matrix A are known as communalities and till the proportion of the total variance of each variable which is accounted for the 'x' factors together.

**Factor Scores**

One important part of the output from factor analysis is the matrix of factor scores, which provides a measure of the relationship between each observation and the new factors. These scores are the values for each observation on the new factors. These scores are the values for each observations on the new variables, and as such they reflect the some extent their relationship with the original variables, and the contribution that each new variable makes to their variance. This if an observation has a large value in on an original variable, which in turn is highly loaded on a new factor, then it will have a high score for that particular factor.

Here it should be pointed out that a factor analysis including variables of residential and those of quality of life together might have been a better exercise. This might have helped in the analysis of the intricate relationships between the two sets of
variables. But the limitation imposed upon the number of observations, has not only restricted this analysis but has also imposed a limitation on the number of variables to be included in the separate analysis. As a result many other important variables had to be dropped. However, relationships between dimensions of residential structure and quality of life were qualitatively evaluated livability in the city.

CHAPTER SCHEME

The present work is divided into 4 Chapters. The main interest of this study as pointed out earlier is the residential structure and quality of the habitat in which these patterns have developed. Since the evolution of the residential structure and the quality of their environment is the result of ongoing as well as overgoing processes of social change and transformation of the living conditions which can only be interpreted historically and culturally.

Chapter I begins with brief description of the location and general geographic features of environment of the city traces its origin and describes its expansion till present times. The impact of history and specific oriental culture evolved with the city on its plan, layout and expansion in detail.

Chapter II describes the assessment of quality of life in Aligarh city and is devoted to the general
characteristics of the wards i.e. ward-wise population density, average number of persons per house, average number of families per house etc.

Chapter III outlines briefly the basic concepts, hypotheses and findings relating to the residential structure. The remaining part of the chapter explains and interprets the results obtained from the factor analysis.

Chapter IV is basically concerned with the ways in which quality of living conditions varies over city space. The first part of the chapter discussed concepts of the quality of life and the second part analyses results obtained from the factor analysis as regard the structure and spatial patterns of the livability in the city. In the third part of chapter on attempt is made to investigate various findings of the third and fourth chapters.
References


