Adequacy of Household Environment and Living Conditions of Selected Families

BY

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INTRODUCTION

I. INTRODUCTION

'Housing' in the modern concept includes not only the physical structure, providing shelter but also the immediate surroundings and the related community services and facilities. WHO prefers to use the term "Residential Environment" which is defined as the physical structure including all necessary services, facilities, equipment and devices needed or desired for the physical and mental health and social well-being of the family and the individual.

The standard of housing of the existing population cannot be judged wholly in terms of space available per head and the type of material used, but also includes access to and quality of toilet facilites, drinking water, disposal of sewage and garbage, the extent of open space, and other amenities. Though adequate housing is universally recognised, yet as a basic human right the overall condition of shelter for over one billion disadvantaged people in developing countries continues to deteriorate (Narayana and Ramanjaneyulu, 1989).

Realising the urgency to improve the housing conditions, the General Assembly of United Nations had designated the First Monday of October every year from the year 1987 onwards as the 'World Habitat Day' focusing the

attention of the International community on the housing situation of human beings all over the world.

The need for adequate housing is also stressed in the constitutional frame work. Article 25 of the Universal Declaration of Human Rights states that "Everyone has the right to a standard of living, adequate for the health and well-being of himself including food, clothing, housing, medical care and necessary social services". Again Article 21 of the Constitution of India provides that "No person shall be deprived of his life or personal liberty except according to procedure established by law". Without shelter one cannot enjoy fullyother rights such as freedom of speech and freedom of association.

The year 1987 was designated as the "International Year of Shelter For Homeless" by the United Nations. On this basis, the Government of India have formulated a phased programme upto 2000 A.D. for extending the benefits of shelter to all homeless people. The cardinal principles of the country's planning have always been the provision of basic needs to all citizens, optimum utilization of resources and attainment of self reliance on socio-economic and technological fronts. Housing being one of the basic needs assumes priority especially where amenities are below the minimum standards in general (Shah, 1991).

Housing considered as one of the basic needs along with food and clothing is important to development in both economic and welfare terms. In India at the beginning of 1980 the total shortage of housing has been estimated to be of the order 20.1 million units, 5 million in urban areas and 15.1 million units in rural areas (NBO, 1980). In Tamil Nadu alone, the total shortage of housing was estimated to be 9.17 lakhs during 1981 and 10.72 lakhs in 1990 for an estimated population of 47.30 million and 53.01 million for the corresponding period.

In working out the above projections it was assumed that five persons constitute a family and that 52.8 per cent of houses in urban and 14.65 per cent in rural areas are in pucca condition and that structure above 60 years of age would require replacement. It was therefore estimated that upto 1990 an additional 10.72 lakhs dwelling units will be required to accomodate the population of 2.96 lakhs in rural and 7.76 lakhs in urban areas.

The all pervasive nature of the environment we live in cannot be stressed adequately. The quality of water that we consume for drinking for personal and household tasks, the soil in which we grow our food and on which we dispose waste material, the animals and plants around us, the air that we breathe and the rural and urban setting in which we dwell or work determines to

a large extent the level of our physical, mental and social well-being (Sardana and Sangwan, 1988).

Apart from these, urbanisation and industrialization and the resultant influx of population has also resulted in severely stretching, the existing facilities such as housing, water supply and waste disposal, roads and transport system and other basic services.

In addition to the structure, a healthful environment is necessary to improve one's quality of life. The quality of one's life is greatly influenced by one's home environment. A healthy home thus requires careful consideration of existing environmental conditions and health hazards, proper site selection, quality of physical structure, living space, ventilation, domestic animals, prevention of domestic accidents, safe disposal of excreta and refuse, clean water and food, good personal hygiene and proper nutrition.

On an average two thirds of a person's life is spent in his or her home environment. The home will therefore influence and determine the quality of one's life more than anything else. Not surprisingly 80 to 90 per cent of all disease and illness in the developing world can be directly connected to deficiencies and short comings of the home environment, such as poor structure over crowding, humidity, inadequate sanitation, lack of

cleanliness, presence of domestic animals, poor ventilation and unsafe cooking facilities, etc. (Mukherjee, 1988).

A healthful residential environment is one in which the family can develop and flourish physically, mentally and socially. Pallipuram (1988), considers shelter not to be merely of four walls and a roof, but to be complete it must have access to basic things that sustain life such as proximity to where one can find work, a safe and healthy environment and access to basic necessities such as food and water.

A healthy home therefore does not have to be expensive. A simple home built with some thought and with consideration of the prevailing environmental hazards may turn out to be healthier and more suitable than a costly structure. A traditional home developed over a period of time were more practical and some of the practical ones have become aesthetic. Various activities of a household were catered to and this included space to eat, meet and a place for prayer. Today it may not be possible to cater to each aspect of living in a low cost shelter, but it would be necessary to keep in mind the small elements of a house that would make it a home.

Ideally a person would wish to bring up a family where the environmental and epidemiological conditions were such that people were not subjected to any local health hazard, whether communicable diseases including

water and food borne infections or disease spread by poor sanitary and environmental conditions. It is therefore necessary to look at housing as nothing less than the struggle for the access and control of the basic resources that are necessary for people to live in peace and dignity.

Housing effects family life either favourably or adversely depending on the provisions it makes for the routine activities of the household. Housing should therefore provide for rest and quiet, relaxation and a sense of peace, opportunity for self expression and freedom of action, the routine activities of the home and the companionship of the home.

The design of every house is an act of social importance and it influences the future trend of family living. The more limited the space, the more it becomes necessary to utilise to the best possible advantage every available inch.

It was therefore decided that definite knowledge of the habits of families and their saatisfactions and difficulties in adjusting to various types of houses would help us determine the characteristics of adequate housing. We need data from various sections of people to assess the conditions of livability . Hence the present study has been framed to assess the adequacy of household environment and living conditions of selected families

in Coimbatore district with the following objectives:

1. Assess the housing patterns of selected families

2. Understand the living conditions among residents living in owned houses in selected rural and urban areas

3. Examine the nutrition and health status of the selected families and

4. a) Analyse the adequacy of the existing household environment

   b) Evaluate the adequacy of existing household environment in relation to standard selected.

It is hoped that this study would provide us the much needed information on the adequacy of residential environment of people residing in their owned houses which in future if every citizen is able to provide for his family would result in a much safer, cleaner and healthier environment.

REVIEW OF LITERATURE

II. REVIEW OF LITERATURE

This chapter attempts to present a brief resume of the literature related to the study on **"Adequacy of Household Environment and Living Conditions of Selected Families"**, under the following headings:

A. Housing situation in India

B. Need for good housing

C. Factors influencing the choice of house

D. Housing environment and its influence on health

A. Housing Situation in India:

Shelter is among the basic needs of human beings, but people who are poor are unable to have even a satisfactory shelter as they barely eke out a living. With the fast increase in population, the deplorable housing conditions of poor has been aggravating and has become a matter of grave concern (Dadibhani, 1980 and Mathur, 1980).

As much as 20 per cent of the world's population lack decent housing and several million people lack shelter of any kind, according to U.N. Secretary General Javier Perez de Cueller who gave this statistics while inaugurating 1987 as the "International Year of Shelter for the Homeless." Though shelter is considered as one of

the basic necessities of man, there has not been any massive housing programme.

Reddy (1980), Jagmohan (1984) and Ramiah (1984) state that the housing shortage in India is belived to be between 12 to 30 million units and the shortfall is increasing since inequalities in access to land and finance are considered to be the major hurdles in the way of massive housing programmes.

The housing situation in India is quantitatively alarming and qualitatively depressing. The factors that have been generally responsible for the acute housing shortage in the urban area in India are:

a) Rapid rate of urbanisation

b) Low economic quality of bulk of urban households

c) Inadequacy of public resources to meet the need and

d) Rising cost of construction.

Jain (1980), is of the opinion that in the absence of low cost housing alternatives for the urban poor, the establishment of spontaneous settlements through self built homes on illegally occupied land is a rational response which corresponds to their needs for shelter, economic security and social status.

The National Building Organisation (NBO, 1981) has estimated that the housing shortage is around 21 million dwelling units (16 million in rural areas and 5 million in urban areas). The shortage at the beginning of the Seventh Five Year Plan has been placed at 24.7 million units (18.8 million in rural areas and 5.9 million in urban areas). But apart from the existing backlog in housing, the increase of population between 1985 and 1990 would generate an additional requirement of housing units to the extent of 16.2 million of which 12.4 million will be in rural areas and 3.8 million in urban areas (Table I).

TABLE I

HOUSING SHORTAGE IN INDIA

Year	Rural	Urban	Total million units
1961	6.6	3.6	10.2
1971	11.9	3.1	14.7
1981	15.9	5.4	21.3
1985-90	18.8	5.9	24.7

Seth (1985) and Razdan (1990) estimate the overall magnitude of the housing problem confronting the country for a span of 20 years, from 1981 to 2001 to be 233 lakhs dwelling units in terms of backlog and 638 lakh new dwelling units to meet the incremental housing needs of the growing population during the period.

Central Statistical Organisation reported that a sum of Rs. 13,054 crores were spent on housing in 1981. Nearly 12 per cent growth per year is evidenced for housing yet the shortage tends to grow per year is evidenced for housing yet the shortage tends to grow faster (Pande, 1989). Narayana and Ramanjaneyulu (1980) view that with increase in the size of the population the problem of housing has assumed enormous proportion in our country. It has become acute in most of the industrial regions since early 1960's and in rural areas where three-fourth of population live and 50 per cent of them are below the poverty line.

In addition to poverty in rural areas, the frequent occurance of floods, fire and break down of joint family system further aggravated the problem of housing shortage in rural areas. The problem of deprivation is directly connected with lack of shelter and acute poverty.

Mathur (1980) analysing the situation states that the problem of rural housing in our country is diverse in nature and enormous in magnitude. It has grown over the years due to rapid increase in population on the one hand and low rate of new housing construction on the other. Of the 54.82 crore people who constituted the 1971 population of India 43.9 crores or about 80 per cent lived in villages.

The state of housing situation in rural areas is revealed in Table II.

TABLE II

GROWTH OF HOUSING PROBLEM IN RURAL INDIA

(1901 - 1981)*

Year	Total no. of households	Total no. of census houses	Surplus or deficit (Col.4-3)	Percentage of surplus or deficit
1901	482	502	+20	+ 4.56
1911	519	578	+59	+11.36
1921	521	584	+63	+10.78
1931	571	631	+60	+10.57
1941	620	664	+44	+ 7.97
1951	536	541	+ 5	+ 0.93
1961	690	651	-39	5.65
1971	795	727	-68	8.66
1981	908	861	-47	- 5.17

*Computed from Census Data 1901-1981, Census of India.

In the year 1901 when there were 482 lakh rural hoseholds, there were 502 lakh houses. Thus, there were 20 lakh surplus houses. This situation continued till 1951. But the situation reversed since then. In 1961 when there were 690 lakh households there were only 651 lakh census houses, leaving the housing deficit to the tune of 39 lakh units.

This housing deficit has grown to 68 lakh units in 1971 and 47 lakh units in 1981.

At rural level one can observe a steady and progressive expansion of housing surplus from 1901 to 1921, after which the tempo of housing supply slowed down and by 1971 the problem became very acute with 68 lakh units and by 1981 with 47 lakh units of housing deficit. The great depression, World War II, the partition of country and the rapid growth of households were several factors which contributed to this kind of housing situation.

Stating of various types of houses in the villages, pucca, kutcha and thatched houses, Madan and Madan (1983) report that housing facilities in the country are inadequate and only a small number of houses in rural India are pucca (built with durable materials having long life expectancy). While a majority of these are either completely kutcha (built with non-durable materials) or partly kutcha and partly pucca. While Chandoke (1977) is of the opinion that these kutcha houses need constant repairs and especially their roofs are low and highly prone to fire hazards. House size is generally small, number of rooms per house is low, and inadequately ventilated. Occupancy rate, i.e., persons per habitable room is high. Mathur (1980) and Singh (1985) opine that in many respects the housing conditions in rural areas

are far from satisfactory, rural dwellings are small, insanitary and often in dilapidated condition. The houses are made of locally available building materials that are flimsy and non-durable which require frequent repairs.

Problem of rural housing are inextricably tied-up with the problems of village economy and rural development. As 76 per cent of our population dwells in the rural areas, the problems of rural India, can rightly be considered to be a national problem (Kumar and Mathur, 1988).

Sadik (1991) considers one of the phenomenal growth of urban areas, is one of the most dominant trends of the 20th century. It is one of the most extreme demographic phenomena since people started gathering in cities 5,000 years ago. In 1950 only 18 per cent of human kind lived in urban communities. Today just four decades later the porportion is approaching 50 per cent.

Considering the quality of existing housing in urban areas about 86 per cent of the housing stock is pucca, 24.7 per cent semi pucca and balance are unserviceable kutcha housing. More than 80 per cent of households in major cities reside in small one-room dwellings (Mukherjee, 1988). Moreover a large percentage of the housing units does not have satisfactory ventilation, water and sanitary facilities, sufficient space and privacy.

The severity of the housing problem in the urban areas is reflected in the mushrooming gorwth of slums, states Cherumilam (1984). The most visible expressions of the problem of rapid urban population growth are the make shift settlements on the outskirts of every city. Since space is a problem in cities squatters make use of every bit of land (Jain, 1980).

The urban housing problem has been complicated by the fact that people have been pouring into the world cities much faster than housing can be provided for them. Habitat in Montreal (1980) focussed the world's attention on housing stating that the assistance and support given to housing has been scanty when compared with that of food production.

The most crucial need for housing development at the present time is the establishment of proper and diversified institutional structure of housing finance and construction opine (Narayana and Ramanjaneylu, 1980). In addition to this the strengthening of the existing institutions like HUDCO, GIC and LIC and the creation of new institution like Housing Co-operative and Building Society would be necessary. The vast majority of house seeking families would have to be looked after through the creation of local level housing finance societies. Steps should be taken to develop a secondary mortgage market in housing. Commercial banks should be permitted to participate on a larger scale thanhitherto in housing finance

activities. All these efforts are to be made for economic upliftment of the beneficiaries through IRDP, NREP and other social welfare schemes wherever possible.

Housing a universal problem now-a-days in all countries, like mass poverty, scarcity of housing has proved to be an intractable problem and remained an abiding feature of Indian reality plan after plan. Housing activity among other things aims at providing shelter, raising quality of life particularly of poorer sections and creating conditions conducive to the achievements of crucial objectives in terms of health, sanitation and education (India, 1990).

B. Need for Good Housing:

Housing is one of the basic human necessities and a house is not just a roof over four walls, it is an extension of human personality as Nehru called it, opine Ghosh (1987) and Mukherjee (1988).

Sardana and Sangwan (1988) consider adequate housing and sanitation as the utmost requirements of the civilised man. Madan and Madan (1983) consider the level of living as a pointer to the standards of living of the people their status and thier values of life. A significant reduction in population growth rates is absolutely essential if improvemnts in third world living standards are to continue. Since population growth has out paced part of developmental success in many cases, the links between population, development and environmental

concerns are pervasive opines Sadik (1991).

Shelter along with food and clothing is a basic need for human survival to provide protection against the elements and to serve as the focus of family life, affirm Jain (1980) and Schaefer (1987) and India (1990). Our dwellings should also provide protection against environmental hazards to health both physicla and social. At its best shelter promotes emotional and social health by providing psychological security, physical ties with one's community and culture and a means to express one's individuality(Parvathamma and Satyanaryana, 1987).

Seth (1985) strongly feels that shelter encompasses not only a place to live but also the possibility of generating a livelihood and extends to every aspect of a human beings existence-family and community co-existence.

Sinha (1983), Mathur (1980) and Katakam (1987) also consider provision of shelter as one of the basic needs of the people, but strongly feel that the problems are different between urban areas and villages. The world housing seems to mean usually low-cost housing and a number of type designs duplicated and made into a varieyt of layouts.

Ghosh (1987) observes that the most intimate environment of man is the home and this environment effects his life in many ways. The problems of derange-ment of home environment is universal but the problem

is more overt in urban areas.

Bauer (1970) is of the idea that nearly all the homes protect their tenants lives by sheltering them from bitter cold or blazing heat. The good home goes a step further by providing comfort as well as protection.

Martin (1977), observes that ideally a person would wish to bring up a family where the environmental and epidemiological conditions were such that people were not subjected to any local health hazard whether communicable diseases, including water and food borne infections or diseases spread by poor sanitary, and environmental conditions, chemical hazards such as air pollution adulterated or contamination of foods or physical hazards such as earth quakes, or huricanes

House serves the common purposes like feeding the members, working, sleeping, child rearing entertaining, leisure and many more activities (Parvathamma and Sathyanarayana, 1987).

A WHO survey has shown that a high proportion of the population in developing countries particularly in rural areas have no piped water supply or lack access to one and have inadequate sanitary facilities. Lack of safe water and sanitation is associated with an increased incidence of and mortality from communicable disease in particular. Mathur (1977) remarks that over

crowding contribute to the spread of air borne infections. While old and dilapidated property may be associated with higher accident rates.

Novick (1987) estimates that roughly one quarter of world's population does not have adequate shelter and live in extremely unsanitary and unhealthy conditions and some 100 million people have no shelter whatsoever. They sleep in the streets, under bridges, in vacant lots and doorways.

Ismail (1976) indicates that both rural and urban children cry out for minimum components of a livable environment, both are denied to them. Poor living conditions take their toll every day and the toll is taken in the human resources of tomorrow.

Mathur (1980) observes that the inhuman living conditions in slums and squatter settlements in which poor people live in urban areas especially in metropolitan cities and the need for the improving the appalling conditions bordering to primitive way of life in rural areas are being increasingly recognized as amongst the foremost problem of our times.

Krishnamachar (1980), Narayana and Ramajaneyulu (1989) envisage that infrastructure development of house include laying of roads and drains, drinking water facility, latrine cum bathroom, waste disposal, development

of open space and elctricity. These are the basic amenities. Besides other facilities are also provided and linked with national programmes such as national biogas programme, ICDS etc. for the welfare of beneficiaries. Housing thus occupies the most important place in the probelm of the welfare of the people (Madan, 1987).

C. Factors Influencing the Choice of House:

Considering living space Mukherjee (1988) emphasizes that a healthy home does not have to be very big, but it should provide enough living space for all occupants. over crowding leads to increased rates of disease transmission, in particular air borne and to a higher accident rate. It may also lead to stress situations, tension and conflicts.

Housing includes not only the physical structure which provides shelter but also the surroundings including the services and facilities available in the community (Mathur, 1988).

Guhan et al. (1988) consider lighting as an essential ingredient in housing even though Tamil Naud boasts of 100 per cent electrification of its villages only about 1/5th of rural households have electric lights. While in urban areas the coverage is far from complete. Four out of ten households in the state do not have electric lighting.

Good ventilation of a house is essential opines Mukherjee (1988) since it helps in keeping the environment free of smoke and other gases. Traditional use of bio mass fuels for cooking and heating in badly ventilated structure may result in a high concentration of carbon monoxide, formaldehyde and other gases. Smoke can cause severe irritattion of the respiratory tract and eyes. Infants, young children, old people, people with respiratory problems and smokers are particularly at risk.

Access to basic facilities is another important factor in the choice of housing if one considers the quality of existing housing stock and if housing is viewed as part of a package of private and public amenities like sanitation, water supply, lighting, health care etc. and problem is indeed acute. It is particularly acute for the poor households an over wehlming majority of whom do not have access to basic facilities (Mukherjee, 1988).

The Central Public Health and Environment Engineering Organisation (1980) has reported that 82 per cent of urban households received safe drinking water, and only 27 per cent have sanitation facilities, while only 30 per cent of rural population have safe water supply and 20 per cent have basic sanitation facilities. The availability of these and other amenities including health care, school and recreation is not only relatively

less for the poor but also varied from place to place.

Houses should be protected from excessive heat or cold states Martin (1976) since it may be harmful to health. However crowding can contribute to the spread of air borne infections.

Since the urban development is dependent on energy supply to a large extent Singh (1991) is of the view that the optimisation of energy availability is very essential. Transportation is the biggest user of energy in an urban settlement. Thus if some new centres of urban growth is planned, communication will play significant role in its development. In a study conducted by Shah (1980) on struggling for a habitat, compared to other parts of rural India, states that Kerala's human settlement situation is better in terms of shelter and basic facilities since innovations diffuse more quickly in Kerala through rural-urban knots, many of which have services like banks, shops, markets, service industries, places of higher education, etc.

Narayana and Ramanjaneyulu (1989) are of the opinion that low cost technology enables avoidance of extra vagance by minimising the use of costly materials like cement, steel and wood. The approach is to use locally available materials avoiding long distance transportation. Optimal utilisation of building material resources and adoption of new technologies being

developed would ease the chronic problem of housing shortage (Singh, 1991).

WHO Expert Committee in its first report has outlined certain principles covering 4 levels of planning.

1. Prevention of premature death
2. Prevention fo disease, illness and injury
3. Attainment of efficiency of living
4. Provision of comfort

Planning for healthful housing should include:

1. Provision of space for light, air and recreation
2. Provision of adequate water supply and proper sewerage, drainage and solid waste disposal facilities
3. Freedom from accident hazard
4. Clean air
5. Freedom from unnecessary noise and disturbance
6. Insect, rodent and nuisance control and
7. A land use plan.

Thus every community needs small parks, play grounds etc. for children to play, for adults recreation for mental stimulation and relaxation and for other community activities which aid the total health of the individual and family(Pearce, 1964).

Jaisen (1987) emphasizes that any distortions in housing have profound, social, cultural and political implications and satisfaction contributes strongly to dignity, peace and harmony.

D. Housing Environment and its Influence on Health:

Proper housing exercises a profound influence on people's health and is recognised as an important indication of level of living. It is a matter of utmost importance in social welfare programmes of all states, emphasize Narayana and Ramanjaneyulu (1989).

Briscoe and Porter (1987) foresee that while the number of people living in cities is on the increase and the proportion of those living in slums and shanty towns in developing countries is already between 30 to 60 per cent, preventive health care and family planning for the urban poor is frequently neglected. According to the estimates of United Nations there are more than 180 million homeless in the world. While some 100 million live in insanitary dwellings (Cherumilam, 1984).

Mathew (1991) and Mathur (1991) observe that the physical environment in which many Indians live is most injurious to their health conditions. Contaminated water supplies, unhealthy housing and sanitation and unhygienic disposal of human waste are among the principal causes of morbidity and mortality. Though all human and animal life is affected by the quality of water

consumed, he further states that many diseases in India are due to water borne pathogens and microbial pollution.

Salim (1986) is of the opinion that in most developing countries disease is very much connected with poor environment. For instance there is malaria where there is dirty standing water and respiratory infections are also related to an insanitary environment.

Centre for Science and Environment (1982) and Mukherjee (1988) indicate that due to tremendous over crowding resulting from urbanisation and industrialisation about five persons live in one-room house. The incidence of T.B. and other respiratory infections like common cold, influenza, diphtheria, bronchitis, measles, whooping cough etc. bear a close relationship to the degree of crowding in dwellings while other diseases like scabies, impetigo, ringworm, leprosy, rickets, plague, rat bite fever, infections, jaundice and home accidents are far more prevalent in areas of poverty congestion and unhealthy housing. Rodents and arthropods like house flies, mosquitoes, fleas and bugs also abound where housing conditions are poor and these transmit several diseases.

Morbidity and mortality have been observed to be high where the housing conditions are substandard state Kumar and Mathur (1988). There can also be psycho-social effects like neurosis and behavioural disorders particularly because of isolation of people living in cities.

Analysing the various aspects of housing affecting health Martin (1976) is of the idea that in certain areas, housing may actually encourage the breeding of specific vectors of disease and mosquitoes which carry malaria or rats capable of carrying plague typhus, jaundice and other diseases. Crowding is most strongly, associated with prevalence and incidence of communicable disease and mental illness(Mathur, 1988).

If a dwelling is not properly ventilated Co, Co_2 and So_2 released by cooking fuels can adversely affect respiration, circulation and function of nervous system (Mathur, 1988 and Kumar and Mathur, 1988).

Proper lighting is important for physiological equilibrium, mental health, visual comfort and minimising accidents in the home. More over U-V light has bactericidal effect (WHO, 1974).

Upto now health was considered a medical doctor's business, while on the other hand environment had to do with nature, water, sanitation, waste disposal. But these two groups of people were in fact tackling the same problem, of improving the quality of life, and giving human beings an environment that is comfortable to live in and as no negative impact on their health(Nair, 1988).

Briscoe and Proter (1987) strongly feel that the poor city dwellers have to face both traditional health problems as well as newer hazards, because their diets are poor and they live in over crowded unsanitary conditions. Moreover, they are also exposed to the worst environmental conditions and stresses associated with industrialization, suffering from higher rates of such chronic diseases as cardio vascular complaints and cancer.

Katakam (1987) considers that in a city the main problem is access to services and these are basically clean water-supply, electricity and soil disposal. As a result, unhygienic conditions develop and these shelters become slums.

Mathur and Kumar (1976) are of the opinion that if the drainage exists it is very often open drainage. Moreover the disposal of excreta is usually in the open fields. These factors obviiously lead to chances of gross infection and contamination. The diseases are transmitted in a common single room. T.B. is still one of the major problems in this country. Malaria and fly diseases are very commoon, and contribute to morbidity of population. At a time when the child is in the crucial age of development and growth these factors operate and regress the growth of the individual.

Singh (1988) analysing the causes states that malnutrition and disease caused by contamination of the environment by human wastes and air borne disease form core of the disease pattern of a developing country. It is intimately related to large families with child reborn at short intervals, inadequate housing, water supply, sanitation, nutrition and general hygiene.

Singh (1991) estimating the quantum of water availability indicates that the average water supply to urban settlement is around 100 to 150 litres per capita per day, depending upon the nature of the city. He envisages the need for a proper study linking the ground water potential the area, the cost or creating storage, cost of water treatment and the distribution channel.

According to Martin (1977) a study of deaths in childhood showed higher mortality rates in the rural areas. This pattern is likely in most developing countries with scarce water supply, inadequate sanitary facilities poor health care services and frequently higher communicable disease rates in the country side. In developed countries however the cities often have higher mortality rates than rurual areas where there are good health care services, good water supplies, sanitation and housing.

Guhan et al. (1988) observed that even in urban Tamil Nadu where the proportion of households with no tap water is low compared to rural areas particularly slums having little access to these facilities recorded a very high death rate due to water borne diseases among infants. The amount of mental ill-health in any community is difficult to quantify, conditions which cause stress are knwon to affect mental as well as physical health. Excessive noise, crowded housing particularly where members of different families share accomodation or all these may increase stress. Over crowded slum areas are frequently associated with serious behavioural difficulties.

Sadik (1991) reveals that despite improvements in access to medical care, and family planning services there is still a wide gap in health care between the developed and developing worlds. Around 13 million children under the age of five die every year, many of them from preventable causes linked to polluted environments. In the developing world as a whole infant mortality averages 81 per 1,000 live births compared to 23 in developed countries. Another important though indirect cause of infant mortality is poorly spaced births often due to a lack of family planning services. Children born less than two years after the previous child stand a 66 per cent chance of dying in infancy. If these children survive their vulnerable early years their growth

is more likely to be stunted, their intellectual development impaired and their prospects of adult life greatly diminished.

Sinha (1983) recognises that the health status of India has improved considerably during the last 30 years. That an investment on health is investment of human resource development and on improving the quality of life. Quality of health and life cannot be improved unless proper sanitation is planned (Singh, 1991).

The available statistics relating to the status of rural and urban water supply in India, present a distressing picture especially in the rural areas. By March 1980 about 9.2 million villages in the country with a population fo about 160 million were yet to be provided with potable water supply facilities. Present position of water supply and sanitation in India and as expected by 1990 is given in Table III.

TABLE III

WATER SUPPLY AND SANITATION

S.No.	Particulars	Population covered (Percentage)	
		Present position	Expected by 1990
	Water supply		
1.	Urban	80	100
2.	Rural	30	100
	Sanitation		
1.	Urban	20	80
2.	Rural	Nil	25

Water supply and sanitation facilities appear to be the most important aspect of the man made environment for improving health status in rural India. There is positive correlation between greater use of water and improved health status even if the quality of water is poor. The quantity of water is directly related to water availability(Ebrahim, 1982).

Sadik (1991) views that if the million-plus cities continue to mushroom at current rates, transport, communication, health and sanitation system could be overwhelmed and political systems endangered.

Access to health services has a direct bearing on health status. Convenience to work, educational, cultural and commercial facilities although not directly related to health is important for general well-being (Mason and Stephens, 1977).

Mathur (1991) feels that the Government should pay close attention to matters like drinking water supply, nutrition, sanitation and environmental hygiene and the creation to mass awareness on health hazards, since medicine alone can have only very limited value. Mathur (1980) further emphasises that without a healthy dwelling however modest it may be essential services such as potable water supply, sanitation and drainage it is not poossible to lead healthy and dignified life.

Thus Mathur (1988) consider the primary objective of upgrading the standard of housing is to improve the quality of life. Health both physical and psychosocial is a major component of well being while health status must be a principle in the design of rural housing. Thus a healthful residential environment is one in which "the family can develop and flourish physically, mentally and socially"(Park and Park, 1987).

METHODOLOGY

III. METHODOLOGY

The study on **"Adequacy of Household Environment and Living Conditions of Selected Families"** necessitated information on:

1. An assessment of household environment among selected rural and urban families
2. An analysis of the nutritional and health status of selected families and
3. Evaluation of the existing household environment in relation to selected standard.

Hence the methodology involved:

A. Survey of selected rural and urban families using an interview schedule

B. Use of a nutritional and health assessment schedule to understand the nutritional and health status of selected families and

C. Use of a check list to evaluate the adequacy of the existing household environment in relation to selected standard.

A. Survey of Selected Rural and Urban Families Using An Interview Schedule:

The household survey was found necessary to gain insight into the socio-economic status of the family, the planning of the house, use of building materials and adequacy of existing household environment. The various steps involved in the conduct of survey are discussed

under:

1. Selection fo locale of study
2. Selection of sample
3. Selection of tool
4. Formulating the schedule
5. Pretesting the schedule and
6. Collection of data

1. Selection of locale of study:

Sanganure, Nallampalayam, Kannappanagar and P.N. Pudur villages in and around Coimbatore city were selected for the study. These villages constituted a part of the large number of villages within the district which were selected by the University to implement its mass literacy programme, as a part of National Literacy Mission. Gandhipuram, Ganapathy, Saibaba Colony and R.S.Puram areas within Coimbatore city limits were chosen for the selection of the urban sample.

Easy accessibility and the rapport already established were the major reasons which influennced the selection of the above areas to identify the sample.

2. Selection of sample:

The sample for the present study constituted those families residing in their own houses, fifty each drawn from the above mentioned rural and urban areas. Purposve

sampling method was adopted to identify the sample. According to Gosh (1984) in this method certain units are selected purposively for judgement by researchers and make their selection as representatives.

To obtain a representative sample it was decided to include families residing in their own houses and belonging to the middle income group.

According to Subramaniam (1990) the lower middle class earn an income of Rs. 2000/- - 3000/- per month, the middle class from Rs. 3000/- - 5000/- per month, while the upper middle class have an income in the range of Rs. 5000/- - 10,000/- per month.

3. **Selection of tool:**

Interview schedule was selected as a tool to be formulated for the collection of the required data. According to Sadhu and Singh (1982) interview schedule can be used to collect data by interviewing almost all segments o the population with the hellp of a schedule. Schedule is a name usually applied to a set of questions which are asked and filled in by an interviewer in a face to face situation with another person.

Relevant literature to understand the various aspects related to the problem under study revealed that use of two tools of enquiry (a) interview schedule and (b) observation schedule were imperative in collecting the data required for the study.

The characteristic features of the formal observation schedule serve to set it apart from the casual sporadic and more or less spontaneous observation made by the researcher in the course of conducting the investigation. Sandhu (1979) defines observation as a systematic viewing coupled with consideration of the scen phenomena. It helps in the collection of primary data which is quite reliable and useful.

4. **Formulating the schedule:**

Best (1970) is of the opinion that an interview schedule should be designed to relieve anxiety and arouse the participants interest by the simplicity of question and the order in which they are presented. Bearing this in mind the interview schedule designed called for details on socio-economic status, and features of houses under study kitchen layout and materials used in construction.

Therefore an observation schedule was designed to evaluate the adequacy of liveable space, storage space, ventilation and aeration and other facilities and services available within the household environment.

5. **Pretesting the schedule:**

Smith (1975) and Gupta 1984 recommend pretesting of the schedule. According to Sadhu and Singh (1982)

pretesting provides not only a test of clarity of the questions and of the correctness of interpretation put upon them by the respondent, but also affords the possibility of discovery of new aspects of the problem which are not anticipated in the planning stage.

Hence by using the interview and observation schedules in five selected families, modifications needed in the schedules were identified. These modifications were incorporated and the schedules were finalised. Appendices I and III respectively present the interview and observation schedules restructured for use in data collection.

6. **Collection of data:**

Data were collected personally by the investigator adopting the direct personal interview method. Shukla and Gulshan (1983), Koul (1984) and Sindhu (1985) opine that under this method of collecting data, the investigator personally comes in contact with the persons from whom the information is to be obtained. Questions pertaining to the enquiry were put forth and the required information collected.

In addition the observation schedule prepared enabled the investigator to gather details on the adequacy of the household environment in relation to the plan made.

2. **Use of a Nutritional and Health Assessment Schedule to Understand the Nutritional and Health Status of Selected Families:**

The kind of homes people live in, their size, design and quality have great deal to do with the amount of illness caused by communicable diseases and health in general (Sharma and Malhotra, 1977).

Analysis of the nutritional and health status of the selected families involved the following steps:

1. Selection of tool
2. Framing the schedule and
3. Collection of data

1. **Selection of tool:**

A nutritional and health assessment schedule was formulated to understand the nutritional and health status of selected families.

2. **Framing the schedule:**

This schedule (Appendix II) called for anthropometric details (height and weight) of the members in the family and their meal pattern.

Details on health included the attack of communicable diseases and infections in the family, (recall

for past two years) and the reasons for the same. Aspects related to sanitation included details on general cleaning, waste disposal methods adopted, collection and storage of water etc.

3. **Collection of data:**

The investigator visited the homemakers in person and collected the relevant data. In situations where one of the family members were not available, the data provided by the homemakers was taken into consideration.

3. **Use of Check List to Evaluate the Adequacy of Existing Household Environment in Relation to Standard Selected:**

Standard for healthful housing recommended by an Expert Committee of the WHO similar to the Basic Principles of Healthful Housing published by the American Public Health Association (Park and Park, 1987) was utilised for formulating the check list in relation to adequacy of household environment.

A check list thus formulated and presented in (Appendix IV) was used for evaluating the adequacy of the existing households environment in terms of selected staandards related to location of the house, floor, wall, windows, lighting and space available.

Twenty families (10 in rural and 10 in urban) were selected and the evaluation was done with the help of the homemaker indicating the presence or absence of various features indicated in the check list.

The data thus gathered for the various aspects of the study were consolidated, tabulated and analysed for various details, the results of the same are interpreted and presented in Chapter IV, Results and Discusison.

RESULTS AND DISCUSSION

IV. RESULTS AND DISCUSSION

The findings of the study on "**Adequacy of Household Environment and Living Conditions of Selected Families**" are discussed under the following major headings:

A. Socio-economic Status

B. Featurs of Houses Surveyed

1. General features of the house
2. Influence of values in housing
3. Details of the plan of the house
4. Kitchen details

C. Nutritional and Health Status:

1. Nutritional status
2. Health status
3. Sanitation

D. Adequacy fo the Existing Household Environment:

1. Livable space
2. Storage facilities
3. Ventilation and aeration
4. General facilities and services and

E. Evaluation of Household Environment in Relation to Standard Selected.

A. Socio-Economic Status:

1. Family type:

The trend in setting up nuclear family was evident among the selected sample in both rural and urban families since 74 per cent in rural and 66 per cent among the urban smaple existed as nuclear families.

Only 34 per cent and 26 per cent opted for joint family system among the urban and rural families respectively.

Though young women today prefer nuclear families where they can manage their own affairs the present study revealed the presence of joint families wherein young women were still availing the various forms of female support available in joint families.

2. Family size:

Information on family size revealed that the concept of small family norm was more popular among the urban families than the rural families.

Classification of family size as stated by Devadas (1988) was considered for the present study which represents a small family with 1-3 members, medium family with 4-6 members and large family with 7 or more members.

The survey brought to light the fact that 42 per cent in urban and 30 per cent among the rural families were medium sized consisting of 4-6 members while only 36 per cent and 20 per cent among the rural and urban families respectively had large families of more than six members.

3. **Age of homemakers and heads of families:**

The age range of homemakers and heads of families is given in Table IV.

TABLE IV

DISTRIBUTION OF HOUSEHOLDS BY AGE OF HOMEMAKERS AND HEADS OF FAMILIES

S.No.	Homemaker			Head		
	Age range (Yrs.)	Percentage of households		Age Range (Yrs.)	Percentage of households	
		Rural	Urban		Rural	Urban
1.	Below 25	22	12	Below 30	10	12
2.	25 - 35	24	14	30 - 40	20	12
3.	35 - 45	40	36	40 - 50	44	34
4.	45 and above	14	38	50 and above	26	42

Data revealed that among the homemakers 40 per cent in the rural and 36 per cent among the urban were in the age range of 35 - 45 years, and only 22 per cent and 12 per cent in the categories rural and urban were quite young being below 25 years of age.

Considering the heads of families 44 per cent in the rural and 34 per cent in the urban were in the middle age ranging between 40 - 50 years. Since owning a house is usually a long term planning and takes quite a number of years both in planning and constructing a house, it was observed that 42 per cent in the urban and 26 per cent among the rural sample were above 50 years. of age while only less than 12 per cent in both categories were below 30 years and were fortunate in residing in their well planned and constructed residential environment based on needs, demands and activities.

4. Educational status:

Table V depict the educational status of the homemakers and heads of families.

TABLE V

DISTRIBUTION OF HOUSEHOLDS BY EDUCATIONAL STATUS OF HOMEMAKERS AND HEADS OF FAMILIES

S.No.	Educational status	Percentage of households			
		Homemaker		Head	
		Rural	Urban	Rural	Urban
1.	Illiterate	34	6	26	4
2.	Primary school	48	12	42	2
3.	High school	12	34	12	14
4.	Graduate	6	32	14	34
5.	Post graduate	--	16	6	46

It was rather surprising to note that almost 30-40 per cent of the selected sample among both the homemakers and heads of households were illiterate since they had no access to acquire the minimum basic education.

Among the rural homemakers 48 per cent had acquired their education only upto the primary level while their counterparts in the urban areas were graduates (32 per cent) and post graduates (16 per cent).

Considering the heads of families it was observed that while 46 per cent among the urban sample were post graduates and 42 per cent among the rural sample had completed only their primary level of education.

5. **Occupaitonal status:**

The occupational status of homemakers and heads of families surveyed is given Table VI.

TABLE VI

DISTRIBUTION OF HOUSEHOLDS BY OCCUPATIONAL STATUS OF HOMEMAKERS AND HEADS OF FAMILIES

S.No.	Occupation	Percentage of households		Occupation	Percentage of households	
		Homemaker			Head	
		Rural	Urban		Rural	Urban
1.	Full time homemaker	82	60	Agriculture	34	6
2.	Officer	--	20	Business	14	28
3.	Doctor	--	4	Officer	--	24
4.	Others	18	16	Engineer	--	10
5.				Lawyer	--	12
6.				Others	42	20
7.				Nil	10	--

Among the homemakers a majority of 82 per cent among the rural and 60 per cent among the urban sample were full time homemakers, their duties being the innumerable household chores. Among the other occupations opted by the remaining 18 per cent of the rural homemakers it was found that they were engaged in mills or in social work activities while urban homemakers were working as teachers, or in various administrative positions.

The main occupation of the family refers to the occupation which is the major source of income for the family usually undertaken by the family head. It was observed that 34 per cent of the heads in the rural households were agriculturists while 28 per cent and 14 per cent among the urban and rural sample were engaged in business. Among the other varied occupations adopted by 42 per cent of the heads of the families among the rural sample, included jobs in mills and workshops while in the urban families the heads were Officers (24 per cent), Engineers (10 per cent) and Lawyers (12 per cent) respectively. Rest of the 20 per cent of the heads of the urban families were teachers working at various levels of education.

6. **Family income:**

Table VII and Figure 1 present the monthly income of the selected families in relation to size of family.

TABLE VII

DISTRIBUTION OF HOUSEHOLDS BY MONTHLY INCOME IN RELATION TO SIZE OF FAMILY

S.No.	Income Range (Rs.)	Size of the family					
		Percentage of households					
		Rural			Urban		
		1 - 3	4 - 6	7 and above	1 - 3	4 - 6	7 and above
1.	Less than 2000	10	14	22	12	14	4
2.	2000 - 4000	14	12	8	6	20	6
3.	4000 - 6000	6	4	6	16	4	10
4.	6000 and above	4	--	--	4	4	--

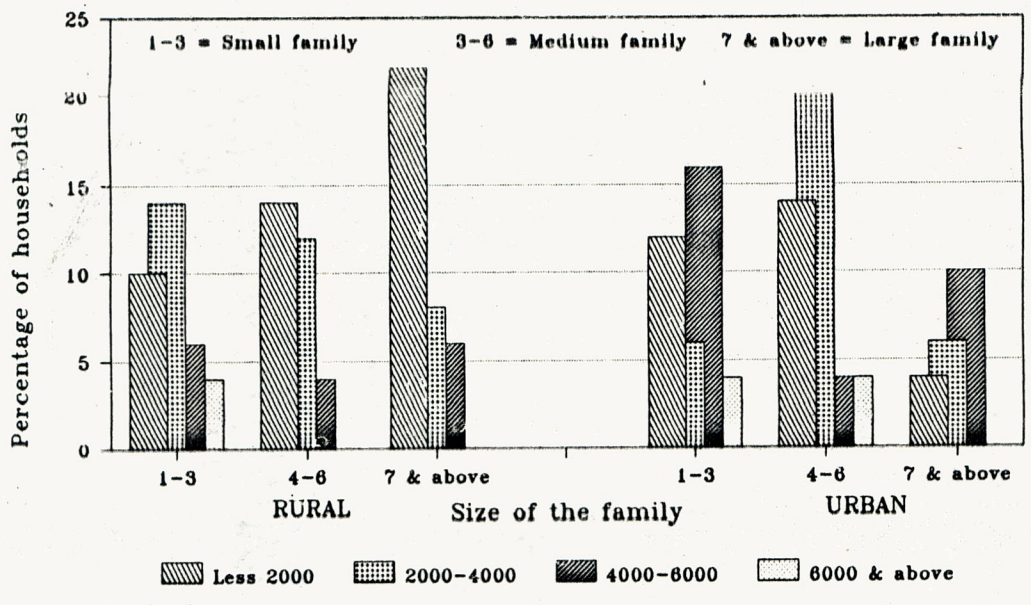

FIG.1. DISTRIBUTION OF HOUSEHOLDS BY MONTHLY INCOME AND SIZE OF THE FAMILY

An analysis of the total family income earned by the families revealed that 46 per cent and 30 per cent among rural and urban categories earned less than Rs. 2000 per month though this income is quite a small amount, residing in owned houses to a certain extent might have given them the ability to meet their monthly expenditure with maximum satisfaction.

True to the conditions as commonly observed it was noted that families residing in the urban areas were found to be in a better economic position than their counterparts in the rural areas. Of the 30 per cent of the urban families belonging to small and medium sized families, earning an income ranging between Rs. 4,000 - 6,000/- only 16 per cennt residing in the rural areas earned similar amounts.

Since the occupations in which the rural and urban families were found to be engaged were quite different it is not rather surprising to note that eight per cent urban families earned an income of more than Rs. 6,000 per month while only four per cent of the rural sample belonged to this category.

7. **Expenditure pattern:**

The three basic necessities food, shelter and clothing together form the most important item in household spending throughout the world (Cherumilam, 1984).

Table VIII and Figure 2 indicate the details on percentage of income spent on various items of expenditure.

TABLE VIII

DISTRIBUTION OF HOUSEHOLDS BY PERCENTAGE OF INCOME AND EXPENDITURE

S.No.	Items of Expenditure (Percentage distribution)		Percentage of households	
			Rural	Urban
1.	**Food:**	Less than 50	44	14
		50 - 75	56	86
		75 and above	--	--
2.	**Clothing:**	Less than 1	96	94
		1 - 5	4	6
		5 and above	--	--
3.	**Household maintenance:**	Less than 5	96	88
		5 - 10	4	12
		10 and above	--	--
4.	**Education:**	Less than 5	66	76
		5 - 10	10	14
		10 and above	--	--
5.	**Medicine:**	Less than 1	32	22
		1 - 5	14	10
		5 and above	--	--
6.	**Recreation:**	Less than 1	54	84
		1 - 5	12	8
		5 and above		
7.	**Miscellaneous:**	Less than 10	14	4
		10 - 20	82	86
		20 and above	4	10
8.	**Transport:**	Less than 10	88	64
		10 - 20	12	36
		20 and above	--	--
9.	**Savings:**	Less than 1	26	36
		1 - 5	--	--
		5 and above	--	--

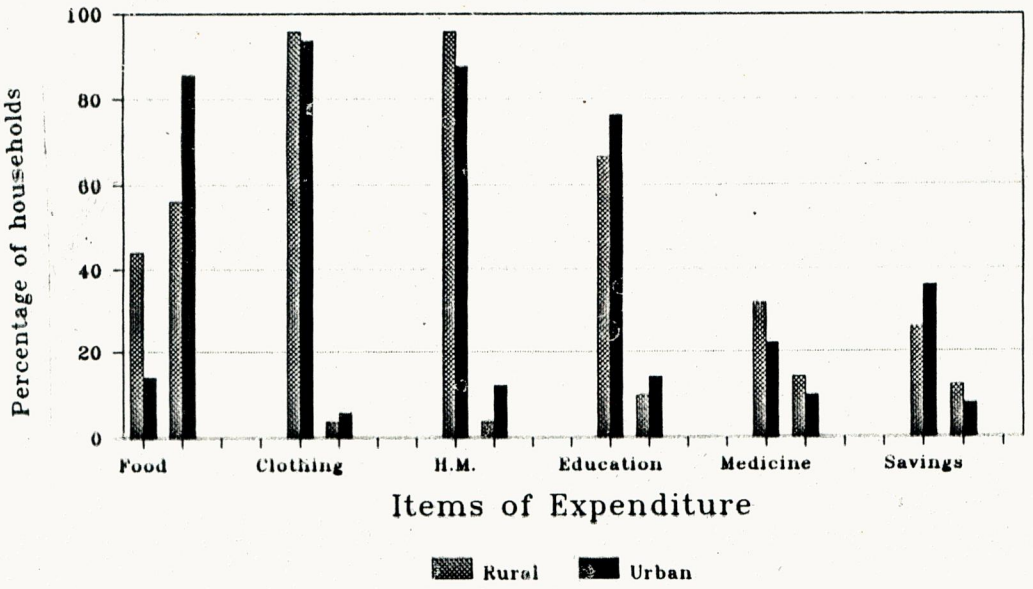

FIG.2. DISTRIBUTION OF HOUSEHOLDS BY PERCENTAGE OF INCOME AND EXPENDITURE

An analysis of percentage of income spent on various items of expenditure revealed the following details:

Food along with shelter and clothing as one of the basic necessities of life is usually given the top priority. Thus out of the total available income 50 - 85 per cent of the sample irrespective of their residence being either in rural or urban were found to be spending 50 - 75 per cent of their income to meet expenditure related to food while almost 44 per cent among the rural sample and only 14 per cent among the urban sample could manage with less than 50 per cent of total income being spent as expenditure for food.

Location of house in a particular set up whether rural and urban exerts its own influence on the expenditure pattern of families necessitating them to maintain their standard of living.

Transportation cost and expenses on miscellaneous items required an expenditure of almost 10-20 per cent of total income. Expenditure on house maintenance and education of children made 60 - 95 per cent of families spend almost five per cent of their total income for the same. Items which necessitated families to spend less than one per cent of total income included clothing, health and that of investment made by them as savings.

B. **Features of Houses Surveyed:**

This aspect covers information on:

1. General features of the house
2. Influence of values in housing
3. Details of the plan of the house and
4. Kitchen details

1. **General features of the house:**

The general features of the house as observed are discussed below:

a) Nature of dwelling:

Among the houses surveyed 78 per cent in urban and 70 per cent among the rural sample were independent houses. Since houses now-a-days are not only a source of shelter for a single family but also become a potential source of income for the family when portion of the same is rented out. Thus it was observed that 30 per cent of the houses in rural set up and 22 per cent in urban category were attached typed and had been constructed that, it could possibly be let out for rent.

b) Type of soil:

Above 90 per cent of the houses in both rural and urban categories were constructed on firm soil while 10 per cent in the rural and only six per cent in urban category had selected reclaimed grounds for construction

of the house thus necessitating a firm foundation for the building.

Analysing in terms of situation of the building it was observed that almost 70 per cent of the houses were on plain ground while elevated ground was opted by 22 per cent of urban and 12 per cent of rural families respectively. With no alternate choice it was not supris-ing to see that eight per cent of urban houses and six per cent of rural houses and six per cent of rural houses were constructed in low lying areas.

2. **Influence of values in housing:**

Values in housing are discussed under:

a) Values in choice and planning for residence and

b) Values in planning various areas.

Table IX reveal the values that influenced choice of residence and also in planning for the dwelling.

TABLE IX

DISTRIBUTION OF HOUSEHOLD BY VALUES THAT INFLUENCED CHOICE AND PLANNING OF RESIDENCE

S.No.	Values	Percentage of households			
		*Choice of residence		* Planning of residence	
		Rural	Urban	Rural	Urban
1.	Economy	88	96	90	84
2.	Comfort	88	96	86	92
3.	Functional	76	54	52	78
4.	Location	64	82	72	56
5.	Prestige	54	82	68	86
6.	Sentimental	44	74	22	16
7.	Social and cultural	26	56	60	14
8.	Symbolic	12	28	4	14
9.	Aesthetic	12	26	14	18

*Multiple responses.

Among the various values listed out economy and comfort were the values that influenced about 80 per cent of the sample both in the choice of residence as well as in planning for he residence. The next among the list of values that were found to be influencing were that of location for 56-82 per cent prestige for 54 - 86 per cent and functional for 52 - 78 per cent of families.

Thus values exert their influence in decision making and can be considered as the core of the management process enabling the effective utilisation of resources available to the family.

b) Values in planning various areas:

Table X indicates the values that influenced in the planning of various areas as stated by the selected sample.

TABLE X

DISTRIBUTION OF HOUSEHOLDS BY VALUES THAT INFLUENCED IN PLANNING VARIOUS AREAS OF THE HOUSE

S.No.	Values	Area											
		*Percentage of households											
		Living		Bed room		Dining		Kitchen		Bath and toilet		Verandah	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1.	Comfort	92	98	68	96	40	56	46	80	42	98	32	72
2.	Efficiency	80	88	70	82	20	34	62	84	22	46	24	72
3.	Knowledge	54	96	42	56	26	48	40	92	30	98	16	60
4.	Health	26	68	72	86	12	24	44	78	36	94	12	26

*Multiple Responses

Above 90 per cent of the sample selected stated comfort as an influencing value in planning for the living area along with (72-86 per cent) and efficiency (70-82 per cent) in planning for the bedroom. A place for comfortable dining was stated by 56 per cent urban and 40 per cent of rural sample.

In planning for the kitchen, knowledge (92 per cent) efficiency (84 per cent) and health (78 per cent) were some of the influencing values as opined by the urban sample. Religion was considered important and influenced the planning of the pooja area for just only 22 per cent of the urban and 14 per cent of the rural sample.

3. **Details of th plan of the house:**

This aspect provides details on:

a) Planning of the residence
b) Modification made in th plan and reasons
c) Location of residence and
d) Details of the house plans

a) Planning of residence:

While 64 per cent of the rural families had built their houses as per their own plans, a similar percentage of urban sample had sought the architect's guidance in drafting the house plans. Almost 84 per cent of the rural

and 70 per cent of the urban sample constructed their houses as per the original plan, the remaining had introduced some minor modifications prior to constructing as per the original plan.

b) Modificatiions made in the plan and reasons:

Analysing some of the modifications made by the selected sample it was noticed that six per cent of the families had improved on their storage facility by increasing the number of shelves provided, while staircase though originally situated outside the house was shifted to the inside by (6 per cent) and (2 per cent) of the rural and urban families respectively for safety reasons.

It was stated that need for additional comfort, privacy and space necessitated four per cent of rural sample and two per cent of the urban sample to change their original plan of having living cum dining to that of planning for a separate dining area.

c) Location of residence:

Table XI and Figure 3 present the various locations chosen by the selected families to build their own houses.

TABLE XI

DISTRIBUTION OF HOUSEHOLDS BY LOCATION OF SITE

S.No.	Location	Percentage of households	
		Rural	Urban
1.	Out of traffic lanes	92	38
2.	Residental area	88	62
3.	Bus stand	14	28
4.	Factory	12	8
5.	Busy street	6	48
6.	Railway station	—	18

Quite a variation did exist in the locations opted by the selected families. Those living in rural areas were fortunate in exercising their choice over the selection of an appropriate location for building their house since a majority of 92 per cent of the rural households were situated in a quite and calm environment being located out of traffic lanes away from the influence of noise and air pollution. At the same time it was observed that 88 per cent of the rural and 62 per cent of the urban houses were built in selected residential areas. This enabled them to reside in a much safer and healthier environment which is also an ideal location for residential purposes.

Though personal choice was exercise in selecting

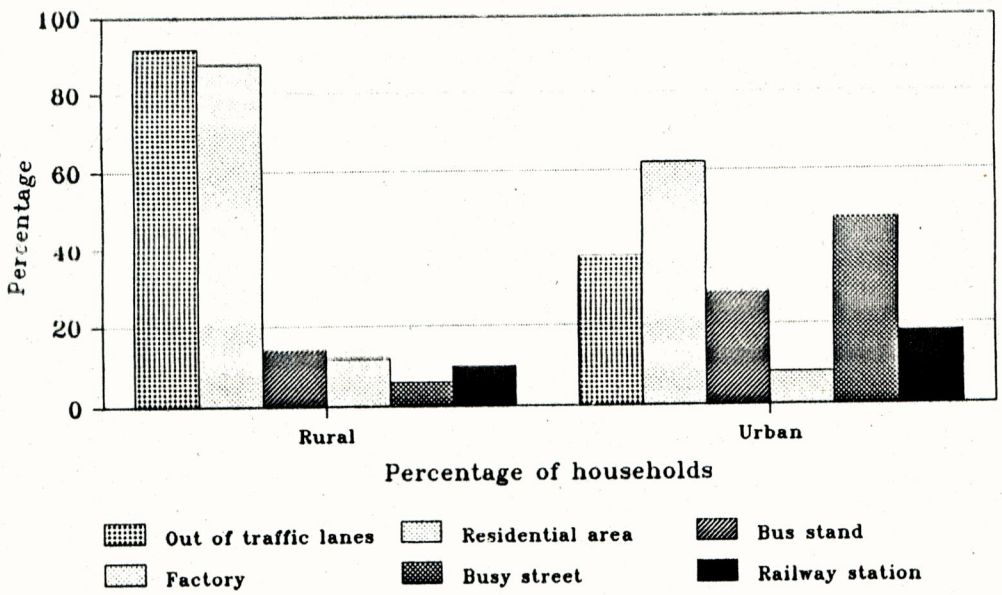

FIG.3. DISTRIBUTION OF HOUSEHOLDS BY LOCATION OF SITE

the site, the data revealed that houses were also located on busy streets (48 per cent and 6 per cent) near bus stand (28 per cent and 14 per cent) near to railway station (18 per cent) and also close to factories (8 per cent and 12 per cent) in the selected urban and rural areas respectively.

Easy access to selected community facilities is at times preferred for efficient management of resources since these facilities in the for of banks (20 per cent) clinics (44 per cent), hospital (10 per cent) church, temple and post office when situated in the near environment is considered as a wise investment in terms of future needs and requirements.

d) Details of the house plans:

The details of the plan is discussed under:

I) Area of the house
II) Room size, number, doors and windos present
iii) Building materials used and
iv) Activities performed and adequacy of space.

i) Area of the house;

Taking into consideration the plinth area of the selected houses it was observed that a majority of 78 per cent in rural and 50 per cent in the urban localities

had constructed their houses within an area ranging between 500-800 sq.ft. while area within 1000 sq.ft. was opted by 44 per cent and 10 per cent of families residing in the urban and rural areas respectively.

Though ample open space is available in the rural areas it was rather surprising to observe families residing in rural areas opting for smaller house designs since none of the selected families had constructed their houses in an area exceeding 1000 sq.ft. in contrast about 10 per cent of families residing in the urban areas desired for bigger constructions with houses being built in an area covering more than 1000 sq.ft.

ii) Room size, number, doors and windows present:

Information on various rooms in relation to number, size and number of doors and windows present in houses are listed in Table XII.

TABLE XII

DISTRIBUTION OF HOUSEHOLDS BY NUMBER OF ROOMS IN RELATION TO SIZE, DOORS AND WINDOWS

S. No.	Rooms	Number								Size						Number of doors						Number of windows					
		Percentage of households																									
		Rural				Urban				Rural			Urban			Rural			Urban			Rural			Urban		
		*a	b	c	Nil	*a	b	c	Nil	*a	b	c	*a	b	c	*a	b	c	*a	b	c	*a	b	c	*a	b	c
1.	Living	100	--	--	--	96		--	--	86	10	4	14	66	20	100	-	-	86	--	--	12	80	8	10	78	12
2.	Bed room	82	8	--	10	68	32	--	--	80	10	-	70	30	--	90	-	-	74	26	--	44	46	-	14	86	--
3.	Dining	40	--	--	60	56	--	--	44	34	6	-	48	8	--	40	-	-	56	--	--	32	8	-	46	10	--
4.	Kitchen	86	--	--	14	100	--	--	--	86	--	-	80	20	--	82	4	-	68	32	--	64	--	-	82	--	--

*a - 1
b - 2
c - 3

*a - less than 10 m²
b - 10 - 12 m²
c - Above 12 m²

*a - 1
b - 2
c - 3

*a - 0 - 2
b - 2 - 4
c - More than 4

Considering the number of various rooms in the selected rural and urban households it was noted that all the houses in the rural and 96 per cent in the urban area had just one living area while only four per cent in the urban households had two areas separately planned for living purposes. Among the households selected 32 per cent in the urban and only eight per cent in the rural had two rooms being used as bedrooms while the remaining had just one room serving the same purpose.

Planning for a separate dining area is not in vogue though this has come into existence in terms of space conservation rather than a trend. It was rather surprising to find that 60 per cent of the houses in the rural and 44 per cent in the urban area had not made any provision for dining area.

Another noteworthy observation made was that 14 per cent houses in the rural area had no kitchen and four per cent did not possess either bath or toilet facilities within the house, on the other hand almost 24 per cent of the houses in the urban area had planned with two rooms which could be used for bath and toilet.

An analysis into the size of various areas revealed that while 86 per cent of the houses had living areas of a size less than 10 m^2 almost 66 per cent of the houses in the urban area had an area of 10-12 m^2 and 20 per cent were almost above 12 m^2 in its measurement.

All the 86 per cent households in the rural area which did possess a kitchen measured less than 10 m^2 while in urban area though 80 per cent had kitchen area of the same size almost 20 per cent had the kitchen area measuring about 10-12 m^2.

Considering the allocation of number of doors and windows in the various activity areas it was observed that 70 per cent of the households had just one door for the living and bedroom in both the rural and urban areas in comparison to the placement of two doors which were observed for both the living and bedroom in almost 20 per cent of the households in the urban area.

Almost 80 per cent of the houses located in both the rural and urban area had the placement of more than two windows for the living while 86 per cent in urban and 46 per cent in the rural households had two windows for the bed room also.

iii) Building materials used:

Table XIII provides a glimpse of the some of the building materials used by the selected families in the various activity areas.

TABLE XIII

DISTRIBUTION OF HOUSEHOLDS BY BUILDING MATERIALS USED IN VARIOUS ROOMS

S.No.	Rooms	Materials used					
		Cement		Mosaic		Tiles	
		Rural	Urban	Rural	Urban	Rural	Urban
1.	**Living:**						
	Floor	94	14	6	86	--	--
	Wall	100	100	--	--	--	--
2.	**Bed room:**						
	Floor	94	14	6	86	--	--
	Wall	100	100	--	--	--	--
3.	**Dining:**						
	Floor	94	14	6	86	--	--
	Wall	100	100	--	--	--	12
4.	**Kitchen:**						
	Floor	94	14	6	86	--	--
	Wall	100	100	--	--	78	--
	Countertop	82	34	4	46	--	--
5.	**Bath and Toilet**						
	Floor	94	14	6	86	--	--
	Wall	100	100	--	20	64	--

Though a variety of materials are available for basic construction and finishing purposes it was rather surprising to observe that cement was still found to be used by majority of 90 per cent of families irrespective of the location whether urban or rural. The next in the list was mosaic used as a flooring material in almost 80 per cent of the households in all the rooms including bath and toilet in the urban area.

Ceramic tile as a finishing material was used for the walls in the kitchen (78 per cent) bath and toilet (64 per cent) and for the dining (12 per cent) of the selected families residing in the urban area. Among the other materials used cuddapah was found to be used as a counter top material in only 20 per cent of the urban kitchen.

iv) Activities performed and adequacy of space:

Though various rooms are designed for specific activities it is often observed that a specific room would be used for multi-varied activities on particular occassions.

Table XIV and Figure 4 provide information on the activities performed in various room and its adequacy in terms of space available as opined by the homemakers.

TABLE XIV

DISTRIBUTION OF HOUSEHOLDS BY ACTIVITIES PERFORMED AND ADEQUACY OF SPACE IN VARIOUS ROOMS

S.No.	Activities	Living (Percentage of households)				Bed room (Percentage of households)				Kitchen (Percentage of households)			
		Adequate		Not Adequate		Adequate		Not Adequate		Adequate		Not Adequate	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1.	Relaxing	20	44	80	56	10	32	90	68	--	--	--	--
2.	Sleeping	--	--	--	--	8	44	92	56	--	--	--	--
3.	Studying	--	--	--	--	16	30	84	70	--	--	--	--
4.	Cooking	--	--	--	--	--	--	--	--	6	30	80	70

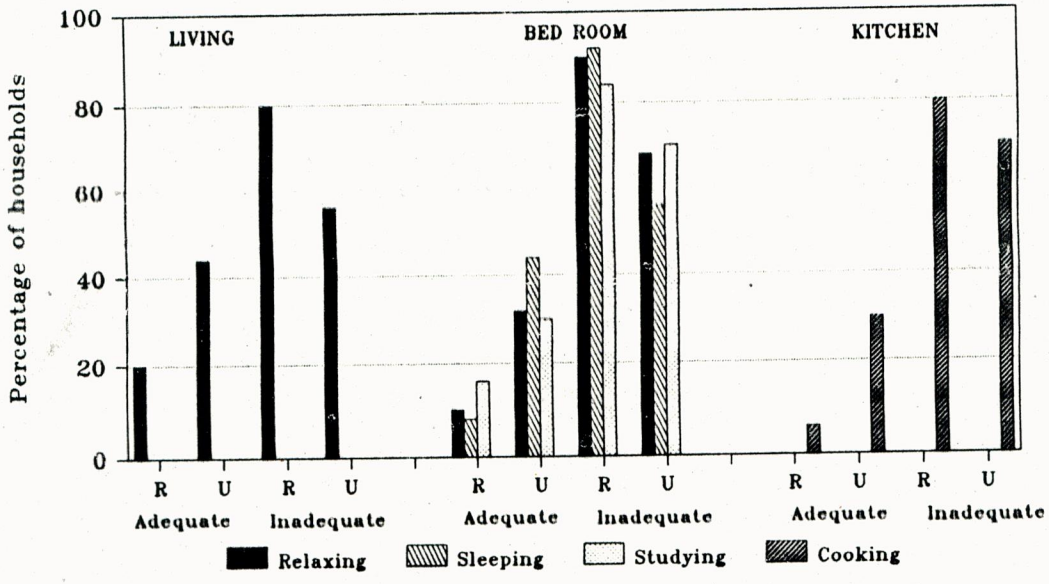

FIG.4. DISTRIBUTION OF HOUSEHOLDS BY ACTIVITIES PERFORMED AND ADEQUACY OF SPACE IN VARIOUS ROOMS

Living rooms among the selected families was mainly used for relaxing and in terms of its adequacy 44 per cent in the urban and 20 per cent in the rural areas considered it just adequate while almost 80 per cent and 56 per cent expressed the inadequacy of using this area for living among both the rural and urban families.

On the other hand the bedroom in addition to being used for sleeping also lent itself for relaxing and also for study prupose by the children. In terms of adequacy of the available space in the bed room 92 per cent in the rural and 56 per cent residing in the urban area stated that it was inadequate.

Kitchen due to sentimental reasons or due to lack of space was used only for cooking and the same though designed and plannned by families was found to be adequate only for 30 per cent of the urban and six per cent of rural households while the remaining stated that the available space was inadequate.

4. Kitchen details:

The kitchen is considered as the nerve centre of the house where the homemaker is predominant figure, spending a major part of their time (Rajagopal and Kumari, 1972).

Working with food requires careful selection, arrangement and use of equipment including the chulah and convenient arrangement of work areas and storage.

The details on kitchen as observed in selected houses are discussedbelow:

a) Location of kitchen:

It was noticed that all the houses in the urban area had a separate kitchen while in the rural area 86 per cent had a separate kitchen and the remaining were planned as part of another room.

b) Shape of the kitchen:

In a majority of 80 per cent of the rural houses the kitchen had a platform constructed along with the chulah and thus acted as a single raised platform for preparation activities related to cooking.

Planning the kitchen space with the three work centres viz. for cooking, cleaning and preparation resulted in either the planning of L shaped (56 per cent) and U shaped (4 per cent) kitchen as observed in selected urban households.

It was hartening to observe that people reesiding in their own houses had the choice and ability of planning their kitchen with raised platform that acted as counters, since research findings indicate that standing to work following good posture reduces fatigue and improves efficiency and the characteristic squatting posture is inconvenient and cumbersome leading to health problems (Dhillon, 1981).

c) **Facilities provided in the kitchen:**

Facilities like provision of window, high level fixed ventilators, smoke outlet and exhaust fan played a significant role in maintaining a clean kitchen which can preserve the health of the family members particularly that of the homemaker.

It was observed that windows were installed in both the urban and rural kittchen (82 per cent and 64 per cent) while separate provision for smoke outlet was also made in 46 per cent rural and 24 per cent of urban kitchens.

In addition to the high level fixed ventilators in 86 per cent of urban kitchen 22 per cent in the rural had opted for the installation of the exhaust fan for a cleaner and cooler working environment in the kitchen.

d) Storage facilities:

Perishable items like vegetables, fruits, milk, cooked food, including meat and fish was just left outisde, keeping it in vessels with a lid, used as a cover was the common method observed among families residing in rural while open basket for storage of vegetables and fruits was of common practice among (86 per cent) rural and (60 per cent) urban households. Meat safe was also used as a storage unit for storage of vegetables, fruits and cooked food by less than 50 per cent of the rural and urban households respectively.

Refrigerator as a labour saving and preservation device was a boon for the urban homemaker being efficiently used by almost 98 per cent of them

C. Nutritional and Health Status:

The health status of man or woman is the outcome of the interaction between his or her internal and the external environment (Audinarayana, 1987).

This aspect of the study provides information on:

1. Nutritional status
2. Heath status of the selected families and
3. Sanitation.

1. Nutritional status:

The nutritional status of the selected families residing in both the rural and urban areas were studied under the following headings:

a) Relationship between height and weight of the heads of families:

Table XV provides details on the height and weight of the selected heads of families in relation to their age.

TABLE XV

DISTRIBUTION OF HOUSEHOLDS BY HEIGHT, WEIGHT AND AGE OF HEADS OF FAMILIES

S.No.	Age (Yrs.)	Height in (cms)								Weight in (Kgs)							
		Percentage of households															
		Less than 155		155-165		165-175		Above 175		Less than 55		55-65		65-76		Above 75	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1.	Below 30			2	4	6	8	2	-			8	12	2	--	--	--
2.	30 - 40	NIL	NIL	10	-	8	10	2	2	NIL	NIL	6	10	14	--	--	2
3.	40 - 50			6	4	38	30	-	-			6	4	38	26	--	4
4.	Above 50			2	6	24	28	-	8			24	38	2	--	--	4

A minimum height of above 175 cms was noted only among 10 per cent of heads residing in the selected urban families, while a majority of 68 per cent of the heads in the age range 40-50 years were of a height ranging between 165 - 175 cms.

Considering the weight in terms of Kgs it was noticed that majority of 64 per cent of heads in the age range 40-50 years were of a weight ranging between 65-75 Kgs, while only less than 10 per cent of the heads between the age group 30-50 years and above were of a weight of above 75 Kgs.

ICMR (1989) considers the reference body weights of Indian adult men of age 20-50 years to be 60 Kgs. In the present study almost 50 per cent of the adults irrespective of their place of residence were found to be maintaining their weight as per the standard requirements.

b) Relationship between height and weight of homemakers:

The relationship between the height and weight with that of their age of selected homemakers is given in Table XVI.

TABLE XVI

DISTRIBUTION OF HOUSEHOLDS BY HEIGHT, WEIGHT AND AGE OF HOMEMAKERS

S.No.	Age (Yrs.)	Height in (cms)								Weight in (Kgs)							
		Percentage of households															
		Less than 155		155-165		165-175		Above 175		Less 55		55-65		65-75		Above 75	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1.	Below 25	4	-	14	6	4	6			6	4	16	8	--	--		
2.	25 - 35	2	6	10	8	12	-	NIL	NIL	4	2	16	4	4	8	NIL	NIL
3.	35 - 45	14	6	10	22	16	8			2	4	16	20	22	12		
4.	Above 45	4	6	6	18	4	14			-	-	10	30	4	8		

Analysing the height and weight of selected homemakers with that of their age revealed that though a majority were of a height ranging between 155-165 cms and in this group 32 per cent of them were in the age range 35-45 years.

Considering the weight of the selected sample it was noticed that a majority were of a weight ranging between 55-65 Kgs while among them in this group 40 per cent of them were of a age above 45 years.

ICMR (1989) considers the reference body weight of Indian adult women of age 20-50 years to be 50 Kgs. Keeping an additional weight of 5 Kg it was observed that only 22 per cent of the homemakers in the present study weighed less than 55 kgs.

c) Number and sex of children:

Almost 50 per cent of the families had opted for a small family irrespective of their place of residence. This is quite encouraging since not much of difference could really be observed among the rural and urban sample. Though it is categorically stated than rural mothers are illierate and quite unaware of the family planning methods available that need to be understood and adopted by them.

The present study revealed that even the rural mothers had become aware of the advantages of having a small family and thus opted for the same. But it was rather surprising to see that there were families still with three or more than three children in both the rural and urban families though the percentage was comparatively less.

Families did exist with a single child as observed among urban (38 per cent) and rural (34 per cent) respectively while only two per cent of the families had no issue in the family.

Quite a difference existed in the sex of the child within each group, since among the children 45-47 of them were females while 40-42 of them were male children, a rise in the female sex, though the trend in the present day society is for preferring a male child than a female child.

d) Height and weight of children:

Among children belonging to the age range 0-5 years it was seen that almost 55 per cent were of a height less than 55 cms while almost 45 per cent of them weighed less than five Kgs.

In the age range 5-10 years while 30 per cent of the children were of a height of less than 115 cms, almost 45 per cent were in the height ranging between

125-135 cms and less than 30 per cent weighed less than 20 Kgs.

In the adolescent age group (10-15 years) it was noticed that a majority of 80 per cent of the children in the urban were of the height ranging between 150-160 cms while almost the same percentage weighed between 50 Kgs. Since the weight of the children among the selected families indicated quite a variation no reference to the ICMR standards could be established.

e) Meal pattern:

The meal pattern adopted by the selected families was studied by recalling the menu planned for two days prior to the interview by the homemakers. The details of the meal pattern were analysed and categorised under the basic food groups as cereals pulses, vegetables.

Among the variety of foods planned and cooked for during the different meals it was seen that cent per cent of families included cereals for breakfast, lunch and dinner, while pulses were included by almost 80-90 per cent of the families for all four meals irrespective of their place of residence, either in rural or urban This might be because of the influence of traditional, cultural and social system as commonly observed in the society within a particular state. Tea and coffee prepared with the additiona of milk had a more permanent place among the urban families rather than the rural.

Though it is of common knowledge that rural areas are a site for fresh fruits, vegetables and also milk products it was rather surprising to see that the consumption of the same was comparitively less. Inclusion of fruits as part of their diet was quite rare among the rural families while 52 per cent and 22 per cent of them residing in the rural and urban families included fruits for dinner or evening tea respectively. Forty four per cent of the urban households consumed meat, fish or poultry for lunch compared to 28 per cent of rural households. Thus food consumption pattern is one aspect which always keeps changing sometimes drastically due to a number of influencing factors.

2. **Health status:**

The details on health status of the members among selected families and aspects contributing to their health are discussed below:

a) Health record of family:

The health record of the (recall for the past two years) was requested of the homemaker and the details of the same is presented in Table XVII.

TABLE XVII

DISTRIBUTION OF HOUSEHOLDS BY ONSET OF INFECTION IN RELATION TO AGE OF FAMILY MEMBERS

S.No.	Age range (Yrs.)	Percentage of households													
		Diahrroea		Typhoid		Chicken pox		Measles		Fever		Cough		Cold	
		Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
1.	**Head**														
	Below 30	10	40	4	14	8	10	22	8	8	22	2	--	20	10
	30 - 40	12	16	12	2	12	--	4	4	42	--	-	6	30	40
	40 - 50	--	44	20	36	--	2	68	70	20	4	4	10	40	20
	Above 50	--	--	--	--	--	--	--	--	--	--	-	--	--	--
2.	**Homemaker**														
	Below 25	4	--	12	10	12	40	16	12	14	24	18	12	20	14
	25 - 35	10	20	6	14	14	20	8	18	--	6	4	4	40	60
	35 - 45	20	2	8	--	--	--	--	--	--	--	--	--	--	
	Above 50	30	4	4	8	8	4	10	2	2	40	70	80	10	20
3.	**Children**														
	Below 5	12	18	12	6	18	12	2	14	20	34	60	40	52	50
	5 - 10	14	50	14	--	10	20	4	12	12	32	10	20	22	12
	10 - 15	42	12	8	2	20	48	14	8	40	4	12	12	4	24
	15 - 20	14	2	10	4	14	10	16	10	28	2	8	6	2	6
	Above 20	2	4	4	6	10	8	8	2	2	20	2	4	6	4

Analysing the general health status in relation to the onset of infections among the families selected it was observed that almost 60 per cent of the adults specially the heads of families were prone to almost all the infections irrespective to the age group to which they belonged.

Fever, cough, cold and diahrroea were the common illness observed among the homemakers though comparatively less than 40 per cent of them have stated to suffer from the other major illness like thus revealing the fact that homemakers were in better health than the heads of families.

Infecttions were most common among the children of the younger age group (0-10 years) than among the older children of (15-20 years). Cold, cough and diahrroea were of common occurance among the children in the younger age group. Ebrahim (1982) refers to Kamath et al. (1969) study of 110 families in South India 7325 illness episodes (10.6 illness per person year) were recorded in period of 21 months. Respiratory infections and diahrroea were responsible for 36.7 per cent and 13.3 per cent respectively of all illness. Even though illness was more frequent in younger age groups, parents also were affected in a appreciable manner.

c) Reasons for onset of illness:

Table XVIII list the major reasons stated by the homemakers for the cause of illness among the family members.

TABLE XVIII

DISTRIBUTION OF HOUSEHOLDS BY REASONS FOR ONSET OF ILLNESS

S.No.	Reasons	Percentage of Households	
		Rural	Urban
1.	Pollution of		
	a) Air	68	98
	b) Water	74	96
	c) Environment	26	98
	d) Noise	14	92
	e) Food	..	98
2.	Not immunised	56	94
3.	Heredity	34	96
4.	Location of house	24	92
5.	Dirt	16	78
6.	Dust	10	80
7.	Medicine	6	90
8.	Cotton	--	12
9.	Parthenium	--	6
10.	Allergic to selected foods	--	92
11.	Drinking water	--	98

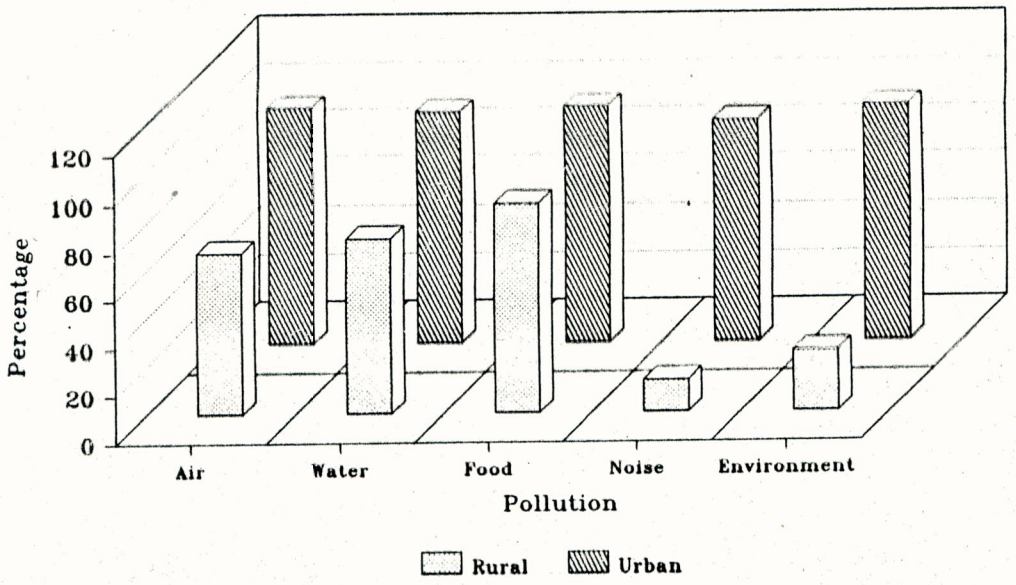

FIG.5. DISTRIBUTION OF HOUSEHOLDS FOR ONSET OF ILLNESS DUE TO POLLUTION

Among the selected families about (70-80 per cent) among the rural and above (90 per cent) among the urban sample referred to pollution of water and air as the (Figure 5). Lack of immunity has resulted in rendering the family members allergic to selected foods. As observed 92 per cent of the urban households the location of house in unsafe and unhygenic surroundings has made them be easily infected.

The growth of parthenium and cotton dust particles in the atmosphere in urban areas were stated as some of the causes for the onset of illness in the family specially in relation to throat, lung and other respiratory infections. Occurrence of food poisoning was stated only by six per cent and four per cent of families in the rural and urban areas respectively.

3. **Sanitation:**

Audinarayana (1987) is of the opinion that an adequate supply of pure dirnking water and sanitary disposal of human excreta are not only essential for the prevention of some of the common diseases but also for the provision of facilities for a decent standard of living.

The sanitary conditions prevailing in the selected rural and urban families was studied with regard to availability and storage of water supply, general cleaning, and waste disposal methods adopted.

a) Source and storage of water:

Table XIX provides information on the different sources of water supply and the methods of storage adopted by the selected families.

TABLE XIX

DISTRIBUTION OF HOUSEHOLDS BY SOURCE: STORAGE AND USE OF WATER

S.No.	Use	Percentage of households														
		Rural							Urban							
		Source				Storage			Source				Storage			
		*W	BW	C	L	UG	OH	V	W	BW	C	L	UG	OH	V
1.	Cooking	64	40	86	70	30	12	90	6	10	98	50	62	92	80
2.	Bathing	76	82	36	24	34	16	92	26	76	80	40	60	90	76
3.	Drinking	--	--	80	98	30	14	90	--	--	98	92	70	82	90
4.	Cleaning	30	62	24	6	24	20	60	70	82	12	10	90	84	12
5.	Washing clothes	72	60	10	22	14	12	80	64	52	98	60	90	82	20
6.	Gardening	90	82	6	4	28	14	90	88	92	10	6	90	88	6

*W - Well BW - Borewell; C - Corporation Supply; L - Lorry; UG - Underground; OH - Overhead tank
V - Vessel

The total quality of water used by a household obviously depends upon the ease with which water can be obtained.

Above 80 per cent of the families (both rural and urban) had the advantage of not only the supply of corporation water but could also avail it for cooking (98 per cent) and (86 per cent) for bathing (80 per cent).

Sixty per cent of the families living either in rural or the urban set up had to depend on borewell water for cleaning and washing clothes while 92 per cent in the urban area had the twin advantage of having both the corporation water as well as borewell water. Gardening was also given importance by the homemakers, since whatever little greenery they had around the house was looked after well. It was seen that 92 per cent of urban families used borewell water while 90 per cent of rural families used well water for watering the garden.

Intense scarcity of water during summer made people plan for its storage. The possible means of storing water was either by underground tank (more than 60 per cent) in the urban area and by (less than 30 per cent) in the rural area. The facility of providing

an overhead tank was made possible by more (80 per cent) in the urban area and less than (20 per cent) in the rural area.

Water needed for daily cooking and cleaning in the kitchen was stored in vessles (Kudam) or in larger containers as is the practice of the people of this state.

The relationship between water use and ease of availability can be seen from the following figures which reveal drawing water by hand resulted in a daily consumption of just 20 litres, while piped to a single tap in the house it was 45 litres in contrast when water was piped to sink, wash basin, bath and toilet together with domestic water heating system consumption shooted up to 150 litres or more per day (Ebrahim, 1987).

b) Cleaning:

This aspect includes activities such as sweeping, mopping, dusting and removal of cobwebs as was commonly adopted by the homemakers in maintaining a clean and hygienic interior environment.

Considering the various rooms the main areas of living sleeping, dining and kitchen were cleaned daily. In addition to sweeping, mopping was done daily to remove minute particles of dust as was the practice

followed by both the rural and urban homemakers. Dusting of furniture and removal of cobwebs was done once in a week by almost 80-100 per cent of the families.

c) Waste disposal:

Schaefer (1987) states that communicable diseases can be reduced if housing provides for safe water supply, sanitary excreta and garbage disposal, adequate drainage of surface waters and necessary facilities for domestic hygiene.

Table XX throws light on various methods adopted by the households in disposingof the waste both solid and liquid.

TABLE XX

DISTRIBUTION OF HOUSEHOLDS BY WASTE DISPOSAL METHODS ADOPTED

S.No.	Method	Percentage of households					
		Human waste		General solid and liquid waste		Kitchen waste	
		Rural	Urban	Rural	Urban	Rural	Urban
1.	Open drainage	60	20	--	--	--	--
2.	Septic tank	40	80	--	--	--	--
3.	Municipality dust bins	--	--	40	98	46	98
4.	Open yard	--	--	60	20	82	20
5.	Burning	--	--	--	--	56	10
6.	Manure pit	--	--	--	--	10	--

Sixty per cent of rural households used open drainage for disposal of human waste. This method is one of the most unhygienic since stagnant water serves to become a breeding place for mosquitoe However 80 per cent of urban households had septic tanks for the disposal of human waste.

Awareness among the people on the importance of keeping their surroundings clean was evident from the fact that 98 per cen tof urban households used the municipality dustbins for dumping solid waste while 60 per cent of rural households used the open yards for this purpose, this included disposing off the waste from the kitchen also.

D. Adequacy of the Existing Residential Environment:

The adequacy of the residential environment in the selected households observed using a three point scale is presented under the following heads in terms of adequacy of:

1. Livable space
2. Storage facilities
3. Ventilation and and
4. General facilities and services.

1. Livable space:

The adequacy of the livable space in the various activity areas as observed is discussed in Table XXI.

TABLE XXI

DISTRIBUTION OF HOUSEHOLDS BY ADEQUACY OF LIVABLE SPACE IN RELATION TO SIZE OF FAMILY

S.No.	Activity Area	Percentage of households																	
		Size of family																	
		Rural									Urban								
		1-3			4-6			7 and above			1-3			4-6			7 and above		
		*A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
1.	Living	6	16	12	4	12	14	-	4	32	8	14	16	4	10	28	6	4	10
2.	Bedroom	-	10	24	-	4	26	-	-	36	10	10	18	-	4	26	-	6	14
3.	Dining	-	14	20	-	10	20	-	-	36	--	16	22	-	10	22	-	-	20
4.	Kitchen	-	14	20	-	12	18	-	4	32	--	10	28	-	10	32	-	6	14

*A - Very much adequate B - Just adequate C - Inadequate

It was noticed that not much importance was given to planning of space in the various areas considering the size of the family.

Though living space was very much adequate for only less than 10 per cent in both the rural and urban households for a family with 1-3 members while with increasing family size it was observed that living space was comparatively reduced in almost 10-30 per cent of the households.

Though bedroom space was rated as being very much adequate in almost 10 per cent of the urban households with small family while for medium and large sized families the sleeping area was either just adequate as observed among all the rural houses and in less than 10 per cent of urban families.

Dining area was carefully planned with just the adequate space as observed among less than 20 per cent households while for larger families even this space for dining was inadequate as planned by 36 per cent rural and 20 per cent urban families.

Kitchen space was found to be just adequate for less than 10 per cent of families while it was observed to be inadequate in almost 20-30 per cent of both rural and urban medium and large sized families.

Statistical Analysis using the Karl Pearsons Coefficient of Correlation revealed that adequacy of livable space provided in living, bedroom and dining among both rural and urban families was related to the size of family(Appendices V A, B, VI A, B and VII A, B). Considering space provided in the kitchen positive relationship existed between adequacy of space and size of family for the kitchen planned in rural area only, while for the kitchen in urban areas there was no relationship between the adequacy of space provided in the kitchen and size of family (Appendix VIII A, B).

2. **Storage facilities:**

Table XXII and Figure 6 provide information on the adequacy of storage facilities provided in the various areas within the residential environment.

TABLE XXII

DISTRIBUTION OF HOUSEHOLD BY ADEQUACY OF STORAGE FACLITIES PROVIDED

S.No.	Area	Percentage of households					
		Very much adequate		Just adequate		Inadequate	
		Rural	Urban	Rural	Urban	Rural	Urban
1.	Living	-	12	22	12	78	76
2.	Bedroom	-	--	10	6	90	94
3.	Dining	-	--	10	12	90	88
4.	Kitchen	-	--	4	14	96	86

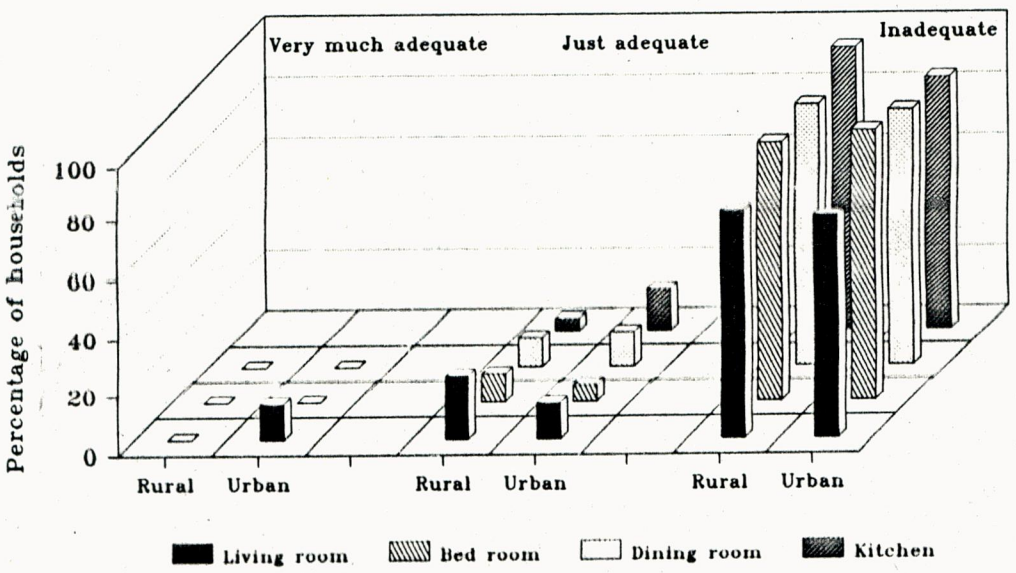

FIG. 6 DISTRIBUTION OF HOUSEHOLDS BY ADEQUACY OF STORAGE FACILITIES PROVIDED IN VARIOUS ROOMS

Analysing the adequacy of storage facility provided it was seen that in only 12 per cent of urban families provision made for storage in the living area was very much adequate while among 78 per cent of households in both rural and urban provision made for the same was inadequate.

Storage facilities provided, for in the sleeping, dining and kitchen was just adequate among less than 12 per cent of the selected families, while almost 80-90 per cent of the families were found to have given no priority for provision for storage in these areas.

3. **Ventilation and aeration:**

Table XXIII reveals the provisions made for ventilation in the selected households.

TABLE XXIII

DISTRIBUTION OF HOUSEHOLDS BY ADEQUACY OF VENTILATION AND AREATION PROVIDED

S.No.	Area	Percentage of households					
		Very much adequate		Just adequate		Inadequate	
		Rural	Urbam	Rural	Urban	Rural	Urban
1.	Living	10	6	14	10	76	84
2.	Bedroom	--	-	20	14	80	86
3.	Dining	--	-	10	20	90	80
4.	Kitchen	--	-	--	--	100	100

Ventilation and aeration provided in the various households was very much adequate in the living area as seen among 10 per cent of both rural and urban families. Only less than 20 per cent of the households both among the rural and urban families were found to have been given adequate thought to provide this facility while planning their houses. It was surprising to see that though houses surveyed were owned houses and had been built with adequate time and thought they were still lacking in terms of ventilation and aeration specially in areas such as dining and kitchen (90-100) per cent among both the rural and urban households respectively.

4. General facilities and services:

Adequacy of selected general facilities and services that are essential in the houses were assessed and the details of the same is given in Table XXIV.

An analysis of the above essential facilities and services provided in the selected households brought to focus that in almost 50 per cent of the urban households provisions made for the availability of artificial light was very much adequate while in almost 70-80 per cent of the houses provision for daylight was inadequate.

Though houses were planned and built it was rather surprising to find that these families belonging to the middle income group had not given much thought to space requirrements for children's play and for the parking of vehicles.

Though adequate space was available for flower garden and kitchen garden it was observed that none of the selected families considered it important to have any plan made for landscape garden both among the rural and urban on the other hand provision made for kitchen garden as seen among urban (32 per cent) and rural (26 per cent) of the households surveyed was found to be very much adequate.

E. **Evaluation of Household Environment in Relation to Standard Selected:**

Any family living in housing conditions so over crowded and so unfit that, it is unable to lead a normal family life is 'homeless'. Therefore, an attmept was made to evaluate the selected 10 houses in terms of

the adequacy of the existing household environment in relation to selected standard among both rural and urban families.

The details on the evaluation using the check list is given in Table XXV.

TABLE XXV

DISTRIBUTION OF HOUSEHOLDS BASED ON ADEQUACY OF HOUSEHOLD ENVIRONMENT IN RELATION TO STANDARD SELECTED

S.No.	Aspects	Percentage of households			
		Rural		Urban	
		Yes	No	Yes	No
1.	**Location of the house Free from:**				
	a) Dust	30	70	10	90
	b) Smoke	30	70	20	80
	c) Smell	10	90	30	70
	d) Excessive noise	60	40	50	50
	e) Traffic	20	80	60	40
2.	At least one living room	100	--	100	--
3.	**Rooms provided with atleast 2 windows:**				
	a) Living	80	20	80	20
	b) Bed room	80	20	80	20
	c) Dining	10	90	40	60
	d) Kitchen	40	60	10	90
4.	Adequate daylight	10	90	40	60
5.	Separate kitchen	50	50	100	--
6.	Separate bath and toilet	60	40	80	20
7.	Sanitary disposal of garbage	80	20	90	10
8.	Dry soil	80	20	90	10
9.	Pucca floors	50	50	100	--
10.	Strong walls	90	10	100	--

Selected aspects related to the location of the house listed in the check list for the presence or absence revealed that 60 per cent of the houses irrespective of rural or urban set up was situated away from excessive noise.

Considering space in terms of its availability and requirements in the constructed houses it was noticed that as per the standard requirement all the houses of selected families had provided a minimum of one room for living purposes. The main activity areas like the living and the bedroom were provided with two windows for adequate ventilation and aeration in almost 80 per cent of the houses, on the other hand the kitchen and dining were provided with just one window in almost 90 per cent of the houses. More over the provision of windows also depended upon the plan originally made.

Almost 80 per cent of the families had planned their houses with separate kitchen, bath and toilet facilities. It was rather surprising to note than 90 per cent of the households adopted various methods for sanitary disposal of garbage.

The study revealed that due consideration was given by the residents in selecting the site for the construction of their house since almost 90 per cent of the

houses were able to maintain the soil dry. It was also seen that all the houses had fairly pucca floors and strong walls.

Since construction of houses is a life time investment it was observed that all the selected families had given due importance in making the cnstruction strong and durable. This evaluation brings to light the fact that careful thought was given in the selection of a suitable environment for the location of the house and in structural planning of the house in terms of providing space for various activities. Education and motivation of the parents and the children is thus the need of the hour to enable them to use their homes in ways that promote their own health and create a livable and healthy environment in the community.

Thus it can be concluded that even the best of structures will not protect or promote the health of its occupants if they do not use the facilities safely and maintain the housing environment in such a way as to defend it against health hazards.

SUMMARY AND CONCLUSION

V. SUMMARY AND CONCLUSION

A house, no doubt performs the basic functions like providing protection against the extremities of weather, wild animals, human enemies and a safe place for storage of valuables, but it is also a place where healthy, physical, mental and social life can be achieved. Thus housing is the provision of houses not just shelters organised in self sufficient communities where family life can be lived in an integral manner.

The present study on "**Adequacy of Household Environment and Living Conditions of Selected Families**", was aimed at assessing the housing patterns of families, their living conditions in terms of adequacy of existing household environment and in general their nutrition and health status. Since families selected were residing in their own houses an attempt was made by the investigator to evaluate the adequacy of existing household environment based on standard selected.

This study was conducted in and around Coimbatore city selecting fifty rural families and fifty urban families. The survey was conducted using interview and observation schedule. Details collected included informaton on socio-economic status of the family, features of the house, nutritional and health status and adequacy of the existing residential

envirorment. Evaluation of household environment with the help of a selected standard was also done by formulating a check list.

The major findings of study are summarised under the following major headings:

A. **Socio-Economic Status:**

The trend in setting up nuclear family was evident among the selected families in both rural and urban areas. Seventy four per cent in rural and 66 per cent among the urban sample were residing as nuclear families.

The survey brought to light the fact that 42 per cent in urban and 30 per cent among the rural families were medium sized families consisting of 4-6 members while only 30 per cent and 20 per cent in the rural and urban families respectively had large families of more than six members.

An analysis of the total family income earned by the families revealed that 46 per cent and 30 per cent among the rural and urban categories earned less than Rs. 2000 per month while 30 per cent of urban families earned an income ranging between Rs. 400-6000. Only 16 per cent residing in rural areas earned the

same. It was also seen that eight per cent of families in urban areas earned an income of more than Rs. 6000 per month and only four per cent of the rural sample belonged to this category.

B. **Features of Houses Surveyed:**

Among the houses surveyed about 70 per cent of the houses were independent houses among the urban and rural samples respectively.

Regarding selection of site for house construction 90 per cent of the houses in both rural and urban categories were constructed on firm soil while 10 per cent in the rural and six per cent in the urban category had selected relcaimed grounds for construction.

Among the various values listed out economy and comfort influenced 80 per cent of the sample both in the choice of their residence as well as in planning for the residence. In making the plans 64 per cent of the rural families had built their houses as per their own ideas, while a similar percentage of urban sample had sought the architects' guidance in making the house plans.

Location of the house plays an important role in housing. Ninety two per cent of rural households were located out of traffic lanes while sixty two per cent of the urban houses were also found to be built

in residential areas within the city limits.

Space available analysed in terms of adequacy revealed that 44 per cent of the urban and 20 per cent in the rural families considered living room space just adequate. Bed room in addition to being used for sleeping also lent itself for relaxing and also for studying by the children. Ninety two per cent in rural and 56 per cent residing in urban areas stated that, bed room space was inadequate. Kitchen was found to be adequate only for 30 per cent of the urban and six per cent of rural households.

Though a variety of building materials are available in the market next to cement in the list, mosaic was used for flooring in almost 80 per cent of the household in all the areas including for bath and toilet in urban areas.

Ceramic tiles as a finishing material was used for the walls in the kitchen (78 per cent) bath and toilet (64 per cent) and for the dining by (12 per cent) of the selected families residing in the urban area. Among he other materials cuddapah as a counter top material was used in only 20 per cent of the urban kitchen.

C. **Nutritional and Health Status:**

Among the variety of foods cooked for during the different meals it was observed that, cent per cent of families opted for cereals, pulses and vegetables for breakfast, lunch and dinner. Inclusion of fruits was rare among rural families while 52 per cent and 22 per cent of them residing in rural and urban areas included fruits for dinner or evening tea respectively.

The health record of the family (recall for past two years) requested of the homemaker revealed that among various infections it was stated that almost 60 per cent of the adults specially the heads were prone to almost all the infections irrespective of age group to which they belonged.

Fever cough, cold and diahrroea were the common illness observed among the homemakers. Infections were most common among the children of the younger age group (0-10 years) than among the older children of (15-20 years). Cold, cough and diahrroea were of common occurrence among the children in the younger group. Among the major reasons stated for onset of illness contamination of food, water, and pollution were stated by majority of rural and urban homemakers.

Inspite of water scarcity, majority of the families in both rural and urban areas were fortunate to have corporation water supply for use in cooking and for bathing. Regarding waste disposal majority of households in urban areas had septic tank for disposal of human waste and dust bins for dumping the kitchen and general waste.

Observation using the three point scale revealed that living and bed room space was adequate for small family, while space seemed inadequate as the family size increased. Dining space was just adequate for majority of families, kitchen space was inadequate for 20-30 per centt of the both rural and urban medium and large sized families. Space for storage, was inadequate in majority of rural and urban households in all the main areas such as living, bed room and kitchen

The availability of artificial light was very much adequate in 50 per cent of urban households while in 70-80 per cent of households provision for daylight was inadequate.

A check list framed containing selected standard was utilised to evaluate the household environment among 10 rural and 10 urban households. Evaluation revealed that all the houses selected had the facility of providing minimum of one room for living purpose. The main activity areas like living and bed room were provided with two windows. Almost 80 per cent of

households had separate kitchen and bath and toilet facilities, and these houses were constructed on firm and dry soil. Thus this evaluation brought to focus that due thought was given by the selected families in constructing their houses, in terms of adequacy thus meeting the standard requirements.

In the context of the pace of developmental changes experienced in all phases of human activities there is no doubt in stating that the meaning of housing has also undergone change. Today a house is no longer a passive cell but is considered as a functioning unit. The very concepts of adequacy and inadequacy of a house have also changed. No dwelling can be called adequate today if it does not meet both phsyiological and psychological needs of its occupants.

Everyone building a house should aim at "**Minimum standards everywhere and higher standards everywhere possible**", suggested by the United Nations. This will ensure the provision of adequate safe and healthy environment for all in the future.

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APPENDICES

APPENDIX - I

INTERVIEW SCHEDULE TO ELICIT INFORMATION ON ADEQUACY OF HOUSEHOLD ENVIRONMENTAL AND LIVING CONDITIONS OF SELECTED FAMILIES

I. Background information:

1. Name of the repondent :
2. Age :
3. Area : Rural / Urban
4. Residential Address :

5. Type of family : Nuclear / Joint
6. Size of family : 1 - 3 [ ]
   4 - 6 [ ]
   7 and above [ ]
7. Family background:

Name of family member	Relation to head	Sex	Age (Yrs.)	Education	Occupation	Income (Rs.)

8. Other sources of income:
   - 8.1 Rent :
   - 8.2 Business :
   - 8.3 Land :
   - 8.4 Any other :
9. Total income (Rs.) :

10. Family budget:

Items	Approximate amount per month(Rs.)
Food	
Clothing	
Rent	
House maintenance	
Education	
Medicine	
Recreation	
Miscellaneous	
Transportation	
Savings	

II. **Details on house:**

11. **Nature of dwelling:**

11.1 Independent house [ ]
11.2 Attached house [ ]
11.3 Flat [ ]

12. **Mode of ownership:**

12.1 Owned [ ]
12.2 Rented [ ]
12.3 Any other [ ]

13. **Factors related to site selection:**

House situated on a
13.1 Elevated ground [ ]
13.2 Plain ground [ ]
13.3 Low lying area [ ]

14. **Type of soil:**

14.1	Firm soil	[ ]
14.2	Reclaimed ground	[ ]

15. **Location of site/house situated near to:**

15.1	Factory	[ ]
15.2	Railway station	[ ]
15.3	Bus stand	[ ]
15.4	Busy street	[ ]
15.5	Residential area	[ ]
15.6	Out of traffic lanes	[ ]
15.7	Any other	[ ]

16. **Reason for building/buying your own house:**

16.1	Economic value	[ ]
16.2	Aesthetic value	[ ]
16.3	Functional/utility value	[ ]
16.4	Prestige value	[ ]
16.5	Any other	[ ]

17. **Factors which governed in making the plan:**

17.1	Comfort	[ ]
17.2	Economy	[ ]
17.3	Beuty	[ ]
17.4	Size of the family	[ ]
17.5	Location	[ ]
17.6	Family background	[ ]
17.7	Social and cultural background	[ ]

18. **The plan of the house designed by:**

18.1	Self	[ ]
18.2	Architect	[ ]
18.3	Both	[ ]

19. Is the house constructed as per the original plan?

Yes / No

20. If no, what are the details of modifications undertaken:

S.No.	Modifications made during construction process	Reasons
1.		
2.		
3.		
4.		

21. Values that influenced the construction of various areas:

S.No.	Values	Areas							
		Liv-ing	Bed room	Din-ing	Kit-chen	Bath room	Toi-let	Poo-ja	Vera-ndah
1.	Religion								
2.	Efficiency								
3.	Comfort								
4.	Knowledge								
5.	Health								
6.	Any other								

22. **Area of the house:**

22.1 Total carpet area :

22.2 Plinth area(Sq.ft.) :

23. Details of various rooms:

S.No.	Rooms	No	Size		No. of doors	No. of windows		Activities carried out	Adequacy of space	
			*L	B		L	B		Adequate	Inadequate
1.	Living									
2.	Bed									
3.	Dining									
4.	Kitchen									
5.	Pooja									
6.	Toilet									
7.	Verandah									
9.	Store									

*L - Length
B - Breadth

24. Use of building materials in various rooms:

S.No.	Materials used	Living		Bed room		Dining		Bath room		Toilet		Kitchen		Stair		Pooja		Verandah	
		*F	W	F	W	F	W	F	W	F	W	F	W	F	W	F	W	F	W
1.	Cement																		
2.	Mosaic																		
3.	Marble																		
4.	Brick																		
5.	Stone																		
6.	Granite																		
7.	Ceramic																		
8.	Cuddapah																		
9.	Spertek																		
10.	Wall paper																		
11.	Any other																		

F - Floor
W - Wall

25. **Details of kitchen:**

Shape of the kitchen

25.1 L. Shape [ ]

25.2 U shape [ ]

25.3 One walled [ ]

25.4 Two walled [ ]

25.5 Any other [ ]

26. Location of chulah:

26.1 Floor level [ ]

26.2 Raised level [ ]

26.3 Any other [ ]

27. Ventilaiton system provided in the kitchen:

27.1 Exhaust fan [ ]

27.2 High level fixed ventilators [ ]

27.3 Windows [ ]

27.4 Smoke outlet [ ]

28. Storage:

S.No.	Storage of Perishables	Methods of storage		
		Covering the the food	Meat safe	Fridge
1.	Vegetables			
2.	Fruits			
3.	Cooked food			
4.	Milk			
5.	Non vegetarian			

APPENDIX II

NUTRITION AND HEALTH ASSESSMENT SCHEDULE

I. **Health:**

1. General health status of the family

S.No.	Family members	Good	Fair	Poor	Frequency of illness		
					Always	Rarely	Never
1.	Head						
2.	Home-maker						
3.	1st child						
4.	IInd child						
5.	Any other						

2. Health record of the family:

Illness	On set of the condition	Family members				Reason
		Head	Home-maker	Children	Any other	
Diabetes						
B.P.						
T.B.						
Asthma						
Skin disease						
Jaundice						
Diahrrhea						
Dysentry						
Cholera						
Typhoid						
Chicken pox						
Measles						
Fever						
Cold						
Cough						
Any other						

3. State the major reasons for illness in the family:

Reasons	Illness
Pollution of air	
Water	
Soil	
Food	
Noise	
Environment	
Heredity	
Not immunised	
Usage of drinking water	
Allergic to selected foods	
Dust	
Dirt	
Parthenium	
Cotton	
Medicines	
Location of house	
Any other	

4. Did any food poisoning occur in the past one year?

Yes / No

5. If yes what type and cause for it?

II. Nutrition:

6. Nutritional status of the family:

Family members	Age	Sex	Height(cm)	Weight(Kgs)
Head Homemaker Ist child IInd child Any other				

7. Meal pattern of the family(Recall for past 2 days).

Preference for

Vegetarian [ ] Non vegetarian [ ]

8. Menu plan

	Breakfast	Lunch	Tea	Dinner
Ist Day IInd Day				

III. Sanitation:

9. Water supply:

General purpose	Source				Method of storage			Treatment
	W	BW	C	L	UG	OH	V	
Cooking								
Bathing								
Drinking								
Cleaning								
Washing clothes								
Gardening								

W - Well
BW - Borewell
C - Corporation
OH - Over Head
L - Lorry
UG - Under ground
V - Vessels

10. Type of facilities available for disposal of waste

Type of waste	Method of disposal					
	*M	ST	OD	OY	B	MP
Human solid liquid						
General solid liquid						
Kitchen						
Rain water						

M - Municipality
ST - Septic tank
OD - Open drainage
OY - Open yard
B - Burning
MP - Manure pit

11. General cleanliness of the house:

Area	Areas						
	Living	Bed	Dining	Kitchen	Pooja	Bath room	Toilet
			Method of cleaning				
	D*TD W M	D TD W M	D TD W M	D TD W M	D TD W M	D TD W M	D TD W M
Sweeping							
Inside							
Outside							
Mopping							
Dusting							
Removal of cobwebs							

D - Daily TD - Twice Daily W - Weekly M - Monthly

APPENDIX III

OBSERVATION SCHEDULE TO ANALYSE THE ADEQUACY OF EXISTING HOUSEHOLD ENVIRONMENT

	Aspects	Extent of space available		
		Adequate	Just Adequate	Inade-quate
I.	**Livable space in**			
	1. Living			
	2. Bed room			
	3. Dining			
	4. Kitchen			
II.	**Storage facilities in**			
	1. Living			
	2. Bed room			
	3. Dining			
	4. Kitchen			
III.	**Availability of**			
	1. Open shelf			
	2. Built in coupboard			
	3. Wooden racks			
	4. Almirah			
IV.	**Ventilation and aeration in**			
	1. Living			
	2. Bed room			
	3. Dining			
	4. Kitchen			
	5. Store room			
	6. Bath room			
	7. Toilet			
V.	**Facilities and Services**			
	1. Daylight			
	2. Artificial light			
	3. Parking of vehicles			
	4. Children's play			
	5. Kitchen garden			
	6. Landscape garden			

APPENDIX IV

CHECK LIST TO EVALUATE THE HOUSEHOLD ENVIRONMENT IN RELATION TO STANDARD SELECTED

S.No.	Aspects	Yes	No
1.	**Location of the house**		
	Free from		
	a) Dust		
	b) Smoke		
	c) Smell		
	d) Excessive noise		
	e) Traffic		
2.	Living room at least one		
3.	**Rooms provided with atleast two windows in**		
	a) Living		
	b) Bed room		
	c) Dining		
	d) Kitchen		
4.	Adequate daylight		
5.	Separate kitchen		
5.	Separate bath and toilet		
7.	Sanitary disposal of garbage done		
8.	Dry soil		
9.	Pucca floor		
10.	Strong wall		

APPENDIX V-A

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN LIVING ROOM TO SIZE OF FAMILY(RURAL-A)

	1 - 3	4 - 6	7 and above	f	dy	fdy	fdy²	fdxdy
Very adequate	4 (4)	0 (2)	-3 (3)	9	-1	-9	9	+1
Just adequate	0 (7)	0 (5)	0 (2)	14	0	0	0	0
Inadequate	-8 (8)	0 (14)	5 (5)	27	+1	27	27	-3
f	19	21	10	50		18	36	-2
dx	-1	0	+1					
fdx	-19	0	10	-9				
fdx²	19	0	10	29				
fdxdy	-4	0	+2	-2				

$$\Sigma fdxdy = \frac{(\Sigma fdx) \times (\Sigma fdy)}{n}$$

$$\gamma = \frac{}{\sqrt{\Sigma fdx^2 - \frac{(\Sigma fdx)^2}{N}} \sqrt{\Sigma fdy^2 - \frac{(\Sigma fdy)^2}{N}}}$$

$\Sigma fdxdy = 2$, $\Sigma fdx = 9$, $\Sigma fdy = 18$, $\Sigma fdx^2 = 29$,

$\Sigma fdy^2 = 36$, $N = 50$

$$= \frac{-2 - \frac{(-9) \times (18)}{50}}{\sqrt{29 - \frac{(-9)^2}{50}} \sqrt{36 - \frac{(18)^2}{50}}}$$

$$\gamma = \frac{1.24}{28.43}$$

$$= + 0.044$$

$$\gamma = + 0.044$$

Positive relationship existed between space provided in living room to size of the family in rural areas.

APPENDIX V B

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN LIVING ROOM TO SIZE OF THE FAMILY (URBAN-B)

	1 - 3	4 - 6	7 and above
Very adequate	3	2	-
Just adequate	8	6	2
Inadequate	6	7	16

$$Y = \frac{13 - \frac{(1) \times (24)}{50}}{\sqrt{35 - \frac{(1)^2}{50}} \quad \sqrt{34 - \frac{(24)^2}{50}}}$$

$$= \frac{12.52}{28.01} = 0.446$$

$$Y = + 0.446$$

Positive relationship existed between the space provided in living room to size of the family in urban areas.

APPENDIX VI-A

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN BED ROOM TO SIZE OF FAMILY

(RURAL A)

	1 - 3	4 - 6	7 and above
Very adequate	-	-	-
Just adequate	5	2	-
Inadequate	12	13	18

$$r = \frac{6 \quad \frac{(1) \times 43}{50}}{\sqrt{35 - \frac{(1)^2}{50}} \sqrt{43 - \frac{(43)^2}{50}}}$$

$$= \frac{5.14}{14.51}$$

$$= + 0.354$$

$$r = + 0.354$$

Positive relationship existed between the space provided in bed room to size of the family in rural areas.

APPENDIX VI-B

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN BEDROOM TO SIZE OF FAMILY(URBAN-B)

	1 - 3	4 - 6	7 and above
Very adequate	5	-	-
Just adequate	5	10	3
Inadequate	9	11	7

$$Y = \frac{3 - \frac{(-9) \times (22)}{50}}{\sqrt{29 - \frac{(9)^2}{50}} \sqrt{32 - \frac{(22)^2}{50}}}$$

$$= \frac{6.96}{24.92}$$

$$Y = + 0.2792$$

Positive relationship existed between space provided in bed room to size of family in urban areas.

APPENDIX VII-A

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN DINING ROOM TO SIZE OF FAMILY(RURAL - A)

	1 - 3	4 - 6	7 and above
Very adequate	-	-	-
Just adequate	7	5	-
Inadequate	10	10	18

$$Y = \frac{8 - \frac{(1) \times (38)}{50}}{\sqrt{35 - \frac{(1)^2}{50}} \sqrt{38 - \frac{(38)^2}{50}}}$$

$$= \frac{7.24}{17.63}$$

$$= 0,41$$

$$Y = + 0.41$$

Positive relationship existed between space provided in dining room to size of the family in rural areas.

VII - B

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN DINING ROOM TO SIZE OF FAMILY(URBAN - B)

	1 - 3	4 - 6	7 and above
Very adequate	-	-	-
Just adequate	8	10	
Inadequate	11	11	10

$$Y = \frac{11 - \frac{(10) \times (1)}{50}}{\sqrt{11 - \frac{(10)^2}{50}}\sqrt{50 - \frac{(32)^2}{50}}}$$

$$= \frac{10.8}{16.29}$$

$$= + 0.662$$

$$Y = + 0.662$$

Positive relationship existed between space provided in dining room to size of family in urban areas.

APPENDIX VIII-A

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN KITCHEN TO SIZE OF THE FAMILY(RURAL -A)

	1 - 3	4 - 6	7 and above
Very adequate	-	-	-
Just adequate	7	6	2
Inadequate	10	9	16

$$\gamma = \frac{6 - \frac{(35) \times 1}{50}}{\sqrt{35 - \frac{(1)^2}{50}}\sqrt{35 - \frac{(35)^2}{50}}}$$

$$= \frac{5.3}{19.16}$$

$$= 0.277$$

$$\gamma = + 0.277$$

Positive relationship existed between space provided in kitchen to size of family in rural areas.

APPENDIX - VIII-B

CORRELATION COEFFICIENT TO FIND THE RELATIONSHIP BETWEEN ADEQUACY OF SPACE IN KITCHEN TO SIZE OF FAMILY(URBAN-B)

	1 - 3	4 - 6	7 and above
Very adequate	-	-	-
Just adequate	5	5	3
Inadequate	14	16	7

$$\gamma = \frac{2 - \frac{(-9) \times (-13)}{50}}{\sqrt{29 - \frac{(29)^2}{50}}\sqrt{13 - \frac{(-13)^2}{50}}}$$

$$= \frac{-0.34}{10.54}$$

$$= -0.032$$

$$\gamma = -0.032$$

Negative relationship existed between space provided in kitchen to size of family in urban areas.