

## Chapter 5

### RESIDENTIAL ENVIRONMENT

#### 5.1. Introduction

With the increasing number of older people and with higher expectations of a good life, the elements of health, economic and family life remain on high demand and are treated as most universal in the enhancement and measurement of quality of life. Apart from these, there is another aspect related to ageing, which is the living environment condition of the aged. This chapter seeks to explain and analyze a wide range of exploratory factors related to the environmental conditions of the aged and their quality of life from a specific view point. It is the external environment which enables the older people to maintain their independence and actively contribute to society. This also contributes to graceful ageing. The physical environment refers to the totality of the diverse range of phenomena, events and forces that exist outside the ageing individual and that are directly linked to the material and spatial sphere (Wahl et al., 2007, pp. 101). Environmental gerontology deals with the physical, spatial and material parts of the environment and its relationship to outcomes like autonomy, well-being and societal participation (Wahl et al., 2007, pp. 101).

Wahl et al., (2007, pp. 101) makes a distinction of the physical environment - home environment and out of home environment. The physical aspects considered include the built environment (home environment), the home and the building, its characteristics and amenities. The social environment (out of home environment) would affect the outdoor space where older people enter into contact with the rest of the population, and the psychological environment is expressed through the experience of the physical and social environment and what it means to them (Rozo-Perez et al., 2007, pp. 125). Ecological and residential environments cover objective indicators such as housing, neighbour, neighbourhood, types of houses, types of tenancy, quality of housing and

service as well as subjective indicators such as availability of basic, necessary and comfort amenities, access to transport, personal safety, levels of crime; climatic changes and environmental atmosphere, satisfaction with residential environment. Elderly living in unsafe environment reduces their independence, self-esteem and more importantly their quality of life. This makes them more prone to depression, isolation, reduced fitness and mobility problems. If their mobility is restricted both inside and outside their home, if they are denied fresh air to breathe and if they are isolated from their friends and relatives, ageing cannot be graceful (Chakraborti 2008, pp.330). It is very important for the wellbeing of the elderly that they be provided with safe and adequate housing in the present age of individualism where younger generations are not there every time to take care of them. Deteriorating environmental conditions like unsafe or polluted areas can lead to debilitating and painful injuries among older people. Some may become prone to isolation and depression reducing their fitness and increasing expenditure on health care and support for the elderly. Appropriate housing and healthy physical environment is longed which do not damper movements of the elderly.

Socio-environmental theory directs itself at understanding the effects of the immediate social and physical environment on the activity patterns of aged individuals (Kart 1997, pp.208). Jaber Gubrium is the chief proponent of this theory. The different physical and social context of the environment generate different meaning and activity norms for the aged people. Lawton's (1991a, pp.6) definition of QOL directly addresses the environment: '*Quality of Life is the multidimensional evaluation, by both intra personal and social-normative criteria, of the person-environment system of an individual in time past, current and anticipated*'. In this context, the study aims to find out the living space, housing of the elderly and how the elderly rate their residential environment in relation to their needs and expectations which certainly throws an impact on the quality of life of the current cohort of elderly as it ages.

## **5.2. Housing –The Residential Environment**

One of the basic needs for the existence of human being is shelter. The concept of shelter goes far beyond a roof and four walls to provide protection against adverse climatic

conditions. It implies the availability of good ventilation, proper circulation of air and sunshine, absence of insanitary, unhealthy and polluting conditions and access to basic community and social services (Bose 2006, pp. 212). The quality of housing affects the quality of life of the individuals, more so for the elderly as safe and satisfactory living accommodation is indispensable for the well-being of the elderly. As majority of the activities of the elderly revolve around the four walls of the house and they spend most of their time in home, it is desirable to design the house to meet the requirements of elderly people. According to the 1971 White House Conference on Aging, housing is probably the single most important element in the life of an older person, aside from his or her spouse (Kart 1997, pp. 407). With the growing number of aged and at the same time ageing in isolation require adequate housing with well-developed technological facilities to support the aged at home.

The term '*ageing at home*' is relatively new to gerontological nomenclature (Callahan, 1993. As quoted by Rozo-Perez et al., 2007, pp.124). The sense of attachment to the place of residence is related to the home and environment, places where older people spend most time and to which they feel most closely attached (Rozo-Perez et al., 2007, pp.124-125). The main elements of this housing environment include: (a) the ownership of the dwelling unit (b) type of house (c) size of house and ownership pattern (d) separate room for the elderly

### **5.3. Housing Characteristics**

#### **5.3.1. Ownership of the Dwelling Unit or Type of Tenancy**

Ownership of a dwelling confers socio-economic status to the person, and assurance of a safe and secure living in old age (Bose 2006, pp.212). House is considered as a valuable asset in old age and having a place to stay is all the more important. Ownership of the dwelling unit refers to whether the house in which the respondent lives is owned by him, rented or any other kind of arrangement made. The study in the Darjeeling hills shows that 86.3 percent of the elderly live in their own house; whereas 10.7 percent of the elderly live in rented houses. There are 3 percent of the elderly who live in other kind of arrangement. The other kind of arrangement means they live either in daughter's

place or in relatives place. It is seen that majority (86.3%) of the elderly live in their own houses due to their current stage of lifecycle as they have all through the years accumulated economic resources to buy or build their houses. Home ownership seems to afford individuals the means through which they can achieve a sense of 'ontological security' in their daily lives, in a world that is sometimes perceived as threatening and uncontrollable (Dupuis and Thorns, 1998). (As quoted by Rozo-Perez et al., 2007, pp.132). Own house is a form of asset for the elderly which can be passed on to the next generation. It gives a sense of freedom of choice and independence when it comes to deciding changes, modifications, and improvements in the house. Ownership represents financial security, in as much as the house can constitute a value of change, a guarantee that offsets the drop in their level of income upon retirement (Rozo-Perez et al., 2007, pp.132). On the other hand research shows that owner occupation brings responsibilities such as upkeep that some older people find difficult.

### 5.3.2. Types of House

An important variable of housing characteristics is the type of house. Types of house have been categorized as: *kuchcha* house, *pucca* house and *semi-pucca* house. Houses made from mud, thatch or other low quality material are called *kuchcha* house (www.data.gov.in , Open Government Data (OGD) Platform India). Houses made with high quality materials throughout including the floor, roof and exterior walls are called *pucca* house (ibid.). *Semi-pucca* houses are partly made of high quality materials and partly low quality materials. The structure may have roof of wood shafts, tiles, light weight steel and the body may be of burnt bricks, stone or concrete. A good quality house facilitates greater satisfaction among the elderly. General satisfaction with the housing is linked to the nature of the housing and the design that is easily managed and not too large (Tinker 1997, pp.1865). In the study area it has been observed that the elderly living in *pucca* houses is more common (45%) than in *kuchcha* houses (11%) (Table 5.1). Proportion of elderly living in the *semi-pucca* houses is same as those elderly living in *pucca* houses (44%) (Table 5.1).

With respect to the rural and urban (Table 5.1.) areas it is observed that 49.5 percent of the elderly live in *semi-pucca* houses in rural areas whereas majority of the elderly

(64%) live in *pucca* houses in urban areas. In rural areas 15 percent elderly live in *kuchcha* house whereas 3 percent live in *pucca* house (Table 5.1). There is a direct or indirect link between housing and health problems. The less energy efficient homes such as the *kuchcha* or *semi-pucca* houses tend to interfere with the health of the elderly developing hypothermia in winter. As Darjeeling has a cold weather condition all the year round, the elderly people are at risk of developing hypothermia in the winter. In the cold climatic condition, the body loses heat faster than it can produce heat due to exposure to cold causing a low body temperature. Collins (1989. As quoted by Tinker 1997, pp.1868) in his research showed that higher mortality rates are related to both outdoor exposure and cold indoor temperatures. The housing type and conditions have an impact on the quality of the life of the elderly.

**Table 5.1. Types of House of the Elderly Respondents in Rural and Urban Areas**

Area	Type of House				
		<i>Pucca</i>	<i>Semi-pucca</i>	<i>Kuchha</i>	<i>Total</i>
Rural		71 (35.5)	99 (49.5)	30 (15)	200 (100)
Urban		64 (64)	33 (33)	3 (3)	100 (100)
Total		135 (45)	132 (44)	33 (11)	300 (100)

Figures in parentheses denote percentage  
Computed from fieldwork, 2016-17

Autonomy and wellbeing of the elderly are also associated with the housing characteristics.

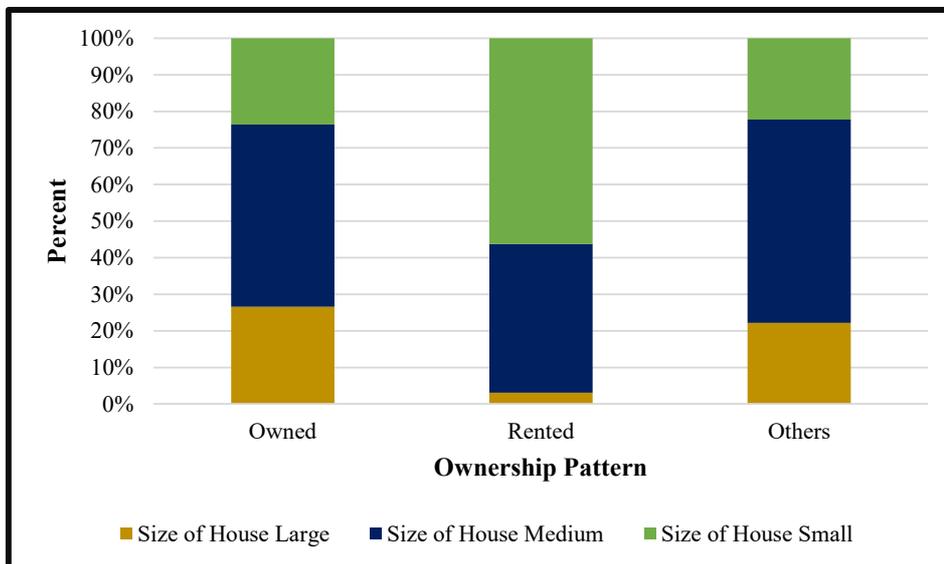
### 5.3.3. Size of House and Ownership Pattern

The size of the home is another element to be considered when assessing whether it is suited to their needs and its members' ability to cope on their own every day (Rozo-Perez et al., 2007, pp.134). In the study area 49 percent of the elderly own a medium sized house, 27 percent elderly have a small sized house and 24 percent have a large sized house (Fig 5.1.). It is important to ascertain whether the size of the house meets the needs of the elderly bearing in mind the present stage of the older person's life cycle.

With reference to the ownership of the dwelling unit and size of house (Fig: 5.1) it is observed that, the elderly who have their own dwelling unit, a sizeable proportion (49.8%) of them have medium sized house. On the other hand, the elderly who live in

rented houses or flats in the study area, majority (56.3%) of them live in small sized house. The findings of the present study is consistent with the study of Rozo-Perez et al., (2007, pp.135) which states that those living in rented accommodation are more likely to live in older and smaller houses and have fewer amenities, while older people who own their houses, especially if they are still paying for them, are likely to live in houses that are more modern, larger and well equipped.

**Fig 5.1. Size of House and Ownership Pattern of the Elderly Respondents**



*Source: Computed from fieldwork, 2016-17*

There is a general satisfaction with housing ownership. Hypothesis suggests that those elderly who own house have a better quality of life. A bivariate analysis has been done to find the correlation between size of house and ownership pattern with the help of Pearson correlation test. It shows a statistically significant positive relationship between size of house and ownership pattern. Ownership pattern decides the size of house. Generally elderly respondents with own house have medium sized house and elderly respondents staying in rented dwelling prefer small size house [ $r(298) = .162, p=0.005$ ].

#### **5.3.4. Separate Room for the Elderly**

The space where older people normally spend their lives is their home and they tend to spend longer time at home than most other age-groups. In the study area whether the

elderly respondents have a separate room to live in the household is also considered. The average number of rooms in household in the study area is 4. 77.3 percent of the elderly have a separate room but 22.7 percent report that they do not have a separate room to live. As the elderly are the most vulnerable group and not having a separate room to live is attributed to the fact they are financially incapable, have small house or are poorly housed. The elderly either live in the living room or stay in their grandchildren's room. Privacy is very important factor for the elderly at this stage, not being bothered by others, having independence at home as they are ageing. Home is the most basic area of the residential system and the absence of a separate room for the elderly tends to make the home environment oppressive and limits their physical activity, reducing their QOL. After retirement, the elderly prefer to live independently with barrier free home environment and enjoy all comforts and facilities to lengthen their life span which creates a positive impact on their QOL.

There are some housing schemes and facilities which are provided by the government for the disadvantaged families.

### **1. Indira Awas Yojana (IAY)**

The BPL families are given grants for construction of dwelling units under the flagship scheme *Indira Awas Yojana* of the Ministry of Rural Development (MORD). The funding of IAY is shared between the Central and State governments in the ratio of 75:25 respectively. Under the scheme, financial assistance of Rs. 70,000 in plain areas and Rs. 75,000 in difficult areas (hilly areas) is provided for the construction of houses (UNFPA, 2014). Additional financial assistance is provided from Total Sanitation Campaign (TSC) and *Rajiv Gandhi Grameen Vidyutikaran Yojana* (RGGVY) to provide sanitary latrines and smokeless *chullahs*.

### **2. Gitanjali and Amar Thikana**

Apart from IAY, the Government of West Bengal runs two exclusive housing schemes for BPL category - *Gitanjali* and *Amar Thikana*. In the rural areas more than 34,000 houses have been constructed under these two schemes (UNFPA, 2014).

#### 5.4. Amenities

The features or facilities of a building, house or place which increase its pleasantness or attractiveness and are desirable are called amenities. In order to ascertain the objective well-being of the elderly it is desirable to study the presence and type of amenities available in the house. Presence of amenities is one of the basic characteristics of housing. Housing includes, in addition to dwelling rooms, provision of kitchen, toilet facilities, electricity, safe drinking water, and sewerage and drainage connections. The amenities have been divided into three types: basic, necessary and comfort.

The basic amenities are the availability of water and its source, availability of toilet and availability of electricity. The necessary amenities include TV, refrigerator, motorcycle, phone, radio, sofa set, etc. The comfort amenities include washing machine, heater, wheel chair ramp, car, garden, caretaker and others.

##### 5.4.1. Basic Amenities

**Water** is fundamental for the survival of living beings. It is used for cooking, washing, bathing, in industrial process and is central for the sustenance and proliferation of life. Sufficient availability of water for domestic purpose increases the well-being of the family. It has a significant influence on the health and sanitation of the elderly. On the basis of availability and accessibility of water in the study area the need of water is fulfilled by different sources. The sources are spring water, tanker trucks, water drums and hand pumps (well). With rapid increase in population, provision of adequate and safe supply of water is one of the most challenging tasks in Darjeeling hills because of the acute shortage and scarcity of water. Darjeeling hills have a good number of perennial and non-perennial water bodies in the form of springs that are the main sources of water. The main town of Darjeeling is provided water from the natural springs located in the Senchal Range. Two lakes namely North and South Senchal Lake store this water. Sindhap Lake is also another important source of water in Darjeeling which too is located in the Senchal Range. Another important source which provides water to the town and surrounding areas is the Rumbi Catchment. Other than these many natural springs emanate from the surrounding area of Darjeeling town such as *Giri Dhara*, *Lal Dhikhi*, *Kholi Ghari*, *Jail Dhara*, *Police Dhara*, etc. Water pipelines are distributed all

over the town through which water supply is maintained in the Darjeeling town and nearby areas.

The supply of water in Kurseong largely depends on the perennial and semi-perennial springs of the hills. The perennial source are Dharary *Khola* (near Bagora), Babu *Khola* (near Khundrukay), Panigaira *Khola* (near Khundrukay), Pahwa *Khola* (near Deorali), Chitray *Khola* (near Chitray Busty), Aringalay *Khola* (near Dilaram), Sepoydhura *Khola* (near Sepoydhura), Thothay *Khola* (near Tung), Whistle *Khola* (near St. Mary's Hill) (Lepcha 2013, pp.5).

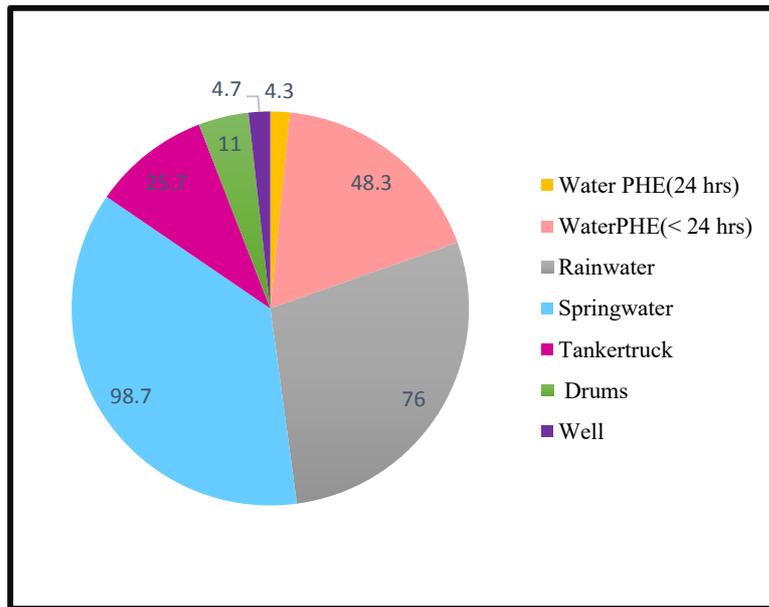
Relli and Thokchu *Khola* are the major sources of water supplied to Kalimpong town. Other than these, Neora *Khola* is another major perennial stream which supplies water to half of the town. Several semi-perennial streams are located near the town which supply water to the town and surrounding area like O.C. *Jhora*, 28 No. *Jhora*, Dahal *Jhora*, Barbole *Jhora*, Roy Master *Jhora*, Bagdhara *Jhora* and Pandey *Jhora*.

Springs and *jhoras* supply water to the Mirik town. Other than these, Mirik avails water through handpump and tube wells. Some areas in Mirik consists of depressed areas where water can be availed through handpump and tubewells, but they dry out in dry season. The Public Health Engineering (PHE) is the sole supplier of water in the said areas through pipelines of various sizes brought from the *jhoras* and springs. The households which are not connected with pipelines avail water directly from the source that is near the spring and *jhoras*. Other than pipelines distribution of water by the municipality is done through tanker trucks. In the dry season owing to acute scarcity of water the local population is compelled to buy water which is available in drums.

The study area reflects the availability of water through various sources and the responses coded are multiple response. The diagram shows (Fig 5.2.) that the main source of water is spring water for large number of the respondents (98.7%) which is collected at the source. Rainwater is another source of water which is harvested by 76 percent of the elderly respondents. The Public Health Engineering (PHE) sources have been divided into 2 categories - where PHE provides 1) 24 hours water and 2) less than 24 hours of water. Here only 4.3 percent of respondents get 24 hours running water supplied by PHE. They belong to the elite class whereas 48.3 percent respondents

receive PHE water for less than 24 hours. Tanker trucks and drums provide water to the households of 25.7 percent and 11 percent of the elderly respondents. Water from well is availed by only a handful of elderly respondents counting to 4.7 percent.

**Fig 5.2. \*Availability of Water through Various sources**



*Source: Computed from fieldwork, 2016-17  
\*Multiple Response*

The water availability through various sources has been coded in multiple responses and the analysis shows that (Table 5.2.) in rural areas 99.5 percent of the respondents avail spring water, 80 percent of them harvest the rainwater and 41.5 percent receive water through pipelines of PHE for a few hours. In the urban areas (Table 5.2.) too spring water constitutes the major source of water supply for majority of the respondents (97%), followed by rainwater which caters to the need of 68 percent. PHE water (less than 24 hours) is availed by 62 percent respondents. Other than these, tanker truck is another source providing water to 34 percent respondents while 15 percent respondents avail water by buying drums. Wells constitute another source of water but wells are found only in Mirik because it is a depressed area. 14 percent of the respondents here extract water from the well (Table 5.2.). For maintaining a clear, hygienic life availability of water is a basic pre-requisite which enhances the quality of life. There is

acute scarcity of water in the study area, especially in the dry season of February-March. Shortage of water and fetching water through tanker trucks by connecting pipes from the trucks to the water tank of the house creates a difficult situation for the elderly. This fetching and drawing water from the source is done by majority of the male elderly as a part of household chores.

**Table 5.2. \*Availability of Water in Rural and Urban Areas**

Area	Basic amenity (WATER) in rural and urban area							Total
	Water PHE(24 hrs)	WaterPHE (< 24 hrs)	Rainwater	Spring water	Tanker truck	Buy drums	Well	
Rural	7 (3.5)	83 (41.5)	160 (80.0)	199 (99.5)	43 (21.5)	18 (9.0)	0 (.0)	200
Urban	6 (6.0)	62 (62.0)	68 (68.0)	97 (97.0)	34 (34.0)	15 (15.0)	14 (14.0)	100

Figures in parentheses denote percentage  
Computed from fieldwork, 2016-17

\*Multiple Response Table

**Electricity** is another major basic amenity. We daily utilize electricity for turning the electrical devices be it light, fan, computer, mobile phone, mixer, TV, refrigerator and so on. This is a basic power infrastructure. In the study area all the households in the rural as well as urban areas have access to electricity that is, they have 100% electrification.

**Toilet** is another important housing characteristic which defines the wellbeing in terms of sanitation, its types and availability. Subjective wellbeing of the elderly cannot be achieved if they live in an unhealthy and unclean surrounding due to lack of access to sanitation and water. In the study area the toilets have been divided into 5 types - flush toilet (own), flush toilet (shared), pit-toilet (own), pit-toilet (shared), and no facility/bush/others. Overall, majority (90.7%) of the elderly have toilet facilities. Table 5.3. depict that 59.7 percent of the elderly use flush toilet (shared), followed by flush toilet owned by 19.7 percent. 9.3 percent elderly respondents use pit toilet which is shared and only 2 percent elderly have a private pit-toilet (own). 9.3 percent have inadequate sanitation where they still defecate behind the bushes, banks of a stream, a back street or some sheltered place (Table 5.3.). Elderly women especially face the crisis and it is a deplorable condition for them.

The rural-urban differentials are not wide, the proportion of respondents having a toilet is more or less same in rural and urban areas (Table 5.3.). In the rural area, 55 percent respondents share flush toilets, followed by 19.5 percent who own flush toilet. 13 percent of the elderly in rural areas do not have a toilet facility and defecate in the open. Pit toilets are shared by 10.5 percent and owned by 2 percent elderly in the rural areas of Darjeeling hills. In the urban areas 69 percent of the elderly use shared flush toilets, while 20 percent of the elderly respondents own flush toilets. Pit-toilets are shared by 7 percent of the elderly and 2 percent use their own pit-toilet. The elderly (2%) who do not have toilets defecate in the open (Table 5.3.). The *Nirmal Bharat Abhiyan* (NBA) aims to transform rural India into '*Nirmal Bharat*' by adopting 'community led', 'people-centred' strategies and a 'community saturation approach' with emphasis on awareness creation and demand generation for sanitary facilities in houses, schools, etc. for a cleaner environment (SACOSAN-V, 2013, pp.5).

**Table 5.3.Types of Toilet facilities owned by the Elderly in Rural and Urban**

<u>Areas</u>			
<i>Types of toilet</i>	<i>Rural</i>	<i>Urban</i>	<i>Total</i>
Flush toilet (own)	39 (19.5)	20 (20.0)	59 (19.7)
Flush toilet (shared)	110 (55.0)	69 (69.0)	179 (59.7)
Pit-toilet (own)	4 (2.0)	2 (2.0)	6 (2.0)
Pit-toilet (shared)	21 (10.5)	7 (7.0)	28 (9.3)
No facility/ bush/ other	26 (13.0)	2 (2.0)	28 (9.3)
Total	200 (66.7)	100 (33.3)	300 (100)

*Figures in parentheses denote percentage  
Computed from fieldwork, 2016-17*

Rozo-Perez et al.,(2007, pp.134) in their study state that basic amenities are regarded as elementary for living a dignified life, such as running water or one's own toilet which are nearly universal. Basic amenities such as availability of water, presence of toilet and electricity present a difference in the context of rural urban housing of the population.

#### **5.4.2. Necessary Amenities**

The second category of amenities are the necessary amenities. 96.7 percent of the elderly in the study area have access to the necessary amenities whereas 3.3 percent of the elderly do not have access to any of these necessary amenities. The necessary

amenities have been coded with multiple response (Table 5.4.) where the results show that TV is the most common item which is owned and accessed by 97.6 percent of the elderly respondents, followed by mobile phones (84.5%), sofa set (73.8%), refrigerator (62.8%), radio (24.8%), and motor cycle (9.7%). Age-based differences have been observed with regard to the necessary amenities in the study area such as the old-old (80 years and above) respondents have less access to and ownership of the necessary amenities than the young-old (60-69).

**Table 5.4. \*Necessary Amenities Owned by the Elderly Respondents**

<i>Necessary amenities</i>	<i>Responses</i>		<i>Percent of Cases</i>
	<i>Number</i>	<i>Percent</i>	
TV	283	27.6	97.6
Refrigerator	182	17.8	62.8
Motorcycle	28	2.7	9.7
Phone	245	23.9	84.5
Radio	72	7	24.8
Sofa set	214	20.9	73.8

*Computed from fieldwork, 2016-17*

*\*Multiple Response Table*

### 5.4.3. Comfort Amenities

Comfort amenities are those which provide a state of physical ease, elegance and richness and have been placed in the third category of amenities. These are generally acquired by those elderly respondents who have a stable financial base. 66.7 percent of the elderly in the study area have access to the comfort amenities. The comfort amenities (Table 5.5.) which have been least reported by the elderly respondents in the study area are the four wheelers (11%). The other less important amenities specified by the elderly are garage, lift, etc (6%). The amenities most reported related to comfort are garden (68%), heater (59%), washing machine (29.5%) and wheel chair ramp (26%). It is observed that the elderly who live in urban areas having a large sized house have more comfort amenities than those elderly who live in small dwellings.

**Table 5.5. \*Comfort Amenities Owned By the Elderly Respondents**

<i>Comfort amenities</i>	<i>Responses</i>		<i>Percent of Cases</i>
	<i>Number</i>	<i>Percent</i>	
Washing machine	59	13.6	29.5
Heater	118	27.2	59
Wheel chair ramp	52	12	26
Car	22	5.1	11
Garden	136	31.3	68
Caretaker	35	8.1	17.5
Other	12	2.8	6

*Computed from fieldwork, 2016-17*

*\*Multiple Response Table*

### **5.5. The Outer Residential Environment**

Apart from the home environment, the attachment to the place of residence that is the outer residential environment where older people spend their leisure time is also closely related to ageing-in-place. Environment in its broadest context includes the general pleasantness or unpleasantness of the neighbourhood, and the affluence of the people and business in the community (Antonucci and Ajrouch 2007, pp.60). Emotional and social elements such as privacy, safety, pleasure, stimulation, relationship with neighbours, visitors, are important outer residential characteristics. The area around the house is another important spatial characteristic for the wellbeing of the older persons. It is interesting to examine the neighbour relation with the elderly, safety in the residential environment, pleasantness of the atmosphere, proximity of the goods and services which are considered as strong predictors of residential satisfaction. If an elderly has a favourable residential environment he/she feels more satisfied, which is prescribed as a good indicator in the quality of life. Therefore, the main elements in the outer residential environment include:

- a) relationship with neighbours
- b) threat, safety and security in the surrounding social environment
- c) congeniality, pleasantness of the physical environment
- d) the proximity to commercial and recreational activities

e) the accessibility and usability of transportation

The important part of this analysis requires to measure whether outer residential environmental variables are useful predictors of the wellbeing of the elderly.

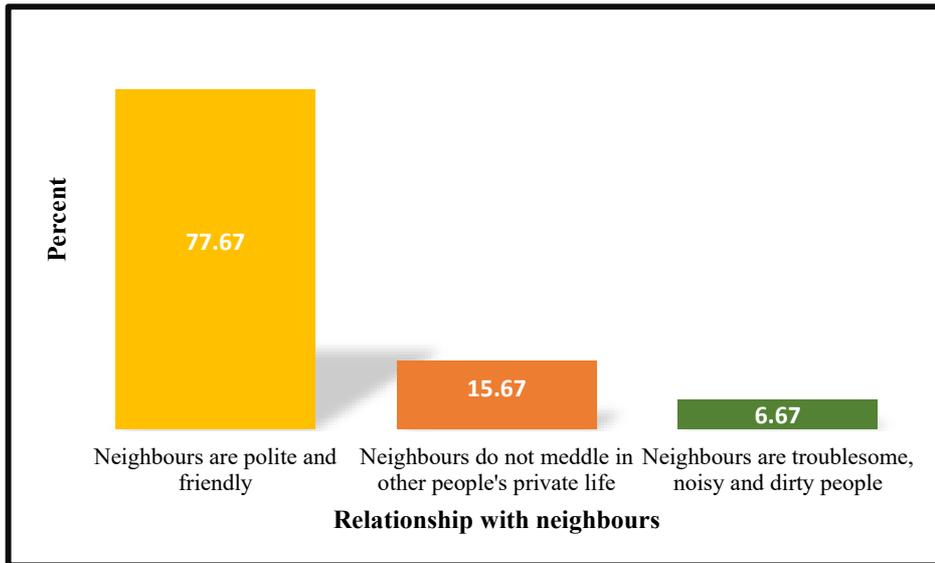
### **5.5.1. Elderly Respondents Relationship with Neighbours**

Out-of-home environment significantly adds to the quality of life of the elderly. If a neighbourhood is supportive to the elderly it enhances their wellbeing and satisfaction towards life. The frail elderly persons living independently stress on the relationship with their neighbours. The study area unfolds that majority of the older people have a longer stay in the same neighbourhood, and a large section (77.7%) of the elderly respondents (Fig 5.3.) report that their neighbours are polite and friendly. The healthy social network in the neighbourhood is an important resource for the elderly who can help and comfort them in times of trouble, pain and provide necessary information whenever needed. The elderly respondents report that they are significantly satisfied and happy with their neighbours. Chapman and Beaudet (1983). (As quoted by Kart 1997, pp.408) in their study have found that people living in higher quality neighbourhood are significantly more satisfied with their lives. Living in a higher-quality neighbourhood and living relatively far from downtown are two factors that significantly increase satisfaction with the neighbourhood (Kart 1997, pp.408).

Figure 5.3. shows that 15.7 percent of the elderly respondents report their neighbours do not meddle in other people's private life and they always take a neutral stand. On the other hand, 6.7 percent elderly respondents report their neighbours are troublesome, noisy and disreputable people. As they live in a poor and deteriorating community or neighbourhood, the necessary amenities, services and available support from the neighbourhood residents is limited. Many senior residents living in housing complex view other building residents as their primary source of social support (Schensul et al., 2003). (As quoted in Disch et al., 2007, pp. 153), but other building residents or neighbours may not provide the necessary support in times of crisis or emergency to the elderly population. There is a relationship between age homogeneity and friendship pattern. Rosow's (1967). (As quoted by Kart 1997, pp. 208) work on elderly people in Cleveland shows that old people residing in apartment buildings with high concentration

of aged people are more likely to develop friendship with neighbours than in the buildings with a low concentration of elderly.

**Fig 5.3. Elderly Respondents Relationship with Neighbours**



*Source: Computed from fieldwork, 2016-17*

### **5.5.2. Surrounding Social Environment of the Elderly Respondents**

Safe residential environment is very important for the wellbeing of older adults. Due to the increasing trend among older people to live alone or with spouse it is especially important for them to be provided with enough security. In the present study area 66.7 percent of the elderly respondents have reported that they enjoy safety in their neighbourhood or residential complex or environment. 33.3 percent of the elderly respondents do not feel safe in their residential environments. Older people who live in an unsafe environment or areas with multiple physical barriers are less likely to go out and therefore, more prone to isolation, depression, reduced fitness and increased mobility patterns (Kalache 2009, pp.24). The most significant problem is unsafe residential environment (Table 5.6.); 57 percent of the responses are of suspicion of strangers including foreigners, gypsies, squatters and prostitutes; 54 percent refer to negative social behavior such as drug dealers, frequent confrontation with beggars; 48 percent reported disharmony among residents of different communities and finally a few have reported about not enough police and burglary/theft.

**Table 5.6.\* Unsafe Residential Environment as reported by the Elderly Respondents**

<i>Unsafe residential environment</i>	<i>Responses</i>		<i>Percent of Cases</i>
	<i>Number</i>	<i>Percent</i>	
Burglary/theft	19	9	19
Not enough police	34	16	34
Suspicion of strangers	57	26.9	57
Communal disharmony	48	22.6	48
Negative social behaviour	54	25.5	54
Total	212	100	212

*Computed from fieldwork, 2016-17*

*\*Multiple Response Table*

Area wise (Table 5.7.), the study exhibits that a sizeable number of the elderly respondents of Kurseong (36%) and Kalimpong (37%) do not feel safe in their residential environment. In Kurseong (Table 5.7.), most of the elderly (66.7%) feel that negative social behavior is the root cause of insecurity and unsafe state or condition in their residential environment. 47.2 percent elderly think suspicious strangers and communal disharmony in the area lead to unsafe environment. Same is the scenario in Kalimpong as more than half of the elderly respondents cite suspicion of strangers and 45.9 percent cite negative social behavior in the area.

In comparison to Kurseong and Kalimpong, fewer elderly respondents (27%) from Darjeeling report that they do not feel safe in their residential environment (Table 5.7.). But similar to Kalimpong, here also 63 percent of the elderly respondents state the root cause of unsafe environment is suspicion of strangers (Table 5.7.). Fear stalks the life of older persons living alone or as a couple, especially at night. Media reports indicate that murderous assaults on older persons who live alone or with spouse usually take place in their homes, and are often carried out by domestic servants, masons, carpenters, painters, vendors, labourers and others who for some reason have had access to the house or visit on some pretext (Bose 2006, pp. 223). Therefore, safe residential area and neighbourhood contributes to the wellbeing of the elderly. Patrolling by police, security guard in the area, installation of CCTV camera in the house and neighbourhood, installing magic eye and electronic devices to identify the visitors can minimize the risk.

When older people live in a poor or deteriorating community it is likely that available services will be few, the number of people available or willing to provide support will be limited, and the security that a person will feel walking to the store or standing on a corner waiting for a bus will be minimal (Balfour and Kaplan, 2002. As quoted in Antonucci and Ajrouch, 2007, pp.60).

**Table 5.7.\* Unsafe Residential Environment across Sub-divisions as reported by the Elderly Respondents**

<i>Sub-division</i>	<i>Unsafe residential environment</i>					<i>Total</i>
	<i>Burglary/theft</i>	<i>Not enough police</i>	<i>Suspicion of strangers</i>	<i>Communal disharmony</i>	<i>Negative social behaviour</i>	
Kurseong	10 (27.8)	14 (38.9)	17 (47.2)	17 (47.2)	24 (66.7)	(36)
Kalimpong	5 (13.5)	13 (35.1)	23 (62.2)	15 (40.5)	17 (45.9)	(37)
Darjeeling	4 (14.8)	7 (25.9)	17 (63.0)	16 (59.3)	13 (48.1)	(27)
Total	19 (19.0)	34 (34.0)	57 (57.0)	48 (48.0)	54 (54.0)	100 (100.0)

*Figures in parentheses denote percentage  
Computed from fieldwork, 2016-17*

*\*Multiple Response Table*

High levels of crime in surrounding neighbourhood, buildings that are ill-repaired, non or poorly functioning security systems, little or no control over who enters the building, excessive noise especially at night, crowded conditions and small apartments, and disharmony among residents are all significant contextual stressors that can affect the mental and physical health of the residents (Disch et al., 2007, pp.153).

### **5.5.3. Congeniality of the Physical Environment of the Elderly Respondents**

Deterioration of the environment in terms of pollution is another element of residential environment. Pollution and depletion of natural resources are the main environmental problems, such as widespread noise pollution, destruction of beauty of nature (deforestation, excessive or overutilization of natural resources) and dirt in the form of rubbish (garbage heaps here and there without proper method of recycling and reusing, animal droppings etc.). Discharge of solid waste materials and hazardous matter causes widespread contamination of surface and ground water and also land degradation. In urban conurbations and urbanized rural localities, ambient concentrations of hazardous particles and gases are many times the safety limits (Hussain et al., 2009, pp.332).

Unprecedented population growth and immense pressure on the environment have generated adverse impact on the natural resources like land and water. Excessive use and growth of motorized vehicles have relentlessly increased the noise pollution which has a severe impact on the older people's health. Environmental problems are increasing in large scale aggravating the environmental situation. In the study area the elderly respondents having been asked about whether they enjoy the atmosphere or what are their opinions about the environment, 34.3 percent of the elderly state they are not enjoying the atmosphere and environment (Table 5.8.).

**Table 5.8. Number of Elderly Respondents enjoying pleasant atmosphere**

<i>Enjoying Pleasant atmosphere</i>					
<i>Yes</i>		<i>No</i>		<i>Total</i>	
Number	Percent	Number	Percent	Number	Percent
197	65.7	103	34.3	300	100

*Computed from fieldwork, 2016-17*

According to 51.5 percent respondents the nature of the problem related to deterioration of the environment is widespread noise pollution (Table 5.9.). Unwanted or disturbing sound interferes with the normal activities such as conversation and sleeping. This disrupts the elderly's quality of life and health. Noise pollution has an immediate effect on the elderly's health causing high blood pressure, sleep disruption, depression, etc. Prolonged exposure to noise can induce hearing impairment of the elderly. It can interfere with the normal speaking, conversation or communication which leads to irritation, fatigue, concentration and stress reaction. Disturbed sleep due to environmental noise affects the physiologic and mental functioning of the elderly posing long term effects on their wellbeing. It also affects the nervous system increasing the risk of cardiovascular disease. Noise level generates the mental disorders which impairs task performance of the elderly by slowing their mental process, and increasing errors at work. Excessive noise pollution has a detrimental effect on the health of the elderly. Evans (2003) (As quoted by Disch et al., pp.152) views that direct dimensions of the external environment such as air quality and other pollutants, toxic noise levels and safety can affect mental health status.

95.1 percent of the elderly respondents have reported about the destruction of the beauty of the hills (Table 5.9.). The Queen of the Hills is gradually being destroyed due to massive development activities. Unprecedented population growth has led to the development of infrastructural facilities which has depleted the natural resources due to overutilization of the resources. Development of roads and railway has been a serious threat for biotic environment of Darjeeling hills. Rapid forest cutting has damaged many species of plant kingdom. Forests have been cleared to give way to roads, for expansion of tea gardens, construction of huge buildings which have caused irreparable damage. As a result, innumerable landslides and drying up of water resources have been observed. All the blocks in Darjeeling hill area are affected due to environmental degradation. Some elderly respondents have reflected on the past and present environmental situation of Darjeeling hills. An elderly gentleman expresses his sentiment and love for the hills as he says, *'During the British occupation, Darjeeling hills were largely uninhabited and covered with forest. It was very much nature dominated, and the environment's quality was well preserved. Air was clean and fresh, large number of species of flora and fauna dominated and decorated the hills. Trees were in profusion and were indigenous. The population was sustainable in comparison to the available natural resources. There was a balanced and harmonious growth and utilization of natural resources. There were only two-storied buildings then and people were very much lover and protector of environment abiding by the laws. Forest was treated as a valuable commodity and people embarked on clearing forest, setting up of tea garden, by establishing railway lines and roads ruthlessly destroying the natural ambience. Shifting agricultural practice was carried out by the Lepcha people which degraded the forest cover and extensive forest fires were often reported. Gradually with more immigration of people from neighbouring areas the man-environment relation became more complex. It led to large scale degradation of forest, destroying the mountain ecosystem. Now, you can see establishment of 5 storied building or more than that without proper plan and specifications of establishing a building in the hill region according to government rules. Increasing air pollution has resulted in increase of many diseases especially among us. The clean and pure air have been substituted by impurities filled air and it is seriously affecting our health. We have been exposed to*

*increasing pollution such as sand, dust and smoke. It is a land of adventure but too much adventure in the name of progress can result in the extinction of a whole civilization'.*

Dirt in the form of rubbish and garbage thrown or mounded in the town, animal droppings, etc. are well known environment stressors and are more likely to be associated with reduced QOL which have been reported by 65 percent of the elderly respondents in the study area (Table 5.9). Herskind et al., (1996) (As quoted by Disch et al., 2007, pp. 151-152) in their study add that characteristics of the physical or built environment such as noise, stress, sanitation, food, water, heat/cold and toxins account for approximately 65 percent of the variance in the life expectancy of the elderly. It is an unfortunate reality that more pleasant environment, example, those that are safer, cleaner and with greater affluence afford more open, accepting, and interactive social relations. The influence of socio-economic status on the individual is well recognized (Antonucci and Ajrouch, 2007, pp. 60).

**Table 5.9.\* Reasons cited by the Elderly Respondents for not enjoying a pleasant atmosphere**

	Responses			Percent of Cases
		Number	Percent	
Respondents who reported of not enjoying a pleasant atmosphere	Wide spread noise pollution	53	24.3	51.5
	Destruction of beauty of nature	98	45	95.1
	Dirt in the form of rubbish	67	30.7	65
Total		218	100	211.7

*Computed from fieldwork, 2016-17*

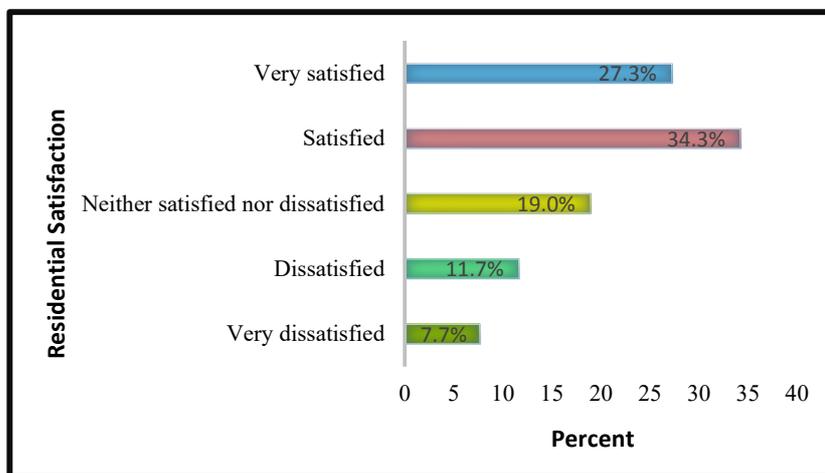
*\*Multiple Response Table*

The outer residential environment of the elderly be it relating to personal safety which is one aspect of the environment, or being exposed to harmful pollutants and toxins which is second aspect of environment have a significant impact on the QOL.

### 5.6. Satisfaction with the Residential Environment

The environmental context of ageing in terms of residential environment creates a distal impact on the everyday life of the elderly in the hills. Based on the objective and subjective indicators of residential environment, be it home or out of home environment, the elderly residents of the hills have expressed their views about satisfaction or dissatisfaction. Residential satisfaction is expressed by evaluating the conditions of the physical habitat lived-in, based on the expectations and achievements of the individuals with regard to that habitat. Therefore, the quality of the living space is evaluated from the perspective of the contents offered by the habitat (seen as service or amenities) and how its residents use them in terms of their needs. When a balance exists between individual needs and environmental contents residential satisfaction will be high and vice-versa (Rojo-Perez et al., 2007, pp. 130). Data on household, residential environment according to housing, neighbourhood, neighbours, pleasant and safe atmosphere, amenities and services have all been used to assess the residential satisfaction as an attribute of older people's QOL.

The level of satisfaction with respect to the residential environment has been enquired for housing amenities, neighbours, neighbourhood and physical environment. Level of satisfaction has been measured on a 5-point Likert scale: *very satisfied*, *satisfied*, *neither satisfied nor dissatisfied*, *dissatisfied* and *very dissatisfied*. The descriptive results show that older people in Darjeeling hills have a high level of residential satisfaction; 27.3 percent of the interviewees report being '*very satisfied*' and 34.3 '*satisfied*' with the different elements of their living environment. The analysis of the data reveals (Fig 5.4.) that overall 61.6 percent were contented. '*Neither satisfied nor dissatisfied*' is expressed by 19 percent, while 11.7 percent elderly express '*dissatisfaction*' and only 7.7 percent elderly are '*very dissatisfied*'.

**Fig 5.4. Residential satisfaction of the Elderly Respondents**

Source: Computed from fieldwork, 2016-17

The ratings of the elderly as ‘*very satisfied*’ (27.3%) and ‘*satisfied*’ (34.3%) (Fig 5.4.) reflect that the elderly people have greater access to the resources in terms of social support of neighbours, good living environment where crime rates are low and physical environment is congenial. The more the needs of the elderly are covered in terms of housing, amenities, outer residential environment, greater satisfaction the elderly will derive. Gubrium suggests that individuals having resources to meet the demands of the environment show high morale and self-satisfaction (Kart 1997, pp. 209).

In terms of the various age-groups and residential satisfaction (Table 5.10.) those aged between 60-69 years say that they are ‘*satisfied*’ (38.4%) and ‘*very satisfied*’ (22.1%) with their residential environment, while the 70-79 year olds tend to be ‘*very satisfied*’ (35.9%) and ‘*satisfied*’ (27.2%). A large proportion of the oldest-old (80 and above) have expressed satisfaction with the residential environment (satisfied - 33.3% and very satisfied - 30.6%). A bivariate analysis has been done to see the association between satisfaction level of the elderly with respect to residential environment and different age-groups. Chi-square test has been conducted to measure the association (Table 5.10.). It has been hypothesized that with increase in age the elderly respondents will show greater satisfaction towards residential environment. Chi-square testifies the result as insignificant. It shows that there is no significant association between age-group of the elderly and satisfaction with residential environment [ $X^2(8)=11.865, P>0.05$ ] (Table

5.10.). It therefore means that with increase in age the elderly may show a dissatisfaction with residential environment. It is presumed that the objective and subjective environmental conditions will differ substantially between the urban and rural areas of the hills. The economic conditions, environmental state of housing, amenities (basic, necessary, comfort), transport options tend to be better in urban areas than in rural areas while the friendly and compatible relation with neighbours, proximity of important confidants, congenial natural environment conditions are more evident in rural areas.

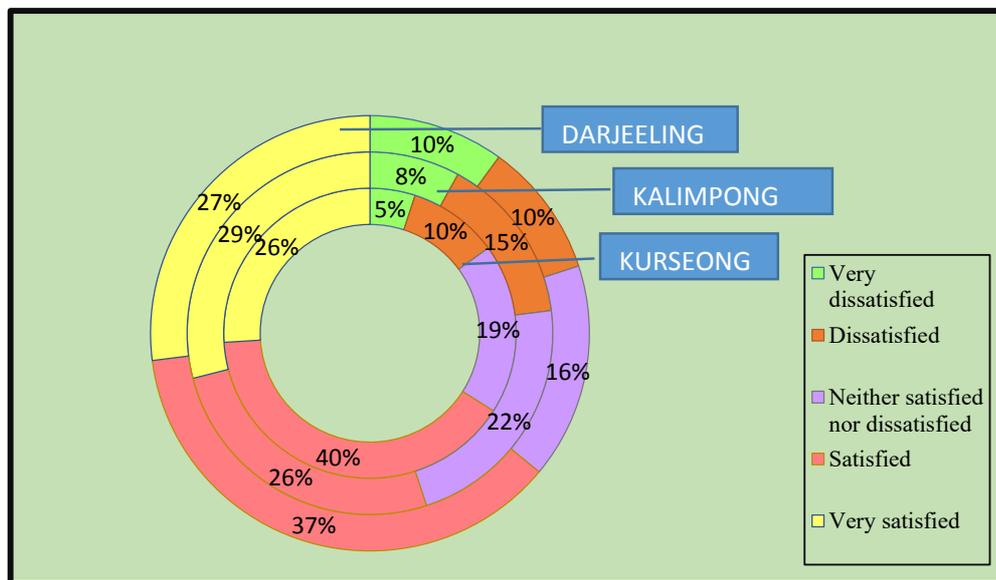
**Table 5.10. Satisfaction with Residential Environment according to Age-Groups of the Elderly Respondents**

Age-Groups	Satisfied with Residential Environment					Total
	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied	
60-69	17 (9.9)	21 (12.2)	30 (17.4)	66 (38.4)	38 (22.1)	172 (100)
70-79	3 (3.3)	12 (13)	19 (20.7)	25 (27.2)	33 (35.9)	92 (100)
80 and above	3 (8.3)	2 (5.6)	8 (22.2)	12 (33.3)	11 (30.6)	36 (100)
Total	23 (7.7)	35 (11.7)	57 (19)	103 (34.3)	82 (27.3)	300 (100)
$X^2(8) = 11.865, P > 0.05$						

*Figures in parentheses denote percentage  
Computed from fieldwork, 2016-17*

Area-wise (Fig 5.5.), the figures reveal that a sizeable proportion of the elderly are 'satisfied' (40%) and 'very satisfied' (26%) in Kurseong subdivision. In Kalimpong the scenario is same as Kurseong subdivision. There the scores on satisfaction given by the elderly are on the higher side (26% - satisfied and 29% - very satisfied). In Darjeeling a large number of the respondents are 'satisfied' (37%) and 'very satisfied' (27%) with their residential environment. A small section of the elderly has expressed 'dissatisfaction' with residential environment from the three subdivisions.

**Fig 5.5. Sub-division wise Satisfaction of the Elderly Respondents with Residential Environment**



*Source: Computed from fieldwork, 2016-17*

There is a higher probability of residential environmental dissatisfaction if there is lack of necessary amenities and resources and the environment is far from meeting these expectations, which reduce their physical activity and ultimately the QOL. Incongruence between environmental expectations and activity resources leads to low morale and diminished life satisfaction (Kart 1997, pp.209). Thus, a given housing environment or out-of-home context may add significantly to the QOL of an older person in terms of allowing for the involvement in preferred leisure activities or desired social interactions (Wahl et al., 2007, pp.103).

### **5.7. Proximity to Commercial and Recreational Amenities and Services**

In addition to examining the home and out-of-home environment it is necessary to consider the amenities and services which are perceived as closest by the elderly. The distance the elderly has to travel to fetch a particular service depends on its location. The locational analysis is an important prelude to the measurement of any differences that might distinguish the travel of the elderly from that of the general population (Hanson 1994, pp.110). A rank distribution was done to measure and perceive which

amenities and services are closest from the residence of the elderly to the point where the amenities and services are located. The elderly have ranked the amenities and services on the basis of the distance they travel and have ordered them from shortest to longest. Overall the amenities which have been perceived as closest by the elderly respondents in the study area are grocery, place of worship, transportation, park and restaurant. In contrast, the amenities perceived as furthest away include health centre, library, cinema, and clubs for old age and sports centre.

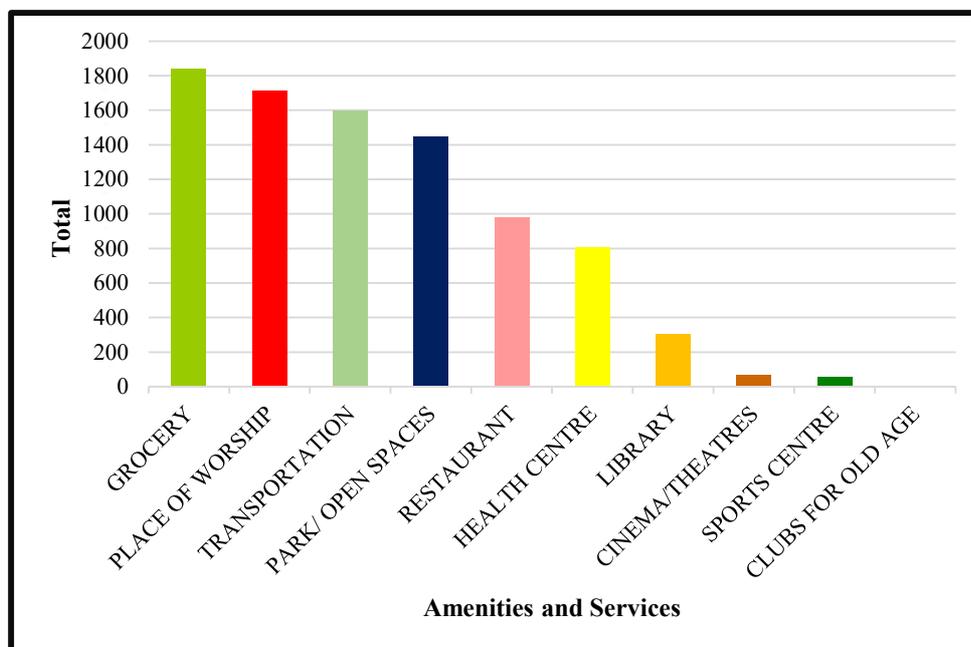
The service like health centre which is the utmost essential to provide a healthier life to the elderly is often far away from the residence point. Even if the health centre exists it cannot cater to the needs of the population and they are always referred to doctors and medical clinics either in the main town of the hills or in the plains like Siliguri, Kolkata, etc. Cinema houses, library, clubs for old age people and sports centres are not found everywhere in the hills. Mainly it is found in the core centre or at the heart of the town like Darjeeling, Kalimpong and Mirik. As one goes away from the town towards the periphery these amenities get rarer.

**Table 5.11. Ranking of the Amenities and Services according to its proximity as perceived by the Elderly in Rural Areas**

RURAL AREA	TOTAL	RANK
GROCERY	1836	1
PLACE OF WORSHIP	1710	2
TRANSPORTATION	1597	3
PARK/ OPEN SPACES	1445	4
RESTAURANT	977	5
HEALTH CENTRE	805	6
LIBRARY	303	7
CINEMA/THEATRES	68	8
SPORTS CENTRE	54	9
CLUBS FOR OLD AGE	0	10

*Source: Computed from fieldwork, 2016-17*

**Fig 5.6. Diagrammatic Representation of the Amenities and Services according to its proximity in Rural Areas**



*Source: Computed from fieldwork, 2016-17*

The top 5 amenities and services which are closest as perceived by the elderly in rural areas (Fig 5.6. and Table 5.11) are grocery, place of worship, transportation, park or open spaces and restaurant. The top 5 amenities and services which are closest as perceived by the elderly in urban areas (Fig 5.7 and Table 5.12.) are grocery, transportation, place of worship, health centre and restaurant. Here health centers in terms of primary health centre, nursing homes and government hospitals are nearest in the urban areas, but in rural areas it has scored a rank 6, which indicates it is far away from the residence of the elderly. In some rural areas of Darjeeling hills there is no health centre at all or even if present cannot provide the necessary services to the local population. In the rural areas, park or open spaces has scored a rank of 4 whereas in the urban areas it has scored a rank of 6 which implies that there is more open spaces and greener environment in the rural area, establishing a nurtured and congenial environment than urban areas. In the urban areas, all the open spaces have either been occupied or transformed into concrete buildings leaving no green space. Food stores or grocery are the necessary and nearest amenities for both urban and rural areas as they

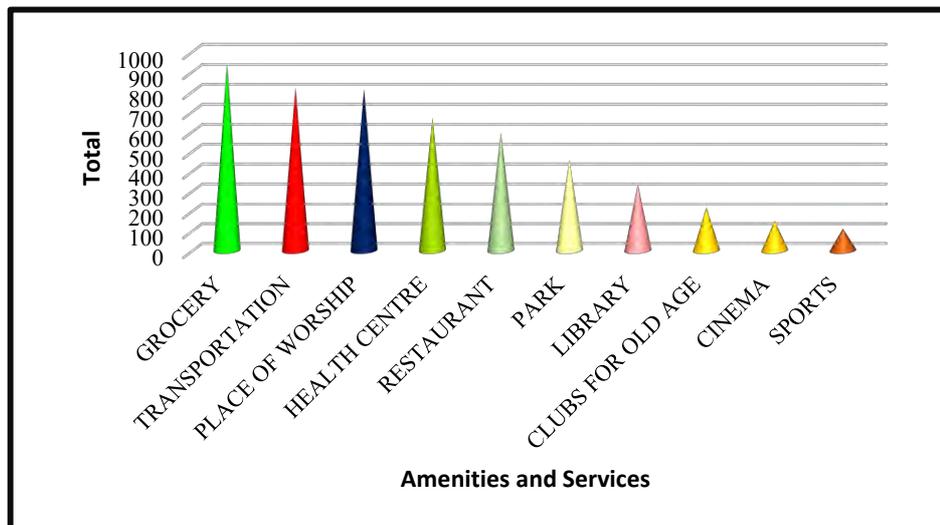
represent one of the most frequently visited urban functions and also because goods form a part of daily needs. Other than these, library, cinema houses, sports centre and clubs for old age rank in the last as these are not available in both rural and urban areas, and even if available they are located at great distance from the residence point.

**Table 5.12. Ranking of the Amenities and Services according to its proximity as perceived by the Elderly in Urban Areas**

URBAN AREA	TOTAL	RANK
GROCERY	942	1
TRANSPORTATION	821	2
PLACE OF WORSHIP	813	3
HEALTH CENTRE	670	4
RESTAURANT	595	5
PARK	459	6
LIBRARY	334	7
CLUBS FOR OLD AGE	218	8
CINEMA/THEATRES	151	9
SPORTS CENTRE	111	10

Source: Computed from fieldwork, 2016-17

**Fig 5.7. Diagrammatic Representation of the Amenities and Services according to its proximity in Urban Areas**



Source: Computed from fieldwork, 2016-17

### **5.8. Accessibility and Usability of Transportation by the Elderly Respondents**

In the main towns of the hills the elderly reach all essential facilities mainly on foot as the location in the hilly terrain does not support public transport everywhere. Some locations are such that the lanes are narrow, steep which do not facilitate easy movement of vehicles and therefore people out here resort to walking. Public transportation is available in the main roads and highways in rural as well as urban areas. Some rural areas have un-metalled and narrow roads where it is impossible for a vehicle to ply on that road. Therefore the elderly have to encounter manifold problems regarding transportation. Rosenbloom (2004) (As quoted by Wahl et al., 2007, pp.112) in his study in USA has found in rural areas the elderly often depend on a car or on other (family, formal) transportation support, because not only are shops and services usually less abundant, but public transportation is less readily accessible.

In the study area more than half (63%) of the elderly respondents report they face transportation problem. The means they use for movement within the city or village limits are hired car which is availed by 60.8 percent elderly, 32.8 percent travel on foot and 6.3 percent have their own car for travelling. Transportation problem often creates difficulties in accessing the services and facilities, in maintaining social relationship which are regarded as crucial elements for the QOL of elderly people. Older people in rural area live generally less far away from their most important confidants than older urbanites, while the transportation times needed in, for example, large urban areas, increase the difficulties of maintaining social relationships (Baas et al., 2005 ; Moser et al., 2002. As quoted in Wahl et al., 2007, pp.112). This has led to diminishing mobility other than health factors to maintain sociability and recreation which greatly affects the QOL. It meets the need providing satisfaction in life whether for leisure activities or availing services which has an impact on the wellbeing too. Higher QOL can be obtained if there is a broad range of transport options available in addition to the elderly's health and income.

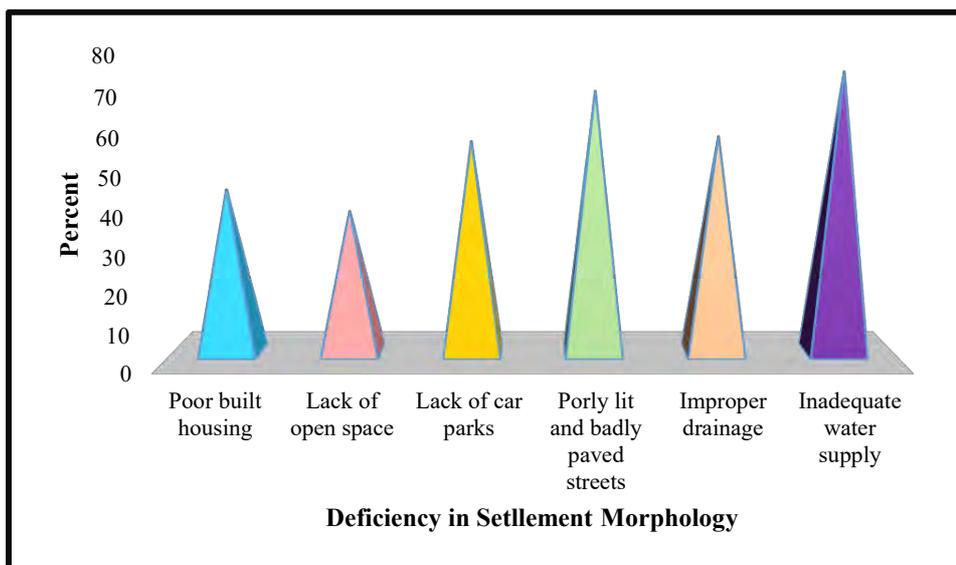
Physical environment has the strongest impact on the dimension of QOL which is called 'happiness', suggesting that barrier-free home and easy access to public transport and

other amenities are important conditions for older people's everyday life (Vaarama et al., 2007, pp.228).

### 5.9. Settlement Morphology

Settlement morphology is concerned with the urban and rural design comprising of arrangement of streets, built space, open space and human activity. Unplanned design of towns and villages results into a chaotic patterns of neighbourhood morphology (open spaces, buiding) and functions (human activity). With regard to settlement morphology (Fig 5.8.) 74.7 percent of the elderly have reported inadequate water supply through water pipelines which is served poorly in the hills. Following it are poorly lit and badly paved streets where 69.7 percent of the elderly expressed their annoyance. The other deficiencies with regard to the lack of amenities and morphology as reported by the elderly in the study area are improper drainage (58%), lack of car parks (56.7%), poorly built housing (44%) and lack of open space (38.3%). The nature of the problems have been aggravated due to increasing population which have a negative effect on perceived living conditions of the elderly.

**Fig 5.8. \*Deficiency in the Settlement Morphology as reported by the Elderly Respondents**



*Source: Computed from fieldwork, 2016-17*

*\*Multiple Response*

### 5.10. Relocation and Quality of Life

The favourable or unfavourable role of home and out-of-home environment spurts the process of relocation in the life of the old people. Relocation is stressful not only as a life event, but also from a perspective of its potentials to improve the QOL (Wahl et al., 2007, pp.110). The study on relocation in Darjeeling hills among the elderly aims to explore the relocation motivations prevalent in the area and the objectives associated with relocation. Both qualitative and quantitative methods have been used for obtaining data on reasons for moving or not moving.

Carp and Carp (1984) (As quoted in Wahl et al., 2007, pp.110) have used level of need related motivations that is basic Vs higher order needs to differentiate between content that is person, physical and social environment. Firstly, the elderly respondents are asked whether they would like to relocate to a better place. Only 27.3 percent elderly respondents have said 'yes' and rest 72.7 percent elderly respondents said 'no'. The different cohort age and process of relocation throws an understanding that with higher age the aged people are not in a position mainly due to health impairments to relocate but the young-aged keep avidity for relocating to a better place. If other variables are controlled, age has a very little effect on the relocation.

As 27.3 percent of the elderly respondents have expressed their willingness to relocate to a better place the reasons for moving are categorized into two different need related motivations. The first is satisfaction of basic needs and second is satisfaction for higher order needs. Basic needs reflect maintenance of personal autonomy with respect to necessary activities of daily living and competencies in everyday life. Higher order needs reflect more development oriented domains including privacy, comfort, stimulation or favoured personal style and preferences (Wahl et al., 2007, pp. 110). In the study area, 31.7 percent elderly persons want to relocate for satisfaction of basic needs to maintain autonomy and 68.3 percent for higher order needs (Table 5.13). Reasons cited for moving with respect to physical and social environment are housing, neighbour, access to amenities, and physical environment. These include basic needs (housing and neighbouring needs), as one gentleman says, *"I want to build a pucca house as the semi-pucca house is dilapidated. Moreover I want to move to a tranquil*

*neighbourhood with views of pine trees and greenery*". Basic needs related to housing are provisions of adequate and ample supply of water. Many elderly complain about the shortage of water and want to relocate to fulfill the minimum basic requirements of life. The health care service in the hills which is inadequate especially for the people residing in rural areas creates a demand of relocation to a better place. The minimum basic needs which are required like adequate health care facilities, provision of water and better housing with all modern amenities for the elderly generate the mobility pattern and relocation among the elderly to maintain their QOL.

Relocating for basic amenities which is related to housing related autonomy serves to maintain or enhance the QOL, as this is a step for preparation for ageing. Another type of relocation is the need for assistance which again falls under the basic needs. Assistance mobility increases with age while amenity mobility decreases (Meyer *et al.*, 1985, pp.85). Newman (1976) (As quoted in Meyer *et al.*, 1985, pp.79) and Wiseman *et al.*, (1979) have shown the reduced capability for independent living that some elderly experience includes a move to a new house or apartment near a potentially supportive relative. Convenient locations near shopping complexes and different services such as health care regulate the choice for relocation. Different housing and neighbourhood choices appear to differentiate the choices of mobility behaviour. The mobility and relocation of the elderly also depend on the socio-demographic characteristics. Ample financial resources of the elderly are related with the mobility behaviour. Those elderly with high income are likely to move to a retirement area or locality with better amenities. But some elderly with good income may not move due to their long-term stay or residence with neighbours and relatives living close by.

68.3 percent of the elderly in the study area wanted to relocate due to higher-order needs (Table 5.13). The presence of recreation service facilities such as library, clubs for old age, sports centre, meditation classes, health centre (private nursing homes well equipped), cultural facilities, natural environment, safe and secure area, modern amenities in housing tend to draw the elderly to relocate to a different place. Facilities and leisure opportunities presented to older people as well as adequate health services are more widespread in urban areas than in the country side (Golant, 2004; Krout, 1998.

As quoted by Wahl et al., 2007, pp.112). The elderly express their desire to relocate to better housing with assistance on a daily basis with modular kitchen facilities, provision of lift, wheel chair ramp, emergency alarm systems in bathroom, staircase.

In the domain of motives pertaining to the social environment the basic need is reflected by an elderly respondent, *'I want to live near my daughter's place as there is no one to assist me in this stage and staying near or close to her will help me with my basic needs'*. Meyer et al., (1985, pp.80) explain this type of mobility as assistance mobility which is associated with older age, poor health status and living alone; local or long distance mobility will be associated with presence or absence of local kin. Higher-order needs in the domain of motives pertaining to social environment expressed by the elderly are privacy, comfort, stimulation, personal style and preferences. Another respondent states, *'I want to stay in care housing unit which provides some additional care and assistance with my daily activities'*. The higher-order needs are getting increasingly significant among the elderly in terms of relocation decision.

High level of stability has been found among the elderly respondents (72.7%) in the study area with reference to relocation to a better condition amidst any environmental conditions. There is an expected relationship between age and relocation. As one ages, the tendency or desire to relocate decreases. As seen from the Table 5.13, in the age-group of 60-69 majority of the elderly (61%) convey a desire to relocate, but with age the desire to relocate decreases as is with the case of 70-79 age-group (30.5 %) and 80 and above (8.5%). Evidences show that majority of the elderly respondents have a desire of relocating only for satisfaction of higher order needs. As is seen in the 60-69 age-group 36.6 percent elderly express a desire to move for satisfaction of higher order needs compared to 24.4 percent who would like to move for basic needs (Table 5.13). Similar is the case with 70-79 age-group where 25.6 percent elderly would like to relocate for higher order needs and in 80 and above age-group 6.1 percent elderly aspire the same.

**Table 5.13. Relocation motivation of the Elderly Respondents to fulfill the basic and higher order needs according to age-group.**

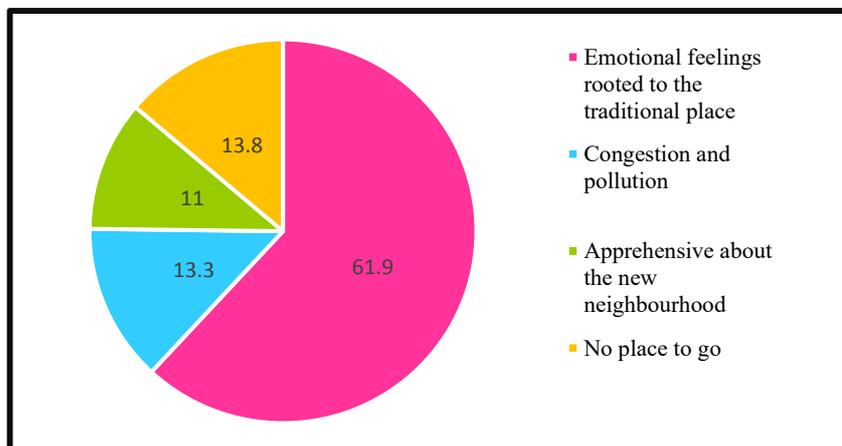
<i>Age-Group</i>	<i>If yes why</i>		<i>Total</i>
	<i>Satisfaction of basic needs</i>	<i>Satisfaction of higher order needs</i>	
60-69	20 (24.4)	30 (36.6)	50 (61.0)
70-79	4 (4.9)	21 (25.6)	25 (30.5)
80 and above	2 (2.4)	5 (6.1)	7 (8.5)
Total	26 (31.7)	56 (68.3)	82 (100.0)

*Figures in parentheses denote percentage  
Computed from fieldwork, 2016-17*

Findings on relocation from home to home in old age show that environmental regulation processes in later life may be triggered by basic needs to maintain autonomy (e.g. to reduce physical barriers) as well as highest-order needs (e.g. to fulfill personal goals), which contribute to the maintenance and enhancement of QOL (Wahl et al., 2007, pp.111). As has been noted earlier, 72.7 percent elderly have expressed an aversion for relocation. When enquired about the disinclination for relocation majority of the elderly (61.9%) express their emotional feelings rooted to the traditional place (Fig 5.9.). Place attachment has been defined as reflecting feelings about a geographic location and emotional binding of a person to places (Oswald and Wahl, 2005) (As quoted by Wahl et al., 2007, pp.105). Wahl et al., (2007, pp.105) have shown that place attachment seems to grow steadily across the life course, reaching its culminating point in old age. In the study area 13.8 percent respondents state they have no place to go because of financial constraints and other reasons, and are bound to reside in the very same place (Fig 5.9.). Congestion and pollution in the new place or city are cited by 13.3 percent elderly who opine that the hill weather is much more favourable for them than any other places. Some are apprehensive about the new neighbourhood (11%) and detest relocation (Fig 5.9.).

The figure 5.9. portrays that emotional feeling rooted to the traditional place is the main reason for the majority of the elderly in all the age-group. In sum, the dwelling place and the out-of-home environment is an important prerequisite for QOL in old age.

**Fig 5.9. Elderly Respondents who do not want to relocate**



*Source: Computed from fieldwork, 2016-17*

### **5.11. Role of Technology in Assisting the Elderly**

Housing alone will not help the elderly to maintain independence and self-sufficiency. In order to improve the quality of life of the elderly the adoption and use of technology is imperative. The characteristics of the residential environment - its design, organization and amenities can have a profound effect on the ability of older persons to function independently on a daily basis, by either fostering or limiting their safety and convenience. This is especially true for the elderly with functional disabilities and for the growing number of older persons who live alone (Huth 1986, pp. 316). Declining physical and cognitive abilities of the elderly and their ageing at home requires home modifications in terms of installation of technology and design features for their convenience and safety. Chakraborti (2008, pp.331) stresses that elderly are deprived from most basic facilities of life and subject to more diseases, and a hazardous physical environment could lead to incapacitating and painful injuries among the aged. Improving the housing environment by implementing the elderly-friendly features could prevent them from injuries like falls, accidents which could otherwise risk the life of the aged.

Technology can cater to the needs of the elderly in a variety of ways like overcoming loneliness and boredom, eliminating barrier within the home for easy movement,

without causing injury, providing safety and security. But the grasping of technology is not an easy task as it requires time, skill and investment. It is necessary to focus on the designs as well as devices to cater the special needs of the elderly.

### **5.11.1. Designs**

For promoting safety of the elderly at home more attention should be placed on the sites where elderly tend to hurt themselves like bathroom, staircase, etc. Slippery bathroom is a major cause of fall resulting in severe injuries. The bathroom floor should be carpeted with non-skid rugs, rubbers and mats and the floor should be a little sliding so that water drains out easily from the floor. It should be slip-proof to avoid fall and minimize the risk of slipping. The bathrooms should be well illuminated if they have visual impairment. Tub chairs with adjustable heights, secure backs and nonslip leg tips are available for the elderly who find it difficult to remain standing for a shower or to rise after a bath (Huth 1986, pp. 316). Another featured design is the adjustable toilet-seat, because many older persons also have difficulty in sitting down or rising from the average toilet-seat height of sixteen inches; various types of adapters are available to increase the height from two to five inches, and, to help prevent falls; assist rails can be installed on either side (Huth 1986, pp.316). If a device system is installed in the bathroom in the form of ringing alarms or speaker phone it can be helpful to the elderly especially the ones suffering from vision impairment (glaucoma or cataract), cardiovascular disease who are prone to falls, dizziness in the bathroom.

Kitchen design should also be such that it minimizes the risk of accidents like fires and injuries. Oven and stoves should be located at a convenient height of the elderly which minimizes the need to bend or stoop and should be placed at a safe distance so that the elderly do not come into contact with flames or heating element. Modern day technology has brought the touch sensitive electronic appliances with touch system, dials and push pads which can easily be used by the elderly. Safety of the elderly is also based on the kitchen design such as adjustable height storage racks, counters and cupboards, finger protector, utensils with finger bump grips or hand straps, jar opener (Dixit and Goyal 2015, pp. 250), roll-out shelves in base cabinets, shelves that are a minimum of seventy inches above the floor and that are approximately two feet deep for ease of access to

items stored on them, turn tables in corner cabinets and rounded edges on all corner and cabinet edges (Huth 1986, pp.317)

In the bedrooms of the elderly, the bed should be designed as such that they can easily get in and out of bed. Persons with joint pain should have a lower bed height so that they can easily move out of the bed. In addition to this, the other furniture designs of the bedroom should be emphasized upon so that the things or the goods kept are within their easy reach. Next to the bed a telephone or an emergency/safety alarm should be there which can be used by them in case of emergency at night. Table lamp should also be there beside their bed.

The doors should be wide enough for the easy movement of the elderly with or without wheel chair; doors should be of magnetic seals. Staircases is another area where elderly tend to fall and hurt themselves. Instead of stairways, ramps can provide free and easy passage for the mobility of the elderly. If staircase is available at all, it should be non-slip, non-high gloss flooring material, which can reduce the chance of slipping. Elderly persons with restricted agility or arthritic patients should restrict their movement by stairways and instead use the passenger lift. The handrails of the stairways should not be slippery and should be in the grip of the elderly being not too large in circumference. The house of the elderly should always be well-illuminated which can avoid them from an unforgiving fall or accident.

### **5.11.2. Devices**

The frail elderly need support on a daily basis with their movement, domestic chores, personal care for which technology is needed creating a difference in their lives. Starting from simple safety devices in kitchen (example, finger protectors, gas leakage detectors, tin openers), the use of technology in safety devices can be noticed in, for example, shock prevention in electrical/electronic gadgets, fire alarms, door security intercoms, skid-free floors, ramps, unobtrusive entrances and exits, fall protection devices, diapers for elders with health problems (Dixit and Goyal 2015, pp. 254-255).

Smart home is the concept of modern day homes. These homes are featured and equipped with latest technologies identifying and monitoring the pattern of the activities of the elderly by enhancing their safety and providing care. The features in the home

are automated, where enabling devices can communicate with each other through a communication network. For example, devices and sensors control lighting, smoke detectors, door entry systems, locks, water outlets as well as visual and tactile signaling devices (Dixit and Goyal 2015, pp.255). Smart digital sensors (motion sensors) and gadgets can track the activity of the elderly either in kitchen, bathroom or in bedroom and send alert signal to the family members or the caregiver via phone if something abnormal or accidents occur. Alzheimer patient who tend to forget their name, address can be traced if sensors are attached to their body. The digital sensors can send signal to smart phone to remind the elderly about their daily activities like having breakfast, medicine, sleeping, exercising. Elderly people who have difficulty in controlling and using an equipment may be provided by home automation system. It will enhance the security and safety of the home which is a part of the smart home.

Elderly with physical disability, cognitive and visual impairment can be benefitted with the help of robotic assistants. Robotic assistants follow older adults to guide them to specific locations in the home and connect electronically to health care professionals, improve orientation by playing recordings of the date and time and of daily activities, and offer social and mental stimulation (Smith 2008, pp.64). Chris and Gavan (2000) (As quoted in Dixit and Goyal 2015, pp.255) mentioned about 'Robot Nurses' in Japan and 'Flo-robot' in Pittsburgh being used to provide assistance in activities such as cleaning, assisting patients from wheel chairs, and onto bed. Human form android robots have been introduced by Alderbaran Robotics (France) named as 'Nao' that are responsive to voice, eye gaze and gesticulation (Normie, 2011) (As quoted in Dixit and Goyal 2015, pp.255-256).

Uses of these technology can help the elderly to lead a qualitative independent life. Japan, Sweden, France have taken active steps in promoting healthy active life of the elderly by embedding these assistive technology.

Computers, internet, mobile phones have benefitted the elderly as these make the elderly stay connected with their family or so called on-line family with the aid of technology devices such as web-cameras which supports conference, video chatting and calls online. Usage of internet is an easy way to remove isolation, depression and maintain a

greater involvement with distant family members and relatives. Other than making calls and conferences, accessibility to services, knowledge about the world, recently developed clinical trials, online education are all done through the internet. Online bill payment, online shopping, clinical trials have all become easy for the elderly especially those detected with physical agility. The use of telecommunication technology increases the social capital and support of the elderly as it helps to maintain the social contact. Use of these devices increases their memory functions as reminders set in the phones helps the elderly in remembering birthdays or bill due dates.

These methods can be used effectively for enhancing the everyday life of the vulnerable elderly who are prone to infirmity or disability to improve their health, social engagement, access to services and retain their independent quality of life. Telehealth technology and telehealth monitoring devices are available for older patients and Israel is developing at a rapid pace in this sector. The telemonitoring or telehealth devices are remote cardiac monitoring, electronic stethoscopes, pulse oximeters, glucometers etc. To prevent fires in the home which is another cause of injury, fire alarms, smoke detectors, hand-held fire extinguishers should be installed in strategic locations such as kitchen, bedroom, hall room to avoid fire.

The outer residential environment is not very friendly especially with the impaired elderly. Physical disability elderly generally meet a problem with the transportation services. There are no special buses for the elderly or disabled in our country. The elderly have to resort to whatever public transportation is available. Earmarked seats for the elderly are there in the public transportation but the other younger age-groups without bothering about the elderly often occupy those seats and the elderly are left to stand in the bus or public transportation. The system should be stricter and the mentality of the younger age generations should be sympathetic towards the elderly in public sphere. Traveler information guide books, navigation system for route guidance, on-board display and announcement of the next stop should be provided to the elderly for their easy movement. Civic volunteers can help the elderly with physical disability and low vision in crossing the roads, warn with the traffic signals and in-vehicle signs.

The government and NGOs can assist the elderly by providing helpline facilities. Similarly, Facebook is an important and viable platform to voice their needs by sharing their life online. Social networking sites help in maintaining contact, making new friends or creating groups (same age-group or cohort) like Old Age Club to vent out their feelings, play games, share news and information.

### **5.12. Conclusion**

This chapter tries to underline the elderly's physical environment, both home environment and out-of-home environment, which is a key component and dynamic context of QOL and understanding the QOL. It aims to understand the objective and subjective indicators of the external environment which acts as a potential resource or constraining force on the life of the elderly. A range of empirical findings have been unfolded in this chapter based on indoor and outdoor concentrations to rate the elderly's quality of life. In the residential environment the ownership, type of house, household size have all been taken into consideration. Majority of the elderly are found to have their own house or are the owners of the dwelling unit from which a great satisfaction is derived by the elderly. Home is considered as a person's own sphere and domain which contributes towards maintaining one's identity, wellbeing and autonomy. As they spend rest of their lives in their homes which is closely related to ageing-at-home, home and related elements have the strongest impact on the dimension of QOL which is called 'happiness'.

Availability and accessibility of amenities is another parameter of the residential environment. In the study area, water is a basic amenity and has been a scarce resource which significantly affects the health and sanitation of the elderly. Age-based differences have been observed with regard to the amenities. It is found that very old respondents (80+) have less access to amenities than the younger respondents (60+). Elderly with sufficient and stable financial base have more access to comfortable and luxurious amenities. The neighbours in the study area are found to be warm, polite and helpful as reported by the elderly. They are considered as a form of social support in the

absence of the family members. They also enjoy safety in the residential environment which is probably the important determinant for the elderly to live alone.

Deterioration of the physical environment in terms of deforestation and pollution has been rampant in the hills. The elderly state that earlier Darjeeling had a more clean, pure and serene environment but with mounting population pressure the environment is getting deteriorated. A high proportion of overall residential satisfaction is explained in this chapter which justifies that majority of the elderly on the question of relocation to a better place with all modern amenities say 'no'. This brings to an understanding that with age and associated health impairments the elderly have a very little will to relocate. The various housing options available for the elderly in the area have also been discussed. Technology plays a vital role in ensuring the safety and security of the elderly which includes not just telecommunication devices but cogitate about the various design options of the house which constantly safeguard the elderly from any injury. In order to attain a better QOL with housing, amenities and services in relation to the residential environment the public policies need to be formulated and applied for fostering graceful ageing.

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