

A Study on Residential Architecture and Life Quality of the Elderly in Northern Iraq

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ABSTRACT

As it is known for the whole world, getting old is a period of life cycle of the human beings, just like their previous ones. But what should be known is that it is a special phase of life and needs to be treated accordingly. Since forever, housing conditions have been directly affecting older people's quality of living and been making them decide their decisions accordingly. Within this regard, at this stage of life, the quality of the living environment is the most important aspect of their lives as it directly affects them, due to its surrounding them in every way. Within this regard determining those aspects that affects quality of the living of those elderly needs to be taken into consideration in every part of the world, whether the country is a developed one or newly developing.

Within this context, the main aim of this study is to determine the level of residential satisfaction of the elderly aged more than 60 years old in Northern Iraq and how the quality of life is affected by it. The study begins by creating a theoretical background between the phrases such as quality of life, residential environment and elderly based on the residential satisfaction as a main context of the study. After that, a review of literature about those previously conducted studies about quality of life and residential satisfaction is done. It provides an image about how those previously made studies have been evaluated, measured and concluded. In order to provide a clear perception about their participant's assessment of their surroundings and their levels of satisfaction. Accordingly, the domains of residential satisfaction are explained which are house and neighborhood. With their roles as variables that predict and describe residential satisfaction.

In order to reach the aim of the research a mixed methodology approach have been used consisting of qualitative and quantitative methods. The quantitative data have been gathered through a survey questionnaire among a sample size of 384 elderly living in Sulaimanyah city in Northern Iraq. With qualitative data being gathered through semi- structured interviews with 36 elderly and observation with physical analysis of 30 houses within Sulaimanyah. Based on the findings of the study, the levels of residential satisfaction are determined and housing conditions of the elderly are described. With determining the main factors that affects residential satisfaction of the elderly in Northern Iraq, the results are discussed and compared.

Keywords: Elderly, Quality of Life, Residential Environment, Residential Satisfaction

ÖZ

Tüm dünyanın bildiği üzere yaşlanmak insanoğlunun diğer aşamalarda olduğu gibi yaşam döngüsünün bir parçasıdır. Fakat, bilinmelidir ki bu yaşamın önemli bir aşamasıdır ve ona göre davranılması gerekmektedir. En başından beri konut tasarımını ve koşulları yaşlıların yaşam kalitesini doğrudan etkilemekte ve kararlarını ona göre almalarını sağlamaktadır. Bu bakımdan hayatlarının bu aşamasında, yaşam kalitesi onları doğrudan etkileyen en önemli unsurların başında gelmektedir. Bu bağlamda ülkenin gelişmiş veya yeni gelişmekte olmasına bakılmaksızın, yaşlıların yaşam kalitesini etkileyen konuların irdelenmesi dünyanın her yerinde dikkate alınmaktadır.

Bu çalışmanın esas amacı Kuzey Irak, Süleymaniye şehrinde yaşayan 60 yaş üzeri yaşlıların konut memnuniyet seviyesini ölçüp, hayat kalitelerinin bundan nasıl etkilendiğini tespit etmektir. Çalışma, öncelikle, yaşam kalitesi, konut tasarımı ve yaşlıların konut memnuniyeti kavramları ile ilgili teorik bir arka plan oluşturarak başlamıştır. Buna paralel olarak, yaşam kalitesi ve konut memnuniyeti konularında yapılmış bilimsel çalışmalar taranıp konu ile ilgili olarak sunulmuştur. Bununla birlikte, daha önce yapılan çalışmalarda hangi değerlendirme tekniklerinin kullanıldığı, nasıl ölçüldüğü ve sonuçlandırıldığı hakkında bilgi verip, başlıca değerlendirme kriterleri belirtilmiştir. Özellikle, konut memnuniyetinin etki alanını oluşturan konut tasarımı ve çevresi konuları tartışılıp, konut memnuniyetindeki başlıca rolleri açıklanmıştır.

Araştırmanın amacına ulaşmak için kalitatif ve kantitatif yöntemlerin oluşturduğu karma bir araştırma metodu kullanılmıştır. Kantitatif veri Kuzey Irak'ın Süleymaniye şehrinde yaşayan 384 yaşlı ile yapılan anket çalışmasından toplanmıştır. Kalitatif veri ise 36 yaşlı ile yapılan yarı yapılandırılmış görüşme ve Süleymaniye'de 30 evde yapılan fiziksel analiz yöntemi ile toplanmıştır. Çalışmanın bulgularına dayanarak, konut memnuniyetinin seviyesi kararlaştırılmış ve yaşlıların konut tasarımı ve koşulları anlatılmıştır. Kuzey Irak'ın Süleymaniye şehrinde yaşayan 60 yaş üzeri yaşlıların konut memnuniyetini etkileyen esas faktörler kararlaştırılarak, sonuçlar tartışılmış ve karşılaştırılmıştır.

Anahtar kelimeler: Yaşlı, Yaşam Kalitesi, Konut Mimarisi, Konut Memnuniyeti.

DEDICATION

This thesis is dedicated to my father (Prof. Dr. Nazar) for his continuous support and encouragement throughout this thesis and my entire life. He taught me to always seek the best of what a person can do, always challenge your limits and never give up. He always inspired me to be better and better, to never give up no matter what a person faces in their lives. without all those supports and guidance he has gave me in every stage of my life I would not have reached this far, and this thesis would not have been finished and see this day. He has always been a role model that I would forever be proud and honored to call my dad.

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Chapter 1

INTRODUCTION

This is an introductory chapter for addressing the context of the study, as well as illustrating the aim and objective of the study, and research questions are addressed. An outline of the methodology is explained, with structure of the thesis and finally followed by a summary of the chapter.

1.1 Introduction

Architecture is mainly believed to be an important approach in order to provide better spaces for living. The study of Levin & Adlercreutz (2000) about the architecture of Alvar Alto, is a good example of how architecture can provide healthy spaces and enhance the quality of life of the people living there.

Globally, there have been an increase in people's average life span with a steady increase in the number of older people within this range (Hafez, Bagchi & Mahaini, 2000). The population's proportion of people aged 60 and over, is expanding in each year. The number is expected to grow to 1.4 billion by 2030, to 2.1 billion by 2050, and to 3.2 billion in 2100 (WHO, 2016). Meanwhile, according to Anderson (2011), there have been a general view about architectural space acting as a structuring framework for providing the needs of elderly living, care and health related issues.

Indicators from previous studies suggest that, architecture has a great part of elderly's lives, by providing spaces that supports or limits their activities. It can be said that the

most effect is on those physically limited elderly who spend lots of time inside buildings (Kite, 2006). Within this regard, according to Stermineki (2015) in his study on housing and quality of life. He suggests that architectural space creates an integration between the building's design, interior space decoration, and surrounding environment of landscape and location.

Although the human being is considered a living creation that exists physically, but their lives are being articulated by their living environments and spaces. Studies like Robin, Matheau-Police and Couty (2007), Evans, Wells and Moch (2003) with Evans (2003) referred that if the environment is not sufficient, then it has the ability to affect multiple aspects of the lives of human beings. According to Ng, Zhang & Ng (2018) in their study on quality of life and living environments. They concluded that the most significant aspects such as diminished control, restraints in behaviors, feeling insecure, overload in the human sensory system, conflict and competence for reaching the resources, social withdrawal, sense of being helpless and reduction in privacy are mostly affected by it.

With aging of the elderly, the most preferred space for them in order to spend time, is their homes. They are believed to be selecting to continue their lives in their own homes rather than the units of institutional care. This is because of their desires to age in their own familiar space with their available ranges of independence (Bamzar, 2019; Schorr & Khalaila, 2018). In addition, the residential environment is the most significant aspect for reaching a successful aging in place through its architecture and built environment. According to a study by Iwarsson, Hostmann and Slaug (2007) on old age and housing concerns. They concluded that the concerns of housing vary on daily basis. Also, differing housing characteristics take their own parts in the levels of

physical limitations that occur in different stages of aging. In Another study by Cutchin (2003) on aging in place. He concluded that housing domains have major parts in the challenges faced by the elderly.

It has a major role in people's lives, because of its being responsible for accomplishing their needs and living requirements (Kerbler, Sendi & Hrast, 2017). From a wider perspective, being able to maintain a residential environment that satisfies the individuals, is considered as a major point of their lives with its effect on the standards of material living of the people. With time the relationship between the living environment and housing changes through different stages of people's lives. Specifically, when they reach their older ages, the residential environment becomes the most significant point in their lives. It is necessary for achieving their essential requirements. Adding to this, it acts as a sanctuary facing multiple conditions like weather, providing a safe environment, maintaining personal space and privacy (Stermineki, 2015).

Adequate residential environments lead to good quality of life, as also researchers emphasize the effect and importance of the living environments to the quality of life of their dwellers. Among the studies is one by Sirgy and Cornwell (2002) on quality of life and neighborhood aspects. They aimed to present models about satisfaction with neighborhood attributes and its effect on quality of life. They concluded that satisfaction with differing aspects of neighborhood was affecting quality of life and life satisfaction. Also Stermineki (2015) investigated quality of life and housing. He concluded that domains of house are essential aspects that direct quality of life of the people. There is also the need to say that recently, it has been argued that because of the subjective characteristics of people's quality of life; there might be challenges to

measure it, although generally researchers believe that it is a many faceted concept regarding the individual's perception of their lives (Bonomi, Patrick & Bushnell, et al., 2000).

In addition, researchers believe that the most difficulty faced by a study of quality of life, is determining which one of its domains affects them mostly. Moreover, it is believed that for achieving a desired result, perception on quality of life should be consisting of psychological, environmental, physical and social values (Theofilou, 2013). It can also be said that there have been attempts to provide more information within this scope throughout the past years (Rejeski & Mihalko, 2001; Higgs et al., 2003; Marans, 2003).

Interest on quality of life began with the western societies and became the focus of many scholars since the past. They were trying to connect between the theories and ideologies of quality of life with those developments that occur in it. It can also be said they were tempting to connect it with life aspects such as enjoyment, happiness and wellbeing (Diener et al. 1999; Sirgy, Rahtz & Samli 2003). It became a field of interest regarding multiple aspects such as, philosophy, social work, psychology, communication, sociology and geography. This subject has also attracted the attention of the scholars of the Asian countries, because of the developments that happened within a short period there. They tempted to relate quality of life concepts of people from Asian counties through different contexts especially older adults and their living aspects, in order to provide more information about them (Shek, Chan, and Lee 2005; Ng, Zhang & Ng, 2018).

1.2 Problem Statement

Elderly is viewed as a phenomenon that is old as humankind, and represents the last stage of human life circle (Bayram et al. 2011). It brings various losses of roles and functions and leads to an increased dependency on others and cognitive impairment. According to Orimo, Hajime and Ito et al. (2006) in their attempt to review elderly definition. They suggest that, it is a chronological age of getting old, begins from 65 years old. Those aged from 65 to 75 years old are in a phase called early elderly and those aged more than 75 years are in the stage of late elderly. It also needs to be said that they have tried to view the definition of elderly through studies, but still it has an unknown base.

On another hand, according to Stein and Moritz (1999) aging can be defined as the mechanism of gradual developments in psychological, social and biological system of those people aged more than 60 years old. Also Şahina, Özer & Zubaroğlu (2019) suggest that getting old carries limitations in body functions and leads to more dependency on their surroundings. This dependency on other people causes decrease in their levels of satisfaction and quality of life.

According to the theoretical models of environmental gerontology, the ability of the elderly to cope and live in their residential environment is directly affected by their demands from the environment and their own personal ability (Parry, 2015; Iwarsson, Horstmann & Slaug, 2007; Day, 2008). As with aging, there is limited physical ability, more adequate residential conditions are needed to protect them from accidents and injuries.

In addition, Studies indicate that the residential environment and its fulfillment of daily needs constitute a significant aspect of older adult's quality of life regarding their perception and evaluation of their living conditions (Braubach and Power 2011; Burton, Mitchell & Stride, 2011; Kaspar, Oswald & Wahl et al., 2015; Costa-Font, 2013; Garin, Olaya & Miret, et al., 2014; Glass & Balfour, 2003). Also, Mandić (2011) states that the most important aspect for people's welfare and quality of life is the residential environments with all its scopes.

Considering Northern Iraq, the population is aging, elderly aged 60 and over comprised % 21 of the population within the recent previous years (IOM, 2017) . The number is expected to continue to rise every year as another generation is born and the previous ages. This case needs to be viewed as a priority while decision makings, which in turn might require many assistive information. Their surroundings of communities, families and service providers, need to be enlightened and guided as much as possible. There should be explanations and clearance on sensitivity and importance of elderly needs and requirements. Especially since, there are particular needs and requirements of them including chronic disease that needs more highlight by their surrounding families and the support programs either governmental or non-governmental.

There are a few studies within this context about the general population in Northern Iraq, for example; Rashid (2013) conducted a study on residential satisfaction of ancient and modern neighborhoods in Sulaimanyah city, Northern Iraq. To investigate residential satisfaction between two neighborhoods, the results indicated major differences in satisfaction levels between the two neighborhoods.

Moreover, there is the need to conduct studies especially related to the residential environments that elderly live in. The influence space has on elderly is not particularly well understood in the care professions. Though it is recognized in the literature as a significant factor that is likely to have an impact on quality of life, especially with elderly lives being limited to their direct residential environment. These facts endorse such a study of elderly people's assessment or perception of the physical environment in which they live, and the analysis of the interrelations between elderly people's residential needs and the amenities/services offered in living space.

1.3 Aim of the Study

As the main purpose of architecture is improving our living spaces through valuable attempts, and with aging of the people, their desires for living in places owned by them increases (Andersson & Abramsson 2012; Sandstedt & Abramsson 2012; Nakhodaezadeh, Jafarabadi & Allahverdipour et al., 2017). However, developing and developed countries have different elderly regarding their life span as they vary according to their personal characteristics (Agahi & Parker 2005).

Globally, it is proved that communities and personal homes are more preferred than institutional environment. Especially, by the elderly, because of their attachment to the home environment, and this is only possible with adequate living environment (Bamzar, 2019; Andersson & Abramsson 2012; Sandstedt & Abramsson 2012).

Nowadays the elderly's physical environment standards within their homes regarding accessibility, corridors, stairs and rooms are proved determinants of quality of life of the elderly (Deal, 2012; Ambrose, Paul & Hausdorff, 2013). Northern Iraq is never the less a part of these developing countries with its share of elderlies and their needs. The demands on housing have been increasing lately which have led the firms and

designers into focusing on the general population, with a lack of interest on the elderly share in the population. Especially, as elderly grow older, they will have special needs and demands of their daily lives than the younger ones (Fielo & Warren 2001).

To the best knowledge of the researcher, there is no studies related to this topic within the field of housing conducted in Northern part of Iraq. Though it is aimed to provide a guidance for better life for the elderly aging in place in Northern part of Iraq. Within this scope, the aim of this study is to investigate the residential conditions and quality of life of those elderly that live in their residential environments at Iraq, through an architectural point of view. Assessing the standards of their living places such as location and characteristics of their built environment.

The main objectives of this research are: First, Evaluate the elderly residential conditions throughout their own perspectives and needs. Second, understand the demands and problems of quality of life regarding the residential environment of the elderly. Finally, satisfaction with housing conditions regarding the environment's physical factors in order to contribute to provide better living environment regarding their residential conditions.

1.4 Research Questions

The case of the older persons needs to be brought higher in the priority list of the decision makes and this may require plenty of advocacy. Families, communities and service providers have to become more sensitive and understanding to the situation and needs of the older persons. Along with the aim the following research question is addressed:

Main question:

1- What is the level of satisfaction with residential environment and how the elderly quality of life is affected in Northern- Iraq?

Sub- questions:

1- What are the most significant factors that affect residential satisfaction among the elderly?

2- What are the causes of a good quality of life among the residential built environment from the elderly perspective?

1.5 Limitations and Scope

In order to reach a clear explanation about this thesis, it is limited to the residential environment and its architectural characteristics, to analyze how it affects the quality of their lives. The study is mostly focusing on elderly because they are the population who prefer to stay at home (Rioux, 2005). They are limited to those literates who are aged sixty and above, with all their types of living arrangements either living alone or with others.

Sulaimanyah city in Northern Iraq has been chosen, because it is a city that constitutes a large number of the population in Northern- Iraq. Its housing sector is in control for providing adequate and fulfilling residential environments with decent quality of life for the population. Since 2003, there have been crucial problems of residential conditions in this city. That is why the city is newly beginning to develop with its own shares of elderly with different abilities, needs and physical conditions. Although attempts have been done in order to find solutions for these problems, but elderly need their own significant share within these solutions. More focus should be given to lack

of information about elderly needs from the residential environment and their own perspective and satisfaction about their housing conditions, especially analyzing it from the field of architecture. For the purpose of the research and reaching an adequate result, those elderly aged more than 60 years are included and those under 60 years old are excluded. Also, the study is limited to those who live within the governorate of Sulaimanyah with excluding those in the rural areas. Detached, semi- detached and apartment housings are included with emphasize on their physical characteristics of how it supports or limits elderly daily lives and needs.

1.6 Methodology

As stated before, this study is to investigate the residential conditions and quality of life of those elderly that live in their residential environments through an architectural point of view. Assessing the standards of their living places such as location and characteristics of their built environment. Both qualitative and quantitative methods have been used. It covers a range of age groups from (60 -65; 66 -70; 71+) with focusing on the residential environments inside the governorate of Sulaimanyah city. For reaching the aim, a number of literature reviews have been done on the main subject, which are the elderly, their quality of life and residential conditions. Then their needs from the residential environment and their requirements for a decent quality of life have been studied. After the descriptions and information on the subject, some key characteristics and issues about the place of the research, which is Sulaimanyah, city is proposed. Then in order to collect data from the participants, a questionnaire survey, semi structured interviews and observation with physical analysis have been conducted. A sample size of 384 elderlies have been chosen to distribute the questionnaires among them, and semi – structured interviews have been

conducted with 34 elderly. Finally, observation and physical analysis have been managed within 30 houses occupied by elderly.

For analyzing the quantitative collected data from questionnaire the Statistical Package for Social Sciences (SPSS, version 25 with Chi-square tests) was used. Adding to this, the qualitative data gathered from semi-structured interviews have been analyzed by content analysis. The final section is the analysis of the data from observation procedure, of the selected houses or apartments with documenting their information in a specially prepared inventory table. This table is prepared for the aim of investigating their current residential conditions such as accessibility, circulation, functionality, use of spaces, engineering services, furniture, aesthetic characteristics of the house. It also investigated their neighborhood conditions through determining the availability of daily needs places near them.

The residential environment is a major part in everyone's life especially for the elderly as they are the group that would like to spend more time indoors, and their satisfaction with their residential conditions fulfilling their is the most aspect regarding their quality of life. While the process of aging, issues of demands and coping with everyday life, situations are becoming of major importance. There is need to emphasize the quality of the living of these group of people and since the major part of their life at this stage is spent within their residential environments. There is need to briefly investigate this environment of theirs which consists of their house neighborhood and since an essential part of quality of life is determined through satisfaction with the domains of life. Due to this reason, within the next chapter there is highlights on these major points of the residential environment, quality of life and satisfaction with its domains.

Chapter 2

ELDERLY AND QUALITY OF LIFE THROUGHOUT THE RESIDENTIAL ENVIRONMENT

This chapter represents a literature review about aging and elderly, their needs and requirements within their surroundings and from life. Then, their quality of life domains is explained and described in detail. After that, one of their major domain of quality of life is discussed, which is their residential surrounding environment. Residential satisfaction is a measure of the elderly satisfaction with their environment and directly affects their quality of life. Due to this reason, the residential satisfaction of the elderly within the residential environment is described with explaining the two main domains of residential satisfaction which are house and neighborhood.

2.1 Elderly and Aging

Getting old is a chronic process occurring naturally, affects the appearance of a person. It leads to significant insufficiencies in individuals' body and mind functions, creating challenges for their daily life activities with time passing. Through biologically engaging with the inner functions of the elderly body, it brings collapsing of physical functioning with abilities, and reflexes, because of limited reproduction of body parts. These in part leads to an increased dependency on others and cognitive impairment. According to Borson (2018) with aging, there is decline in mechanisms of brain also, such as speed of thinking, perception and memory functioning are also affected.

It can be said that the word elderly is a phrase used to describe those people who are older than younger people are, by doing so it is referring to a later life array. Also according Bayram et al. (2011), elderly is a phenomenon that is old as humankind, and represents the last stage of human life circle. It is an important, fundamental, physiological and usual period of life, which is following the period of adulthood (figure:1). Universally, there exists a larger number of elderly than the previous times. Without availability of ancient models regarding this quick and intense group of elderly, which the world is unfamiliar with. In their study Orimo, Ito and Suzuki et al. (2006) on defining elderly, they concluded that it is defined according to evidences regarding various aspects such as medical, cultural and social sciences. Adding to this, Parry (2015) thinks they are described functionally and chronologically.

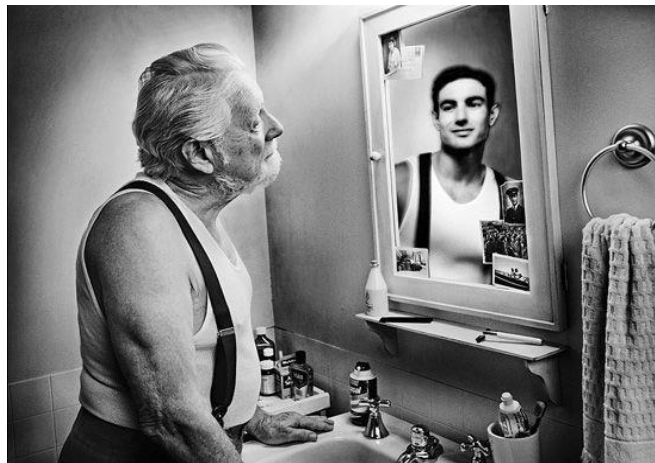


Figure 1: An Expressive Figure of Elderly
(URL1)

The ageing period or elderly life carries many principal characteristics related to life, and to society, which has attracted the attention of scientists and researchers to be the topic of their study. Within this regard, since it is experienced by many people, so it is referred to either as normal or inevitable. However, there is necessity for describing and precautions of aging characteristics. In a study by Putri and Lestari (2017) on basic

needs of the elderly, they found out that financial security was most important needs for them. Secondly, safety and security and thirdly, mental health. Fourthly, health care accessibility and lastly self- actualization. Although these needs may vary according to middle or low-income countries.

There is also focus on those adjustments that occur in their functions such as: having more difficulties in dark spaces, more risk or even death from falls, reduce in mobility, which is counted as the most important of all of them. They face environment adjustments also, either external or internal environments, which causes challenges for them. Coming with all these is, disorders in physiological functions, there is limited permutable actions for them, and any change in those limitations produces risk and damage for their lives. They have difficulties in doing certain or risky tasks, especially in case if muscles or other body activities are included. These are all signs that can be seen very clearly with people aged above sixty. These are all effects of deterioration in functions, some of these deteriorations start from early adulthood in some people. While in some others it occurs in adulthood slowly, and then its rate increases with aging more. While some others, it does not occur in them throughout adulthood and then the deterioration starts with getting older. Within this context, elderly can be referred to differently from mature or adult people, which is a fact still not given much focus from the world (Beattie,1963).

2.2 The Hierarchy of the Needs of the Elderly

Many of today's elderly prefer a long life with high quality, and think it should be concentrated on more than a long life attempt alone. Understanding what constitutes the needs hierarchy for elderly is helpful for caregivers and families in order to contribute in providing high satisfaction levels, self-actualization and self-esteem for

them. Within the past years, the hierarchy model of Maslow (1942) which is gradually formed according to the needs of human beings, worked out in various economic and social situations. In his theory, he describes the needs of the human beings, which are the most basic ones, and the effect of these needs on the people's characteristics. Regarding Maslow, people have two types of needs: every day and fundamental needs. Achieving the fundamental needs depends on characteristics and background of the people. He categorized these fundamental needs as physiological, safety, love, esteem and self-actualization. These have a nature of hierarchy, when you achieve one, another one after it occurs. Meaning that being satisfied with the low levels of the hierarchy, serves as a base for satisfaction with the higher levels. Regarding the elderly needs, there is five points that should be focused on which directly affects their quality of life.

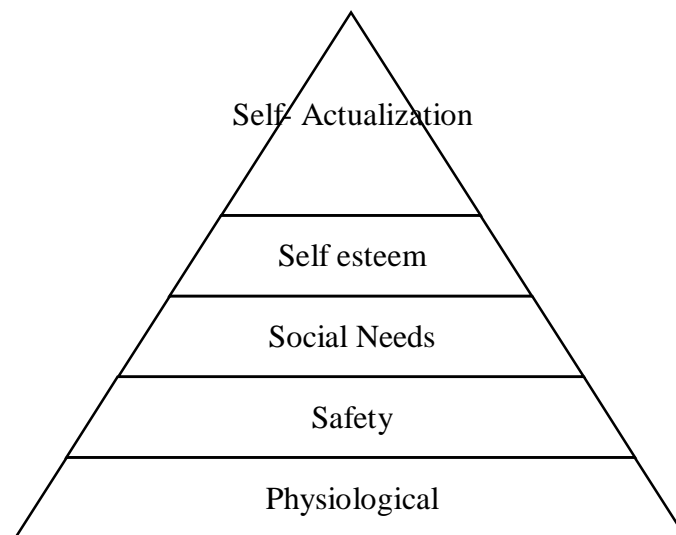


Figure 2: Hierarchy of Needs (URL2)

2.2.1 Physiological Needs

The first level of needs hierarchy and the most important as described by Maslow (1942) is physiological needs. Every person regardless of their age, begin with the basic needs. Shelter, food, drink, sleep and getting medical treatment are required to continue living. Considering elderly, this field is the most focused on by authorities who provide health for them. When providing care for the elderly, this is the area that most caregivers focus on especially on safely circulation within the living environment, bathroom functions, dressing and eating well. According to Hagerty (1999), this level can be provided at a low income level and is not based on high income. On a study by Wang, Chen and Chen (2016) on the needs priority of the elderly in home care services. They concluded that physiological needs were the most significant for the elderly, and then came the other needs of the hierarchy.

2.2.2 Safety

When physiological needs are fulfilled, and then comes the next level, which is psychological consisting of safety and security. Based on the hierarchy (Maslow, 1942) and as a person feels safe and secure, there will be no importance regarding the higher levels. This is a subject worrying many adults that have elderly parents, which usually creates conflicts between those different age groups. Old people, especially the ones that feel scared of illness or injury, require feelings of security. Although, they sometimes get uncomfortable for they feel they are treated as a child by their own children toddler. There should be considerations in arguing the concerns of security such as: being alone at home or maintenance works for it, maintaining a clean environment, having access to surrounding facilities (Josephson, Fabacher & Rubenstein, 1991). If there are any incompatibilities with the safety aspects, then aging

directly gets affected by it, which leads to independence loss. The safety needs depend on the safety of the living area, medical insurance, job and financial security.

2.2.3 Social Needs

Once the lower levels of needs are fulfilled meaning safety and physiological needs, then higher levels gain their share of focus and importance. Social connections are significant aspects for everyone, but for the elderly, it is a concern of their quality of life (Mollenkopf & Walker, 2007). It is connected to interactions between individuals and other people. Being connected socially is very important to all people, but for the elderly it becomes a key quality of life concern. With their aging, elderly often find limitations in their social connections and opportunities. They mostly lose the ability to go out, which makes them spend more time at their homes. They are in need of opportunities that makes them participate socially with their community, friends and family. Attending those places that encourage social interactions such as social centers, or social media communications to make them feel they are society members also. Participating in activities of the community either independently or with help from others, family socialization and interactions, providers of health care and friends.

2.2.4 Self-Esteem Needs

By fulfilling social needs, rises the esteem needs. Like every other person, the elderly need to be appreciated and taken into consideration for their talents, thoughts and capabilities. They often lose their feeling of self-worth when they face limitations like being frail, disable or getting ill. The decrease in personal appreciation is harmful for the health and well- being of elderly. These should be taken into consideration by their surrounding environments to contribute in providing a good quality of life for them. Such as financial issues management, activities of the community participation and their roles, status and reputation being considered in their families.

In a study by Ali, Suhail and Ali (2016) on elderly and self-esteem, they concluded that elderly who have low self-esteem were having troubles in connecting socially and saw themselves as people who are introverted, unworthy and not able to achieve anything because of physical limitations. Also the surrounding environment were causes for it for criticizing them and not inspiring them which leads to depression and finding no purpose of living. The study suggested that elderly should be educated and encouraged in a proper way to increase their confidence and trust. As Maslow (1942) himself also suggests that individual's satisfaction with those needs directs them to feeling confidence and being unsatisfied with these feelings directs them to bad levels such as depression.

2.2.5 Self-Actualization Needs

With satisfaction with all the other needs, then the last level of the hierarchy comes meaning the need of self-actualization, which changes from a person to another. This new level is not achieved until a person feels pleasant and satisfies with their current position. According to the hierarchy of needs, the last and most essential part is self-actualization need. It is achieved by those few who have traits in common. They are more focusing on life realities rather than imaginary thinking, like to solve problems instead of criticizing. In their perspective, the journey of life has as much importance as their last destination. Considering all what they faced of experiences within their mature life, they are the most applicable candidates for reaching self-actualization. Still, getting old decreases the chance of the elderly to reach extreme levels of self-actualization. Instead, they are on their bottom levels for survival. In a study by Wang (2012) on elderly needs in later life, they concluded that facing challenges in managing their own works made the elderly feel anger and bored. They found that reaching self-actualization level is even harder for the elderly, because they already reached it once

before, which makes reaching it again even more difficult. They also suggested the need for them to be encouraged in order to enhance their attitudes towards life positively.

However, as we rise from low to high levels of needs, there will be various differences according to the individuals. Although the physiological needs are alike for almost every person, but the others vary according to the characteristics of the people. Regarding the hierarchy nature, Maslow suggests that the needs are stabilized in order but differ in expectations. And to explain about the hierarchy of needs work as its coordinated in a way that when reaching satisfaction about a need, another one comes. He suggests that every person in anywhere have some points of needs where they are satisfied, and have others, which they are dissatisfied. According to Sirgy (1986) who produced a theory of quality of life from Maslow's theory. Quality of life can be described from the level of satisfaction of the people with those hierarchical needs in a studied society. The more satisfaction with needs the higher the level of quality of life of the society. With understanding the needs of elderly and how to fulfill it for them, their lives can be changed to better even for them to become an idol for the society. When acting more responsible towards their lives, more attention would be given to quality of life aspects, with them becoming more free and independent, healthy, happy and satisfied.

2.3 Quality of Life and Elderly

Within this period of life of the individuals, they can be affected in various ways, and their life quality could be compromised by many threats, regarding all the influential backgrounds of their lives. The number of elderly and their imagination of good life with support for their demands and requirements in the society is increasing. These

changes made elderly's quality of life be internationally focused on for the purpose of increasing and determining their quality of life levels.

Ferrans and Powers (1985) as the developers of quality of life concept, they evaluated the significance of life aspects and satisfaction on quality of life. The topic has gain interest for lots of countries beginning with western countries since 1970s. Then in other years interest on quality of life began to increase, in their study from America Diener, Suh and Lucas et al. (1999), they connected subjective wellbeing with life quality and studied how it affects happiness and life satisfaction. Another study by Sirgy, Rahtz, and Samli (2003), on the theory of quality of life, they put happiness as a main aspect for quality of life especially for elderly and they connect it with income which in turn is directed by gender, as they found out with having better income women were generally happier than men.

Throughout time, especially from the last decade, quality of life topic gained attention of lots of researchers from Asian countries as well, this was due to the continent's steady growth. As a study by Chan, Cheng and Phillips (2002) on quality of life of elderly in Hong Kong, they wanted to develop measures of quality of life of the elderly in Hong Kong with taking two different cultures into consideration.

The effect that age has on life quality can be because of aging either directly or indirectly through the factors the affect aging. There is a complicated relationship between quality of life and elderly. Although, the literature provides us with many definitions about quality of life, which are aimed to provide leading perspectives on quality of life. But it is evident that different studies have used widely different definitions and methods of assessing quality of life. Still, they are often accused they

do not know what they are talking about, because of the vague concept of quality of life itself. According to Barcaccia, Esposito and Matarese et al (2013) in reviewing of quality of life definitions, they concluded that quality of life is indeed a vague and shifty concept. Adding to this reaching a clear and precise definition of it needs many more attempts.

According to, Farquhar (1995) quality of life is the level of people’s satisfaction regarding various dimensions of their lives. Massam (2000) thinks it is the idea of attracting people’s attention to a place by providing good conditions and desired requirements for them. In addition, according to Theofilou (2013) on his definition of quality of life, he concluded that it is a multi-dimensioned concept, which needs to be approached from various theoretical aspects. Also, quality of life is a reflection of the essential values and needs of the individuals that are satisfied according to specified circumstances (Steg & Gifford, 2005).

Table 1: Quality of life Definitions

Scholars	Quality of Life
Faruqhar (1995)	Level of people’s satisfaction regarding various dimensions of their lives.
Massam (2000)	The idea of attracting people’s attention to a place by providing good conditions and desired requirements for them.
Theofilou (2013)	A multi-dimensioned concept, which needs to be approached from various theoretical aspects.

Although lots of descriptions and theories about quality of life have been proposed, but regarding the elderly there are missing in overviews about opinions of the elderly

themselves. Adding to this most of the measures of quality of life were not created in populations of elderly, even though, they also have the ability to talk and think about their quality of life. To know more about quality of life of the elderly, there is the need to understand their experiences of life. This is important in order to provide services for them that reach's their expectations and requirements from life.

Faruqhar (1995) conducted a study on individuals aged more than 65 years to know about their quality of life. The term was recognizable for the participants, and they expressed positive and negative opinions about it, with most of them expressing positive opinions. Their perception on their quality of life was according to a comparison with life aspects of other people. In their study, Netuveli and Blane (2008) and Theofilou (2013) on quality of life of the elderly, they concluded that it is affected by objective and subjective domains. Many of them have positive perspectives of their quality of lives regarding dependency, social relationships, health and financial status. According to Raphael et al. (1997) it can be counted as the level of satisfaction with their properties, surroundings and daily activities. In the reviewed literature, subjective aspects such as reaching desired needs and satisfaction define quality of life. Within this perspective, and for the research's purpose, quality of life is viewed as the level of fulfilling the needs of individuals by their residential environment.

2.3.1 The Meaning of Quality of Life for General Population

Every individual has their own perception about quality of life, but still no one of them have precise clues about what it means for the majority of them. It can be said that regarding the general population, quality of life represents how much they are satisfied with the dimensions of their lives comparing with an ideal life they create in their imaginations. The analysis is generally according to the people regarding their living

nature, improving and maintaining their lives quality. It is directed by their value systems. According to Abdul Mohit (2013) it is connected to satisfaction needs, life and happiness.

In another study by Salehi, Harris and Sebar et al. (2015) on perception of the youth on quality of life, they concluded that it meant healthy life and was affected by physical activity and smoking, social life and financial situation. Also on another hand, a study by Bradford, Rutherford and John (2002) on youth and quality of life, they concluded that the significant aspect for life of the younger generation is social connections and the less significant aspect was physical activity.

In addition, to some other people it means goodness of life and living within the environment happily and successfully (Brown & Brown, 2005). However, quality of life is largely a matter of personal experience and an individual's capacity or group preferences. Different people value different areas of life and as a result, quality of life means different things to different people. In a study called The Pew Research survey done in 2013, which conducted by Pew organization, a nonprofit American organization, they asked respondents for their perceptions of the characteristics and functions that influence quality of life in older age. Nearly half of the elderly expressed social relations as good for quality of life with aging. Another half expressed doing daily activities, no pain, happiness and enjoying life as significant for a good life quality. Others expressed their being able to remember their life experiences and surrounding people as aspects for a good quality of life.

2.3.2 The Meaning of Quality of Life for Older Population

To know what is quality of life from the elderly's perspective, there are conclusions from various fields of study, with different methods according to the study's point of focus. But there are perspectives also from those interviews and questionnaires that express the elderly opinions themselves that can give information about the meaning of quality of life from elderly's perspective. The answers could still be affected by various effects. For example, when Corner (1999) tried to study the elderly, he found that telling the participants from which source he is coming affected the answers. Such as, if he said from medical sciences department, he has come, then the participants would speak about their health. On the other hand, if he only says he come from a university to study your case, then they would speak about general aspects of their lives.

Another study by Farquhar (1994, 1995) in his attempt to make British elderly express opinions and speak about their life quality. This was due to the aim of studying the life aspects of those elderly who manage to live in their homes successfully. This was done by answering five open-ended questions about their quality of life. In a specific question, which was about the things that grant quality of life to an elderly, the responses were social relations, health, economy and daily activities either inside house or outside house.

Understanding the perception of elderly about quality of life is important for them and for evaluating other existing measures of quality of life. Although their perception is different in their evaluation about the aspects of a good quality of life, probably more related to their experiences with the aspects through their daily living. According to Bond and John (2004), elderly have different perspectives of quality of life comparing

to other age groups or researchers. In another study by Molzahn, Kalfoss and Makaroff (2011) on the importance of quality of life for elderly, they found that the value of aspects was differing according to their perceptions. It was mainly self-reported and directed by the status of the country whether medium or high developed.

Although in some cases expressing and evaluating quality of life from elderly that have impairment in their cognitive system might be a challenge, but according to Abramson, Clark and Arling, et al (2012) in their study on cognitive impairment's effect on measuring quality of life of older people. Results indicated it is still appropriate and possible to measure it, although it was changing according to their level of impairment, but it was totally applicable for providing better services for them.

As referred to by Mollenkopf, Hieber and Wahl (2011) in their study on elderly's perceptions about out of home movements within ten years. With decrease in mobility movements comes decrease in satisfaction of transportation opportunities, and those activities done outside of the home. Although in their study, they saw increasing in public transport satisfaction levels. And within their final findings they state that being able to maintain adequate movement outside of their houses is counted as major importance regarding the transferring of people's ages from the final stages of midlife to their older ages.

As in their study Banister and Bowling (2004) on aspects of moving that are affecting quality of life, they concluded that there was differing amount of opinions about the expectations and levels of quality of life of the respondents. But they think that their quality of life is affected by passive aspects meaning social networks and active aspects meaning mobility equipment in order for better understanding of quality of life

of older people. Within this context and as Fisher (1992) states that expectation lead the assessment of quality of life from the elderly perspective, which is based on life biographies and experiences. How ever since the field of gerontology itself is a field with multidisciplinary approaches, then the exact thing is correct for those definitions that are varying according to age of the individuals.

Table 2: Perceptions of Elderly Towards Quality of Life

Scholars	Perceptions of Elderly
Farquhar (1994, 1995)	Social relations, health, economy and daily activities either inside house or outside house.
Bond and John (2004)	Different perspectives of quality of life comparing to other age groups or researchers.
Molzahn, Kalfoss and Makaroff (2011)	Mainly self-reported and directed by the status of the country whether medium or high developed.
Mollenkopf, Hieber and Wahl (2011)	Managing mobility and being able to proceed the important daily activities
Fisher (1992)	Expectation lead the assessment of quality of life from the elderly perspective, which is based life biographies and experiences.

2.4 Measuring Quality of Life of the Elderly

Quality of life can be studied through two approaches; one is according to “objective measures” this is based according to external observations of the standards of living of the individuals meaning economics and education, and health. This one prefers objective dimensions for its being real. While the other is “subjective measures” which is based on psychological characteristics of the individuals meaning perception and satisfaction, happiness and thinking that it is an experience which is subjective.

Barnes and Design in Caring Environments Study Group (2002) think that for determining elderly quality of life, there are strains in between objective measures and the aspects of quality of life's subjective nature. They think any attempt towards quality of life should have subjective and objective domains with maintaining all the aspects of the individual's lives meaning the positive and negative points. In another study by Netuveli and Blane (2008) they described quality of life by subjective and objective dimensions.

Recognizing evaluations and values of the people is important for recognizing their perceptions which varies from a person to another regarding quality of life which. As we can understand that quality of life is the attached meaning to significant events, and the people express their subjective experience with their views, experiences and beliefs with their own means in context. They are the only one able to define what is normal level of experience in their view, and their level of affection by it theoretically (Bond & John, 2004). Adding to this, the built environment aspects might not cause problems, but regarding potentials of the individuals might cause problems (Iwarrson,2005).

In their study Costanza, Fisher and Ali, et al. (2007) on approaching quality of life, they used subjective and objective indicators with keeping in mind the multi facet ability of the concept of quality of life. They link quality of life concept with the available opportunities presented for the requirements of the human beings through their surroundings with the available decisions for enhancing those surrounding. However, according to Ng, Zhang and Ng (2018) subjective and objective quality of life have non-linear complicated relationships; they even have poor association with each other in many cases. For example, Massam (2002) thinks that there is the need to

focus on quality of life concept in order to analyze the influence of projects and plan circulations on people live and even places.

2.5 The Domains of Quality of Life

Within this substance, enhancing quality of life and living conditions is an essential work, since the past identifying and improving measurements of quality of life and defining the factors that are associated with it have been highlighted (Henchoz, Lionel & Goy, et al., 2015). There are many studies about which quality of life domain have higher importance than others, each one has different opinions about it. According to Henchoz, Meylan and Goy et al., (2015) on the domains of quality of life of the elderly. They concluded that elderly categorizes the importance of each domain according to loss experiences and the available resources for them.

According to Bond and John (2004), with thinking of quality of life as an unlimited concept, they believe that defining specific domains for quality of life is not very much convenient because of lots of various opinions about it. Also, evaluating high and low levels of quality of life for different individuals. However, for the purpose of this research objective domains and subjective domains will be evaluated accordingly.

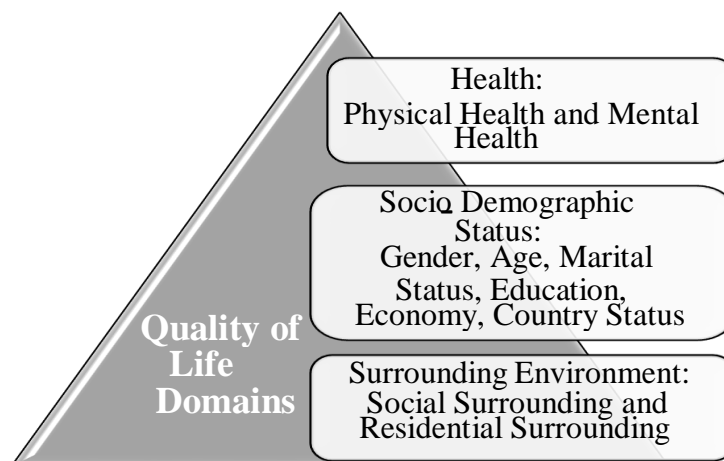


Figure 3: Quality of Life Domains (Author)

2.5.1 Health

There is no doubt that characteristics of later life for many people mostly consists of frailty and illness. As in their study on the perception of elderly on quality of life Paskulin, Córdova and Costa et al. (2010) found out that for many of them it was adequate and good health. It has become the everyday subject of conversation regarding lots of the older people. As in this century which is twenty first century, comparing to the other age groups, the elderly is counted as the group that demands most information about their health for their other levels of life.

Elderly do not only want to be alive for a longer time, they also want to add quality and happiness to their remaining years of living. This extreme attention on health as a subject for quality of life from lots of elderly's perceptions made it a significant domain of quality of life from the perspective of lots of gerontologists. Since, it's known that elderly's perspective about their lives declines as they face limitations in the significant aspects of their lives, such as health and daily activities. this have attracted the attention of the higher authorities to focus more on ways to improve quality of life of the elderly through their health instead of just focusing on how to make them live longer. As Kreschner and Pegues (1998) states that instead of adding years to life, there should be focus on adding life to years in order to have a successful aging plan.

There is a direct relationship between quality of life and health in the elderly. The perception of the elderly towards their quality of life and health is directed by their perception on daily life and independence. As in their study Bowling, Banister & Sutton et al., (2002) on the domains of quality of life in elderly according to the elderly perspectives themselves. To investigate the influence of health on quality of life They

concluded that health and functional status was a strong variable for explaining quality of life of the elderly group. Adding to this in another study by Hilleras, Jorm and Herlitz et al., (2001) on satisfaction with life among the elderly. They concluded that health was a significant aspect for satisfaction of the elderly with their lives. It even directs them to achieve more of their goals about a good life.

2.5.1.1 Physical Health

As it's known, with aging there is decline in physical and cognitive conditions of the individuals. Being able to maintain good physical status is described as healthy aging for the elderly (WHO, 2015). Within this regard, the physical activities of daily life, becomes a significant aspect of their lives. According to White, Wojcicki & McAuley (2009) it has main effect on reducing quality of life. It also affects the other domains of quality of life, but the level of its effect varies from a person to another and their degree of reduction in the physical activity. In their study Gislaine, Filho and Moreira et al., (2012) on elderly's quality of life and physical activity. The people aged from sixty were main included participants regarding the study. They concluded that quality of life is directed by physical activity. The muscular works also have the ability to reflect on the physical health, as in a study by Rikli and Jones (2013) lower movement and exercise activities in elderly can decrease their physical performance also.

Adding to this, daily activities are predominantly performed in the home and its close surroundings. It acts as an aspect of quality of life has direct effect on elderly's satisfaction with life. According to Schalock and Verdugo (2002) being able to perform activities of daily living in a desired way regarding all the conditions is a significant aspect of quality of life.

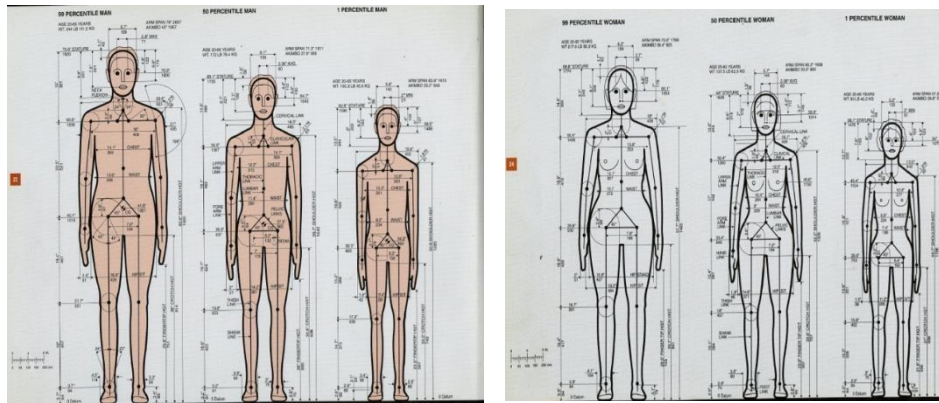


Figure 4: Human Anthropometry (The Measure of Man and Woman, 1993; 22 & 24)

2.5.1.2 Mental Health

Usually the physical health is accompanied by mental health, another important aspect of the life of the elderly, as mental disorders accounted for 13 percent of the world's burden of disease in 2005 and is expected to gain two percent points by 2020 (WHO, 2002). Due to loneliness in the older ages, the elderly population is more vulnerable to acquire any mental disorder. For example, Buber and Engelhardt (2006) have reported higher levels of depression among the childless elderly. It is expected that within the upcoming years, problems of mental health will be categorized in the kind of disease group that has the second place in being the most excessive rate internationally. For this reason, mental health problems are a public health priority, as the social and economic costs of these problems are of huge importance.

In their study Connell, Brazier & O’Cathain, et al (2012) on life quality of people with mental health issues. They concluded poor quality of life levels for those people with psychiatric issues. Another mental health issue regarding elderly is dementia, its symptoms start in later stages of life, and influence approximately 5.0 % of those people aging more than 65 years old. With investigations indicating that its effects doubles within every seven years (Jorm et al. 1987).

Other popular conditions are those health issues related to the psychological part of the elderly such as depression, they are known for not having any causes related to organic parts of the body. Although there are no determined estimates about its range, but in British studies they range from 6 – 26% (Brayne and Ames 1988). Within this regard it has become a significant aspect of quality of life in older ages.

2.5.2 Socio- Demographic Status

The influence that socio demographic factors have on elderly quality of life has lots of differences, mostly the reason of this difference is because of the various measuring tools that have been used. According to Gobbens and Remmen (2019), elderly's quality of life is affected by socio demographic factors. The socio demographic factors consist of gender, age, marital status, education and economy. There are lots of studies conducted to analyze the effect of socio demographic factors such as gender, age, income, education and marital status.

2.5.2.1 Gender

Gender acts as a significant aspect of socio demographic status on quality of life, especially regarding the elderly. In some cases, the results indicated from quality of life varies according to gender of the participants and in other cases it does not create significant differences in their results. And sometimes it might be said that the level of participation of one of the genders was better than the other one.

According to Bilgili and Arpacı (2014) in their study on quality of life regarding the elderly, they found that men had better circumstances with quality of life than women. Another study by Lee, Ko and Lee (2006) also showed higher rates of quality of life regarding men rather than women. On the other hand, there are studies that disagree with these opinions and have no differences in quality of life regarding the two

genders. Such as Top, Eriş and Kabalcıoğlu (2013) in their study to examine the attitudes of quality of life on aging, they found no difference in gender, regarding the ratio of quality of life of men and women. Also in their study Wiggins, Higgs and Hyde et al., (2004) on models of elderly quality of life, they found no significant aspects regarding gender. But in a study of Bowling, Banister & Sutton, et al., (2002) the rating of women were lower than men.

2.5.2.2 Age

There are also significant relationships between quality of life and age. As some studies indicate that younger ones have different perspectives towards quality of life than the other age groups. Lots of the elderly have positive opinions about their quality of life than the younger ones or middle aged groups. According to a study by Gambin, Molzahn and Fuhrmann, et al 2015 the younger people had poor quality of life comparing to older ones in Brazil. But Europe does not support this opinion, as a study by Borling, Jakobson and Edberg, et al., (2006) concluded lower ratings of quality of life for the older people comparing to younger ones in Sweden.

The reason of this might be because of that the younger generation have been in fewer dangerous and demanding circumstances in their lives. they had more convenient life and have not been presented by obstacles and pressures from life. But with older people, it is clear that they have been through major stress and demands from life, such as pressure from emotional aspects, social aspects and academic life.

2.5.2.3 Marital Status

Regarding the marital status, a study by Soósová (2016) indicated that the elderly without partners had lower quality of life ratings than those living with partners. Also a study by Bilgili and Arpacı (2014) concluded higher ratings of quality of life than

between those elderly who were in marital conditions. At the same time, a study by Gobbens and Van Assen (2017) indicated that the condition of being married only affects intimacy life domain of quality of life, when the other socio demographic factors are controlled such as (income, age and education). Also on a study by Lee, Ko and Lee (2006) indicated higher quality of life rates for those elderly who live with a partner comparing to those without partners.

2.5.2.4 Education

It might be known that education have recently become an essential part of the people live in order to keep progressing more and reaching higher levels. Education levels specify those jobs that are available for certain people. With limited levels of education and skills, there is the possibility of being disqualified from various job opportunities and desired goals within the society. It is also the most important form of human capital, at societal level. Quality of life of the elderly has a positive relationship with their education levels. Low levels of quality of life was measured among those who are uneducated or have primary levels of education. While those with higher education levels had higher quality of life. According to a study by Baernholdt, Hinton and Yan (2012) on associated factors of quality of life, showed higher functioning between those elderly with high school certificate or higher levels. In another study according to Hilleras, Jorm and Herlitz, et al (2001) on satisfaction with life among the very old. They found that there was no direct connection between quality of life and education levels regarding people with ages above ninety. In another study by Barrett, Burke & Cronin, et al (2011) on the elderly in Ireland, they concluded that with better education degree, all the other aspects of their daily life was better, it was directing the other domains of life.

2.5.2.5 Economy

In order to provide a standard of living that supports independent individuals, socially connected with their surroundings and easy approach to medical services, economic factors have major part in quality of life of the elderly. While a study by Kiani (2003) found the status of poverty as a significant aspect of quality of life of the elderly. In the study by Chen et al (2014) in China, they concluded that low income elderly expressed lower levels of quality of life, but there was no difference between the groups of high and medium income. Adding to this, Gambin et al (2015) found out that the elderly from Brazil, had lower perspectives on their quality of life, because of low income.

On the other side according to and Hilleras et al (2001) income had no effect on quality of life. This is due to including certain populations regarding the two studies conducted: on one hand the study from Slovakia by Soósov a (2016) included those age group of sixty years and older. While on the other hand, from Stockholm, the study by Hilleras et al (2001) contained elderly aged ninety years and older were included. Although there is doubt about the economic situation acting as an important aspect of a person's life and quality of it, but still researchers argue about the levels of its affection.

2.5.2.6 Country Status

If a country is developing, then there are more chances and limitations also parallel to increase the number of the population alongside with the measures of quality of life. The right to get involved in public debates and influence the shaping of public policies is an important aspect of quality of life. There are 3 sub- dimensions covered in the governance and basic rights dimension: Trust in institutions and public services;

discrimination and equal opportunities and active citizenship. Providing the right legislative guarantees for citizens is a fundamental aspect of democratic societies. According to Putri and Listari (2017) by 2050, 80 % of the elderly worldwide are living in low and middle income countries. Demographic shift is changing these countries to ensure their social and health systems are ready for elderly. According to United Nations Department of Economic and Social Affairs (2015) in their study on the difference in people's view towards quality of life regarding the status of the country whether it is a developed country, undeveloped or it is newly developing. They concluded that the views differ according to their degree of comfort, fulfilling daily requirements and their level of enjoyment.

2.5.3 Surrounding Environment

The environmental dimension is one of the major influences on quality of life, with adequate and supporting environment there exists better mental and physical activity with social interaction, which helps other declines in the human body to get better. (Lawton & Nahemow, 1973) defined environmental stress concept, which is the effects of the environments that presses it on the individuals and their characteristics. According to him the individuals are faced by stress of the environment and their performance is based on the degree of the stress that they face from it. According to (Bond & John, 2004) environments and behaviors that lead to a life style which is active are considered as subjects of interest because throughout them individuals can preserve mobility and independence of their later life. Many of the related factors that influence an elderly's quality of life is related the environment that surrounds them.

2.5.3.1 Social Surrounding Environment

When talking about quality of life, the ability of social connections and networks on lives of individuals should not be neglected, as it affects and directs their satisfaction

with life. The social surrounding is a significant aspect to promote for elderly quality of life, it involves keeping in touch with family members and friends. It increases their maintaining good health. Social relationships, getting support and a pleasant social environment all promote the wellbeing of older people. It creates a joyful residential community, which enables social interaction, activities and home care.

In a study by Elo, Saarnio and Isola (2011) related to social environment and elderly, they concluded that with the help of social surrounding, elderly manage their wellbeing and getting help from family members, which in turn promotes their keeping in contact. In another study by Van Holle, Van Cauwenberg and De Bourdeaudhuij, et al., (2016) on the relation between elderly's physical activity and social environment, they found out that the more elderly had physical activities within their neighborhood, the more their chance to meet their neighbors and interact. Which were favored by the elderly and affected their perception of their quality of life. Also some researchers suggest that the social factors can affect the physical activity performance of the elderly. According to Balfour and Kaplan (2002), they suggest that with getting old, the more the people get isolated and remain by themselves without company, the more their desires decrease for going outside in order to walk or other activities. Meanwhile according to Jorndottir and Arandottir and Halldorsdottir (2012) feeling familiar with the surroundings and living in a familiar social environment promote physical activity.

2.5.3.2 Residential Surrounding Environment

With aging of the individuals, their environments tend to consist of their home or neighborhood, which makes it different from the environment of younger individuals (King, 2008). As it is mentioned before, quality of life concept covers the basic

conditions of life, and the residential environment being a major part of it, which is being evaluated according to the perception of the individuals. Elderly's accessible and supportive residential environment affects their life satisfaction in a positive way, because they become vulnerable towards the residential environment's challenges, due to their health and physical limitations that results decline in their functioning (Noreau & Boschen, 2010). Within this regard, it makes it even more necessary to study the older people's residential environments, regarding how they use and perceive the environment.

Since, the reason for determining quality of life levels of the individuals is due to the purpose of better or enhancing their lives with valuing it. It's also a step for enhancing those issues that are not in good position in people's current lives. Senecal (2000) on the subject of quality of life approached from urban environments, suggests that it is approached in two ways. First one, approaches it through the living environment, accordingly this can be considered as the residential environment with all the aspects that affect its quality including satisfaction with home. Second one, approaches it through urban space's natural environments such as soil quality, water and air with available space for greenery.

Within this regard, the residential surrounding and its aspects that affect quality of life of the elderly including residential satisfaction is studied. In order to investigate their housing conditions for enhancing or providing better quality of life other generations of elderly. Strong cognitive and affective ties to the home environment are formed as people age, as a consequence, aging in place and preventing relocation are among the strongest needs of older adults as well as their families (Gitlin, 2003).

2.6 The Importance of Residential Environment for the Elderly

Considering that humans are created to be physically living, so their whole life is turning around their residential environment. This makes it of major importance for them, as according to Robinson and Godbey (1997) it is the environment where usually people spend most of their time in. Usually all special social bonds are gathered there, according to Bronfen, brenner and Evans (2000). Although there is the need to state that being faced with environments that are risky or dangerous, might cause restraints in the internal and external functions of the individuals. According to Evans (2003) the residential environment has direct effect on individual's mental health and wellbeing, inadequate conditions of housing has the ability to affect all the aspects of their lives especially the psychological aspects.

Among the affecting environmental factors is the residential environment as Iwarsson et al., (2007) states, it has a remarkable role in elder's autonomy, health status, active aging and independence. In fact, appropriate design and decoration of living places may help older people to perform their daily living activities independently and perform social interactions effectively. As in their study Nakhodaeezadeh, Jafarabadi & Allahverdipour, et al. (2017) on relation of home environment to elderly quality of life. They concluded that there were significant connections between the residential environment and quality of life of the elderly in Iran.

If the environment is not able to fulfill the expectations and requirements of the elderly, then there might be unpleasant outcomes to their lives. As in his study, El Fakiri (2015) on the relation of individuals and their environment. They concluded that insufficiency in the ability of the home in fulfilling the elderly needs and increase in their physical

limitations might be the cause for accidents and injuries in their residential environment. As the elderly experience the gradual deterioration of biological functions and various social changes, they need flexible strategies and a constantly adapting and changing environment to deal with the issues of their aging.

The decrease in functions have constant effect on people's requirements from life, which in turn leads to decrease in quality of life that creates unhappy and unsatisfied life. As earlier research has consistently shown, daily activities are predominantly performed in the home and its close surroundings. Strong cognitive and affective ties to the home environment are formed as people age, and, as a consequence, aging in place and preventing relocation are among the strongest needs of older adults as well as their families (Gitlin, 2003).

Adequate residential environments have the ability to provide safe life for the elderly with affecting their health, all this while taking care for their comfortability, being happy and physical mobility. Older people spend most of their daily time in a home usually designed for young people that does not meet the needs of the aged population (Burton & Mitchell, 2006). An important goal in health promotion is to create home environment that supports healthy aging. According to studies done on this issue, it has been shown that those elderly that are independently living in their own homes and fulfilling their daily needs without getting help, usually have better quality of life levels than those who need help in their homes.

Adding to this, having in adequate connection between the physical condition with socio economic levels of the elderly on one hand and the residential environment on the other hand, leads to unpleasant out comes. Some of those outcomes reveal in the

form of constraints in activities within living spaces, decrease in independence levels with having to institutionalize in its peak levels extreme circumstances, (Rojo-Perez, Mayoralas & Rivera, et al., 2001).

2.7 Satisfaction with the Residential Environment

The phrase of residential satisfaction has been used many times before in the context of those studies that investigate home and neighborhood. It is an indicator for the resident's perception about their residential environment according to their desires, requirements and what they perceive (Rojo-Perez, Mayoralas & Rivera, et al., 2001). It is defined as the feeling of contentment resulting from achieving or having desired needs, requirements and expectations of individuals living places with their feeling of satisfaction regarding their physical surroundings. According to Taberero, Briones and Cuadrado (2010), residential satisfaction is an effective mechanism of interaction led by social and physical aspects, which individuals build around their direct surroundings.

According to James (2008) Residential satisfaction is generally characterized as the product of a comparison between the residential environment realities on one hand and the expectations and needs of the people on the other hand. Adding to this, according to Amérigo and Aragonés (1997), who considered residential satisfaction a criteria which is conceptual, and consists of subjective perception regarding the level of fulfillments of the needs of individuals, and directed by some aspects such as neighborhood, characteristics of individuals and housing.

There has been studies on residential satisfaction through various domains in Europe and US, but the context was set around examining differences between ownership and

rental, or differences between ethnicity, gender and age (Pelin Sarioglu-Erdogdu, 2015). The studies about residential satisfaction that started to focus on age as a major aspect were mostly focusing on elderly highlighting their challenge in life regarding those changes that occur in their main living aspects such as functional, social and physical aspects because of lower levels of mobility and retirement.

In a study by Fernandez-Portero, Alarcón & Barrios Padura (2017) on residential satisfaction of the elderly through their dwelling conditions. They aimed to study the level of satisfaction of the elderly with their life and its effect on their perception of home satisfaction. They concluded that residential satisfaction was equally connected to both physical aspects of the house and the whole residential environment's quality sources. Also, according to Francescato (1998) it is the degree of enjoyment a person gets for living in a particular space. He also describes it as the comparison between the desires and the available needs and situations of the individuals.

Table 3: Definitions of Residential Satisfaction

Scholars	Definitions
Tabernero, Briones and Cuadrado (2010)	Effective mechanism of interaction led by social and physical aspects, which individuals build around their direct surroundings.
James (2008)	Product of a comparison between the residential environment realities and the expectations and needs of the people
Fernandez-Portero, Alarcón & Barrios Padura (2017)	Connected to both physical aspects of the house and the whole residential environment's quality sources
Francescato (1998)	Degree of enjoyment a person gets for living in a particular space

Regarding the elderly, residential satisfaction is a significant subject for them and being dissatisfied has the ability to produce ageing stress with affecting their physical and mental conditions. The residential environment of the elderly is an essential aspect directly affecting their lives, the quality that turns a home into sweet home is those aspects that are the cause for a person to be satisfied, and happy with their residential conditions. It involves an extensive range of experts and professionals; some of them try to define the term from one dimension while others try to define it from multi-dimensional perspectives (Abdul Mohit & Al- Khanbajeraja, 2014).

Previous research has shown that with aging there is increase in satisfaction level also. In their study Rojo-Perez, Mayoralas and Rivera, et al (2001) on the predictors of residential satisfaction of the elderly, they concluded that younger ones had lower residential satisfaction levels comparing to the elderly, as their demands from the living environment and housing characteristics were more, such as house ownership, age of the house and their wanting to move house every once in a while. Another study by Speare (1974) on mobility and residential satisfaction, again the younger ones were mostly the ones with low levels of residential satisfaction and wanted to move houses. They connected he connected this to the reason that younger generations had fewer responsibilities on their shoulders and were free to think only about their selves.

On another hand according to Li & Chen (2011), in their research on china, concluded that regarding residential satisfaction, age cannot be counted as an essential predictor. Adding to this, in a research by Lu (1999) of American housing survey, after the other components were controlled, older residents had higher residential satisfaction levels than the younger ones. Within this context James (2008) conducted a study on elderly residential satisfaction in United States on a sample data of 41,000 households, he

concluded that older tenants had greater satisfaction than younger tenants. In addition, Fine-Davis and Davis (1982) in a European study concluded that elderly had higher perceived residential satisfaction than younger ones. In other studies, the relationship between neighborhood characteristics and residential satisfaction has higher levels for elderly than younger ones, because elderly movements were only limited to their surroundings and near their residential environments (Temelova & Dvorakova, 2011; Fobker & Grotz, 2006).

2.7.1 Elderly Needs from their Residential Environments

To provide information for creating connection between the home environment and ageing, a number of literature reviews have been done regarding the related concepts and themes. In their study Kerbler, Sendi and Filipovic Hrast (2017) on elderly relationship with their living environment in Slovenia, they concluded that just like the elderly around the world, the elderly from Slovenia also were satisfied and attached to their housing environment. The results were differing according to age of the individuals, the more they aged, the more they lived in their house and were satisfied. Some look at the residential environment, as a factor that affects the autonomy, daily activities and independence. Such as in their study Gill, Robinson and Williams, et al (1999) in order to investigate the residential environment of 1,088 elderlies, regarding the environments physical barriers which limits activities of human beings, they found no difference in the activities of individuals either physically impaired or unimpaired. There have been many studies within this context guided by diverse disciplinary and theoretical Research.

Even though individuals age with various ranges regarding their environment, life style and genes, but their Housing is treated as the major requirement for daily living

and experience. Because of its being a salient environment and mirror of their lives that gives them the feeling of consistency and cohesion that no other environment can give them. In their study Zhang, Zhang and Hudson (2018) on the effect of housing conditions on overall life satisfaction in China. They concluded that all the housing characteristics were affecting residential satisfaction, with emphasizing the effect of size and home ownership on overall happiness.

When the main scope of the study is around the elderly, there will be more need to highlight the environmental and personal predictors of residential satisfaction due to the fact that they face lots of limitations within their daily lives with physical and social limitations having the highest levels. Many studies regarding the level of satisfaction of the elderly with their housing environment show that the improvement of housing environment has a significant influence on their psychological wellbeing and level of satisfaction with life, which markedly increases the elderly's quality of life. As they age, their independence in living and their ability to control their environment are gradually affected. Thus, considering that elderly are more likely to live in their own homes for as much time as they can, the personal homes provide a shelter for individual's familiarity, autonomy, comfort, stability and security and fulfill their needs, independency (Lefebure, Mangeleer, & Van den Bosch, 2006; Braubach & Power, 2011).

Residential satisfaction has been the most used concept in investigating the adequacy of housing conditions. Research on residential environments adequacy regarding elderly is sourcing from the field of environmental gerontology and the relevance methods within the theoretical aspect of the model of person-environment (P-E) fit.

Within these models it is shown that the living place's suitability for elderly is directed by environmental pressure and the needs of individuals (Gitlin 2003; Wahl, Scheidt & Windley, 2004).

2.8 The Domains of Residential Satisfaction

We can understand from the previous information above, that there is the need to have a wider perspective on residential environment, in order to understand it. It is known that the home is the focus point, but also there are other points affecting it, such as its surrounding environment with all its aspects, the location and the places where major daily life activities occur needs to be taken into consideration. The existing studies indicate that residential satisfaction is directed by subjective assessment and objective characteristics of the residential environment. The predictors of residential satisfaction are classified into subjective and objective characteristics (Fernández-Carro, Módenes & Spijker, 2015; Perez, Fernandez & Rivera, et al., 2001). The facilities, type of the residential environment, its location, services access and greenery can be classified into objective aspects of the bond between the residential environment and elderly Aspects. The earlier experiences with the residential environment, and social factors can be counted as subjective aspects of the bond (Fried & Gleicher, 1961; Tauber & Levin, 1971; Merton, 1968; Gans, 1967; Duncan, 1971). Recent studies that have been done on this issue were designed cross sectional and highlighted self-related and objective measures of the built environment regarding the elderly (Garin, Olaya & Miret, et al., 2014; Engel, Chudyk & Ashe et al., 2016). The studies emphasized housing type, size, accessibility, residential satisfaction, interior environment, exterior environment, usability, successful aging, life satisfaction.

Within this regard the residential environment of the elderly is divided into neighborhood (location, greenery, safety, and aesthetics) and house (kitchen, bedroom, bathroom, living room, accessibility and circulation, services, maintenance and safety) (figure 5).

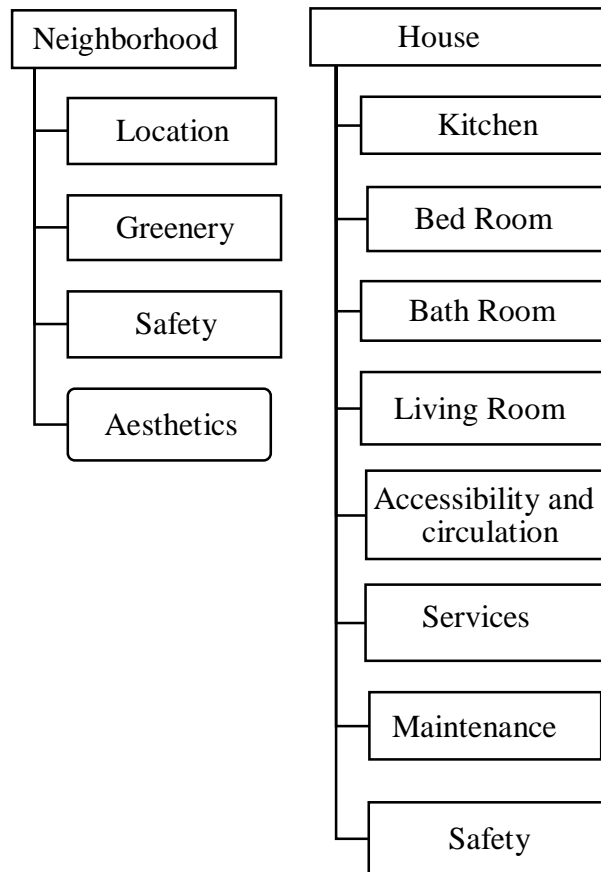


Figure 5: The Domains of Residential Environment (Author)

The characteristics of the residential environment regarding size, adequate maintenance and services levels such as lighting and water, the availability of important amenities regarding the buildings and being able to control decisions about housing conditions. In a study by Perez, Fernandez & Rivera, et al. (2001) in order to specify those factors that predict residential satisfaction regarding elderly since it is the major aspect of their quality of life, they concluded that satisfaction with home-related attributes (comfort, size, distribution, degree of light, insulation), Factor relating to people's perception of the environmental quality of their neighborhood is the second predictor of residential satisfaction. The third and fourth predictors relate to the number and type of amenities in building where the home is located and to the degree of satisfaction with some of the building's elements. Factors related to the

neighbor's network are the fifth and sixth parameters of the model. Availability of space in the home is the seventh predictor of overall residential satisfaction, also based on the accessibility to everyday or local services, Gender predictor show that being a woman propitiates an increase in overall residential satisfaction. The last significant predictor in the regression model is the relative degree of ageing of the household where the elderly people live. Accordingly, the housing environment has been distributed as follows:

2.8.1 House

House is considered the heart of residential environment as its mainly structured on it, it resembles a symbol of quality of life at all ages. As Stewart (2000) suggests that When house is in context, it is not expressed just as a zone which is neutral or an architectural plan. It is also a space for living with systemized ranges of functions. A large part of the daily life of most people is carried out within it and its surroundings, therefore it must be the key element in explaining residential satisfaction (Aragonés, Amérig and Pérez-López, 2016). It can be viewed as a direct and essential environment, which is balanced, certain and has the potential to be controlled. It is the main point where activities of individuals are arranged according to it. It is the place where lots of important experiences happen, and a person is able to feel warm, comfortable and confined from the outside world.

According to Aragonés, Amérig and Pérez-López (2016), the characteristics of security, shelter and protection provides context for home. They enable it to control the household activities and limit their spaces and social interactions. On another hand, Despres (1991) studied the psychological meaning behind home for the people, through reviewing its literature. He concluded that it had various meanings, including

home is a place where one finds control and security and a place for expression of self. It was also considered a place for enabling continuity and permanence, for highlighting family and friend's connections. However, it was not just the whole entity of home that had value and meanings attached to it, but also the material possessions within it.

Bazmar (2018) thinks that every house being built, should be designed and built in a way that has the opportunity to be accommodated by people with various types of needs and ranges of ages. When elderly are in context, a house represents a safe, private and comfortable place that affects all of their life aspects including psychological wellbeing. They have special perspectives about it, as it is a mirror of their daily life, that contributes in their feelings of continuity and persistence. These feelings are kind of feelings that elderly cannot feel it in any other types of residential settlements.

According to Cullen , Delaney and Dolphin (2007) in their study about supportive housing for the elderly in Ireland. They suggest that suitability and specifications of accommodations of older people is critical for their life quality. They also conclude that it is a significant aspect that affects their ability in their self-care and independence.

Throughout the sectors of housing, there are factors related to housing conditions that have direct effect on wellbeing and health of the elderly. Within these factors lays the physical aspect of the house, as in their study O'Sullivan, Donnelly and Mc Gill, et al (2012) on cold housing and health of elderly. They conclude that poor heat maintenance levels or those homes that are damp homes with poor heat insulation are linked to poor health in older people. As according to Demirbilek and Demirkan

(2004) in their study on participating the elderly in designs. They proposed a model of participatory design, where individuals could participate in design aspects of their houses in order to improve their quality of life. So they concluded that a house that is inadequate for the needs of the people living in it, never becomes a home.

Within those developments that occur in the elderly, such as changes in their ability, capacity and the rising levels of their requirements and needs. There is the same urge for those adequate conditions of residential environment they were having in their previous years of life. According to Heidegger (1962), a dwelling is the fundamental characteristic of the human condition. Despres (1991) discussed the importance of home in acting as a container for objects that are selected to convey different aspects of the occupants' personality. The implications of these findings are developed below, in considering the addition of adaptations to the home environment and the images that these can portray.

Our home can have a major impact on our physical and mental health; this is particularly true for older people who may spend more time at home. The standard and suitability of older people's accommodation is vital to their quality of life and is a key factor in their capacity to take care of themselves or to be cared for at home should they become dependent (Cullen, Delaney, & Dolphin, 2007). Leonardi et al. (2009) suggested that the distribution of several types of objects in different areas of the home determine which areas are more frequently used. Moreover, the type of activities related to each area of the home is another determinant factor. According to the results of that study, the living room and the kitchen are the most commonly used areas and that the bedroom is a less frequently used area of a house.

Within this regard the domains of house consist of kitchen, bedroom, bathroom, living room, accessibility and circulation, safety, maintenance, aesthetics and comfort (figure 6).

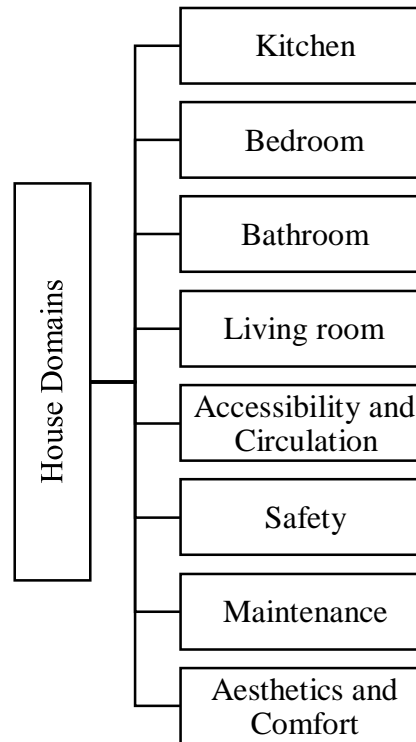


Figure 6: Modified Domains of House (Author)

2.8.1.1 Kitchen

With growing old there are more difficulties in adapting any of the rooms of the house and the kitchen is one of those spaces. Throughout the residential setting, mostly elderly face troubles with areas that level of activity reaches its maximum such as kitchen. As in their study Fabisiak and Kłos (2013) on difficulties facing elderly in their homes. They wanted to study the difficulties that elderly face with adopting their kitchen. They concluded that it is the space where most of the challenging acts occur. According to Carter, Kannus and Khan (2000) in their study on home environments of the elderly. They showed that lots of the injuries such as bumps, cuts, burns and

knocks happen in the kitchen. Spatial layout of the kitchen is a significant aspect of it, there are six types of layout of kitchen that are available: L-shaped, single- row, double row, kitchen furniture with semi- island or island and U-shaped kitchen.

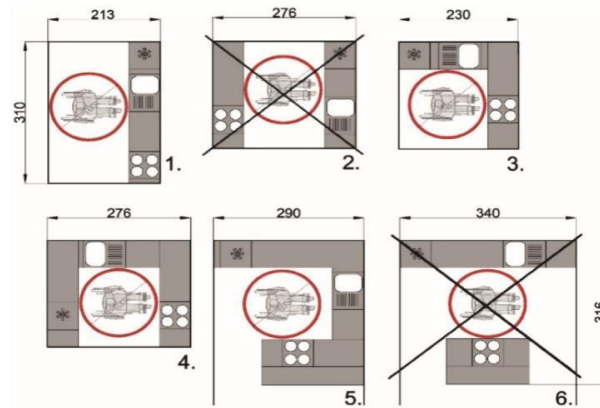


Figure 7: kitchen Layouts (Bonenberg, 2015; 1670)

When a kitchen is designed for elderly and people with limited physical mobility, there are some new points need to be taken into consideration. Such as in his study Boneberg (2015) on designing a kitchen layout for people with functional disabilities. He concluded that for designs to be significant, there is the need to highlight the major points of access for the equipment of kitchen and zones of storage. Within this regard the users need for moving will be narrowed and enable them to do associated movements at the same time. This is done in order to produce functionally connected elements for the people in order to be accessible for them.

According to Grobe, Regan and Smith, et al. (2008) Kitchens with design solutions that are designed for people without physical limitations, is different from one designed for people with physical limitations. For example, availability of circulation

space for the wheel chair or other equipment within the kitchen or else there will be challenges with cooking (figure 8).

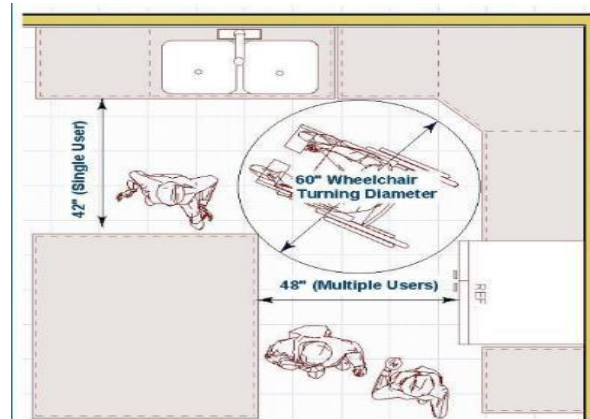


Figure 8: kitchen Design for Physical Disabled (URL3)

Although, the design of kitchen usually consists of arranging the stove, refrigerator, and sink as three vertices of a triangle. Triangle working method is used to specify the relation between these zones. This concept was set from the finding of study of university of Illinois in 20th century. The working triangle concept is the result of research works in field of ergonomics in 20th century. Its purpose was for ease of work in the kitchen by choosing adequate dimensions. Considering this current century, there are some points that needs to be taken into consideration when applying this triangle, such as: size of kitchens was smaller back then and adapted by smaller ranges of people. The open plan concept was not such a broad concept at that time.

Nowadays, this principle is being used for kitchens which are small. Regarding kitchens that are bigger, its being used but also being extended by adding other working elements (figure 9).

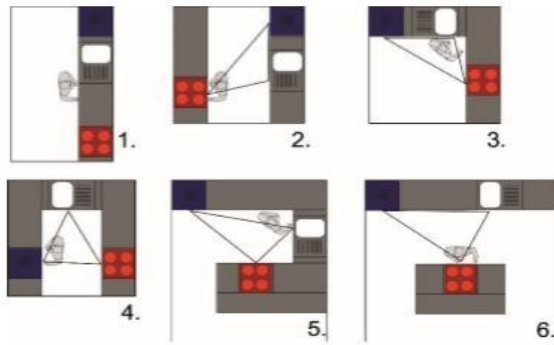


Figure 9: Triangle Working Principle (Bonenberg, 2015; 1672)

According to Bonenberg (2015) this principle determines the dimensions between the equipment's:

- From sink to fridge 120- 210 cm
- From cooker to sink 120- 210 cm for small rooms 90 cm permissions
- Cooker to fridge 120- 270cm in total the dimension of the two branches of the triangle should be less than 7m.

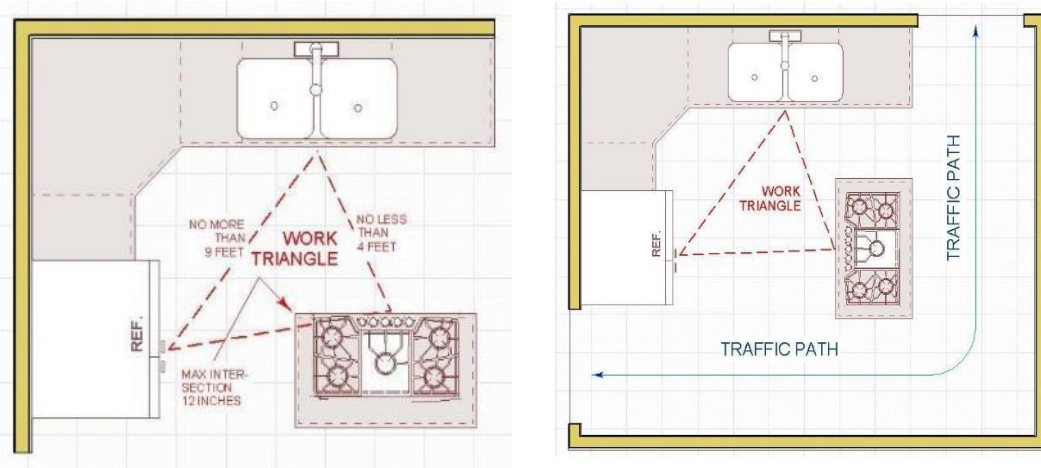


Figure 10: Elderly kitchen Dimensions (URL4)

Considering this triangle for people with wheel chairs, the dimensions will be:

- Sink to fridge 120- 240 cm
- Cooker to sink 120-240 cm for small rooms 90 cm permissions
- Cooker to fridge 120-310 cm . In total the dimension of the two branches of the triangle should be less than 9 m.

In another study by Hrovatin, Širok and Jevšnik (2012) on elderly and kitchen furniture's use with its affecting their safety. They wanted to highlight major points facing elderly people within their kitchen. The results indicated that the elderly were unconscious about the effect of kitchen furniture on their activities of daily life. They suggest that the equipment in kitchen should be specially designed according to the requirements and needs of the senior populations. Adequate organization of the furniture is also a significant aspect of the kitchen. As in his book Smardzewski (2015) on design of furniture. He suggests that the kitchen needs to be divided to usable sections such as different storage for different materials and garbage area and cooking area. Height of furniture of kitchen should be less than 140 cm, if it exceeds this much, then there should be technical support provided in order for the individuals to reach it without difficulties. For ease of use of spaces for storing there is the need to install pedestal (figure) for furniture with height of 27cm for them to not lean when they use the storage.



Figure 11: Pedesteal (URL5)

For those with wheel chairs, there should be a space under that surface in order to be able to work properly and for the wheel chair to fit. There are some difficulties in choosing the best surfaces design for these group of users, because they have differing needs. working surfaces should be 75-85 cm high in order to be used by those with wheel chairs, or a person standing in front of it 90cm. The best option is to specify the heights according to type of works. For example, heating slab is placed lower comparing to other surfaces, in order to have a good sight to check food.

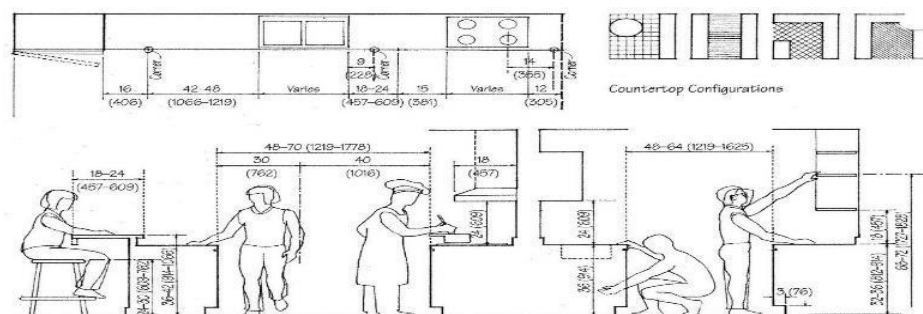


Figure 12: Elderly Dimensions (Times Saver Standards for Interior)

Another study by Kirvesoja, Väyrynen, and Häikiö (2000) on the effect of surface's heights on the elderly within their homes. Their main focus was on the kitchen furniture. They did some experiments on elderly by providing different types of furniture, they concluded differences in the height of furniture regarding the elderly. So it should be mentioned that design of the interior and furniture of kitchen has significant impact on safety and comfortability of elderly's residential environment. The major difference is in the levels of zones to access through ergonomics. The level of surfaces for working and units in the kitchen that are suspended are designed according to older people and those with physical limitations (Ko & Kudo, 2003).

Height of installed units should be 140cm, also furniture pedestal should be added when in need with a height of 27cm.

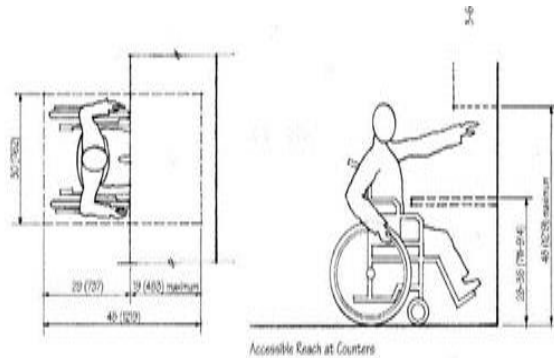


Figure 13: Elderly Fixture Height (URL7)

Adding to this, it is better for the surfaces to be smooth and round instead of sharp edges for decreasing risk of accidents or injuries.



Figure 14: Elderly Adequate Surfaces (URL8)

2.8.1.2 Bedroom

The bedroom is one of the significant rooms regarding houses occupied by old people and most of the times it takes the role of living room also. The elderly within these rooms come in direct contact with equipment that are often situated in the bedroom such as, the bed, chair or arm chair, which have direct effect on them. Bazmar (2018)

in his study on assessing housing of elderly, concluded that availability of unsettled pieces of furniture such as availability of unstable high shelves, inconvenient frames of beds, inadequate lighting and electrical cords all have the ability to affect the elderly and create risk on their lives. adding to this, in the study of Carter, Campbell and Sanson-Fisher et al (2000) on those elderly who live in their own homes. They Conclude that the bedroom is the space of the house that most number of accidents occur in it with elderly being the being victims of it.

It can be said that the arrangement and design of furniture of elderly home environment has the major impact on them that needs to be discussed and focused on. In the study by Carter et al (1997) on home environment of the elderly. They identified major factors of the interior that have direct effect and even risk on the elderly such as the beds that do not have adequate dimensions for elderly. In sufficiency in chairs according to the needs of the elderly, such as their heights or special additions like arm rests and having sharp edges in the other furniture. In his study simek (2013) he focused on designing the chairs higher than usual, adding armrests to chairs, focus on removability and also maintaining more stability. Their being efficient regarding being moved and accepting other elements to be added such as adequate tables or places to put cup.

It can be said that beside functional dimensions of furniture, elderly like those characteristics of furniture that makes them easy to clean and have soft or round edges. According to Josephson, Fabacher and Rubenstein (1991) in order to ensure safe movement, for those who use wheel chairs, between the bed and chairs, there should be a dimension of 4ft between the wall and bed. There should be considerations about

height of beds also. Adequate bed height, helps the elderly in sitting on the edge of their beds with an angle of 90 degree and feet reaching the floor.

As elderly bodily dimensions changing with aging, so they need functional furniture such as an arm chair or a bed. Elderly mostly mention difficulties related to sitting or standing and coming out from their beds. In the study of department of furniture from Poznan university, on studying the elderly and their perception about these modern type of furniture. They complained mostly about the designs being insufficient for their lumbar spine. Also the arm rests were not helpful for helping them get up, with in adequacy in general dimensions. Mostly the complains are for armchairs and also beds being either at low levels or not large enough or their being deep or not wide enough. Although nowadays there are some solution for furniture that are too low (figure15 & 16) but they are not aesthetically designed to be a part of the furniture and do not have a pleasing look.

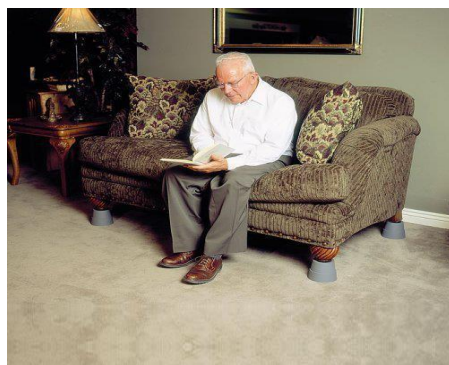


Figure 15: Chair Raiser (URL9)



Figure 16: Bed Raiser (URL10)

There are also solutions regarding the beds for the ease of rise of the elderly. Some tools are designed, but again with their aesthetics appearance being completely different from the furniture. Leaving the aesthetic point aside, they are completely

functional and desired by the elderly, as the study by University of Poznan by the department of furniture design confirmed it.



Figure 17: Bed Cane, Support Rail (URL11)

Also, another point that should be mentioned about the bed room is lighting. It is significant aspect for safe adaptability of the furniture of bedroom and comfortability. There should be consideration that elderly are in most need of light to see in a proper way. As in their book Turner and Mainster (2008) they emphasize on those types of lighting that are mixed with the bed and refer to it as mostly preferred by elderly. With better lighting there is also more safe environment for the elderly for their waking up late at night for different purposes. If there are types of lightings attached to the bottom of the bed, it would lead them through the room without opportunity of falling or other accidents.



Figure 18: Bed Light (URL12)

2.8.1.3 Bath Room

Bathing cannot be taken as a general problem regarding youth generation, but for the elderly it takes a long time with facing many challenges that creates barriers for elderly which makes it dangerous some times. According to Baldrice (2003) on accessible homes, He concludes that the placement of bathroom should be near the bedroom and have a low level of distance with special elements such as safety handrails or grab bars (figure 20) next to the toilet. It can be said that these grab bars are of that much of importance that they need to be placed within the shower also for last minute saving in case of accidents. They can also help the seniors for better moving within the shower and lack of them might cause risky accidents (Stevens, 2002). There is the need of two grab bars either on one side of the walls or both sides. One in the height of sitting and one in the level of standing.



Figure 19: Elevated Toilet Seat (URL13)



Figure 20: Toilet Grab Bars (URL14)

The floor of shower area should be non-slippery with availability of efficient lighting for example dimmer in order to adjust the level of lighting according to need (Nagananda, Sengupta & Santhosh, et al 2010; Baldrice, 2003). Some other safety issues need to be concerned within their bathroom such as avoiding having thresholds within the bathroom and more flat surface Pynoos, Sabata & Choi (2005).



Figure 21: Grab bars for Shower (URL15)



Figure 22: Adequate Shower (URL16)

According to Thomas, Heitman and Alexander (1997) in their study on people with dementia and the effect of music while bathing. They suggest having plants, adequate temperature, pictures, paint and decoration for the walls; the spray shower should be gentle spray, good music, maintaining privacy while bathing. Among all having relaxing music during and before taking bath has major roles in decreasing tension in elderly actions and having a relaxed mind. Bathroom must be free from slippery, sharp edges, and obstacles.

2.8.1.4 Living Room

The living rooms within the houses are those rooms which people spend most of their times in. they use it for the functions of relaxing, sleeping, socializing, reading watching T.V, listen to music or playing games. There are many of major aspects that needs to be taken into consideration with availability of living rooms and should be highlighted by designers when designing these spaces. among them is that it has to have the requirements and desires for all the members of the family and those who visit them. It also has to have adequate location and size of space. According to Ping and Xiaohua (2012) , the living rooms of elderly needs to have a layout which is rationale, adequate lighting and safe. Also the availability of night lamps are preferred and fo the locations of the switches to be in places easy to access. Its floor should be

dry and flat, and for flooring finishing material having wooden material is much better. Adding to this the sofa should be adequate not too loose, the chairs should have adequate height for them to be easily used either for sitting or when living them. Plans should be more open and number of doors decreased, avoiding having corridors with direct connections between rooms. This makes these spaces easier to access by those elderly who use mobility equipment.

2.8.1.5 Accessibility and Circulation

Houses that are adapted by elderly need to be designed in a way that has the ability to fulfill their requirements, especially as some of them become special needed or handicapped. According to Braubach (2004) in his study on risk and housing quality regarding elderly. He defines four major spaces regarding activities of the elderly especially impaired ones within their housings, and they should be taken into consideration. In order to have an accessible, no barrier and easy to use house. He defines them as movement around the house, entrance to house, stairs climbing and finally house facilities such as kitchen, bed room and bathroom.

According to Baldrice (2003) in his study on houses that are accessible, he concludes that accessibility is the major point of focus when the subject is elderly. There is the need to provide adequate entrances for houses, as according to Grobe, Regan & Smith et al, (2008) in their study on physical access to houses. The unavailability of handrails or ramps have the ability to affect the capability of individuals, in order to leave or enter their home without risks. Also According to Pynoos, Sabata & Choi (2005) in their study on preventing falls among homes. They suggest that the steps of outside entrance is problematic, as the elderly had troubles with lack of handrails or ramps.



Figure 23: Handrails and Ramps for Entrances (URL 17)

plans should be open, with less doors, less hallways and rooms should be having good relations with each other to be reached, to provide better accessibility for the elderly especially those who face mobility challenges. Adding to this, in order to be accessible for differing people especially those who use special mobility devices or wheel chairs.

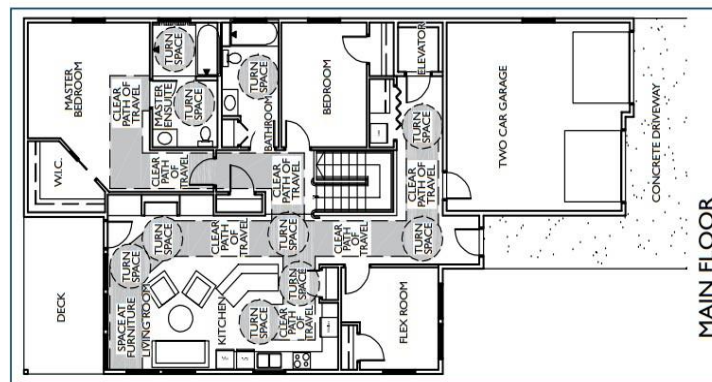


Figure 24: Accessible Paths of Travel in a Residence Diagram (URL 18)

The decorations and furniture all should be in support for mobility and movement of the elderly. Kitchen should be next to the space of dining; bathroom should be close to bed room. It is better to separate calm areas such as the bedroom from loud and noisy areas where activities such as gathering or watching TV occurs. A circulation path with 0.91 m width should be provided through all the spaces. Because this dimension has the ability to provide all the aspects such as storage units, furniture,

control and switches good access. For the individuals with wheel chair or scooters or other instruments, they need spaces in front of switches of furniture with the amount of 0.76 m x 1.2 m. It is better to have a turning space for those equipment within each area, probably a turning circular area with 1.5m.

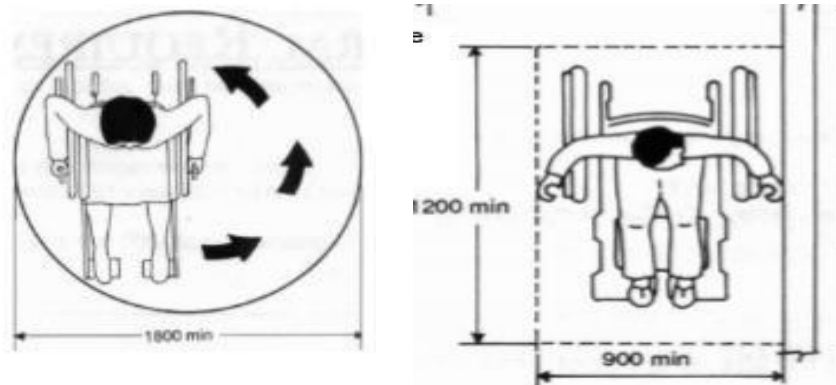


Figure 25: Turning Space Dimension for Wheelchair
(Code on Barrier Free Accessibility in Buildings, 1995; 5 & 6)

Adding to this, aspects such as width of doors as they need to provide adequate width. controlling such as light switches are included as accessible and circulation points. Having appropriate access to the facilities such as kitchen and bathroom are significant. As they are main aspects of every individual's activities of daily living. Having inappropriate access to facilities like these are not only affecting the individual's independency but they are also causing risk on their lives. Adding to this, materials of flooring should be adequate with the elderly, as slippery and wet floors in kitchen or bathrooms are also reasons for difficulties in circulations and falling accidents (Eriksen, Greenhalgh-Stanley & Engelhardt, 2015). Also, according to Bazmar (2018) dark colors, textures and other surroundings have the ability to affect circulation and safety also. Second: the internal stairs used for second floor and bedrooms that are risky.

The results of a retrospective study in Australia indicate that older persons who live in houses with more environmental hazards (e.g. inadequate lighting, slippery and uneven floor surfaces, absence of appropriate grab bars/handrails on stairs) have a 2.8 times greater risk of experiencing at least one injury (Carter et al. 2000). Carrying heavy or bulky objects, walking on slippery floors, and living with poor lighting may increase the risk of falls (Stevens et al. 2001).

2.8.1.6 Safety

With individuals getting older, safety of home becomes even more important as for them, home means safety and simplicity. But it is not just about how they perceive it, rather it is about those situations also that have been lived and experienced among them. As they go through physical changes such as decrease in eyesight level or smelling sense and other chronic diseases. These factors make them vulnerable towards risks of accidents (Gökçe-Kutsal, 2005). within those accidents that compromise their safety, falls are accounted as the most common accidents that occur to the elderly, either leading them to death or other injuries. According to Alptekin, Uskun and Kisioglu, et al. (2008) in their study on home related injuries. Their findings showed high rates of falls among those aged more than 65 years old as accidents that usually occurring to them. Within this regard they concluded that general essential obstacles for the elderly and their safety were falls.

Providing good and safe environment for the elderly helps them in their independency, and decreases their chances of getting more disabled because of home injuries. Falling risks increase with individualistic factors that are occurring in them. As with getting old, there is decrease in density of bones, they get more soft and face breakage in easy situations. According to Josephson, Fabacher and Rubenstein (1991) in their study on

safety of home and avoiding falls. They conclude that Ordinary falling accidents are developing to risky injuries that affects their physical abilities and independence. They suggest that, there is the need to assess and study elderly home environment thoroughly as it is the main element for them to be injured. Within this regard, the conditions of housing such as identifying those risk factors and hazards in the environment that promote falls and accidents can help in decreasing their rates. Also they concluded that applying adequate adjustments to their surrounding environment, results in decrease in the rates of injuries and accidents.

According to the studies of Bamzar and Ceccato in two different years which were (2015) and (2016) on elderly falls in Sweden. They concluded that the reason of falls between the older generations is due to subbing, tripping or slipping. Which often occurred in internal spaces that directly surround the elderly, meaning their homes. Significant interior aspects such as, inadequacy in furniture or their arrangements, issues of wet spaces, with lack of mobility equipment are all accounted as major reasons for accidents to happen to elderly and affecting their safety.

In a study by Atman, Dinc & Orucoglu, et al (2007) on the frequency of accidents happening to elderly within homes. They concluded that with more aging, more accidents are due to happen, especially within their own homes. This is why the housing elements should be arranged in a manner to avoid the occurrence of accidents. In their study Northridge, Nevitt & Kelsey, et al (1995) on home hazards and its effect on elderly falling. They concluded that in general these inadequacies in interiors were main reasons for falling for normal elderly and those with physical limitations.



Figure 26: Carpet Rugs and Elderly
(URL 19)

Adding to this, according to Lehna, Merrell and Furmanek et al. (2017) on safety of the elderly. They conclude that fire preventing facilities and alarms, directions of evacuation and urgent lighting systems for emergency should be put in order to prevent having such accidents. Because fire accidents are also becoming common occurring problems for the elderly, according to Johansson, Pedersen and Mattsson, et al, (2014) in their study fire accidents. They conclude that inadequate use of electrical tools, or extra electricity powers on sources of electricity are all causes for accidents for elderly. Another point within this regard that should be added and has direct contact with elderly safety concerns is lighting. Availability of adequate amount of lighting of outdoor and indoor spaces during night time and day time has the ability to provide a safe and secure environment for the elderly. According to Smolders and de Kort (2014) in their study on adequate lighting and its ability to affect human performance. They concluded that adequate lighting does not only contribute in creating a sense of joyfulness from emotional and perceived systems, but they improve their attention and help in becoming more cautious also.

2.8.1.7 Maintenance

The main aim of maintenance or modifications in housing is to ensure a healthy daily life with fulfilling their needs and control over their house, even though they face limitations in their physical ability. According to the study of Oswald, Wahl and

Schilling, et al. (2007) on healthy aging and housing. They concluded that those individuals who lived in better maintenance homes, had more positive perspectives on their homes. They were thinking of it as more meaningful places that are not affected by external effects and provided them with more independency and better health. Also their findings indicated that modifications of home and moving should be considered in order for the elderly to remain healthy with their perspectives being taken into consideration. According to van Hoof, Kort & Van Waarde, et al (2010) in their study on home design for elderly with dementia. They concluded that modifications for the spaces of living of the individuals provides a safe environment for them, even if they have limitations in their physical abilities. It reduces the levels of falling and enhances their remaining in better physical conditions. Adding to this, there should be also highlighting on age of those equipment or furniture used by house occupants as they comprise a big part of their physical ability.

Although some elderly want to change from a home to another according to what fits best with their needs. But, there are still large numbers who want to stay and age in their own current dwelling, and would like to remodel or modify their homes according to what fits best for them and their biological changes (Molinsky, Herbert & Forsyth, 2019). There are some maintenance and fixing works that elderly mostly need help with such as lighting issues. As according to Pinto et al (2000) in their study of home environment and elderly. They found out that changing light bulb in their houses, is one of the common points for occurring accidents to elderly, as they need to climb up a ladder or stand on chairs. Also the degree of lighting coming from light bulbs should be considered. As according to Raven (2006) in his study on lighting. He concludes that there should be high level brightness and an increase of 20 % for illuminations coming out from those light bulbs.

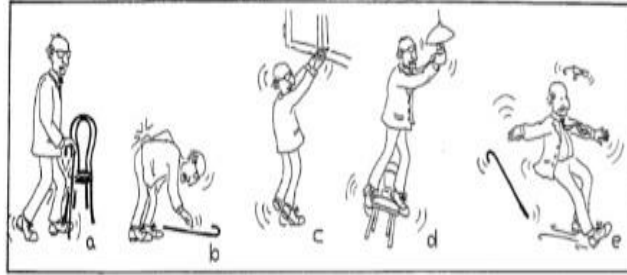


Figure 27: Elderly and Home Dangers
(Pinto et al., 2000; 318)

Another point of maintenance levels for houses of the elderly is considering the degree of lived period and accommodation within those houses. According to Bond (1993) in his study on society and aging, housing quality should be studied through its occupancy degree. This is achieved through maintenance levels of the facilities of the residential environment. The longer individuals continue to live in their homes, then there are more needs of modifications. Adding to this, in another study by Golant (2011) on housing and healthy aging, he suggests that as people age in their own houses. That means the house ages with them, which causes the equipment and parts of the house to get old. This in turn creates threats through the equipment such as windows, poor lighting, leakage, materials and inadequate size of spaces.

Another point that should be highlighted when talking about maintenance is the desires of its occupants or in other words the desires of the elderly. As according to a study by Boyo (2001), over 14 % of English elder citizens live in unfit conditions, in homes that are in intense need of renovation and adaptation. Yet only 10 % of them decide to modify their existing furniture and equipment to reflect their special needs. They usually tend to avoid renovation works due to limited financial issues and physical conditions, with also fear of disasters from those works of renovation.

2.8.1.8 Aesthetics and Comfort

The degree of home comfort is another predictor of overall residential satisfaction. As home is accounted as the most significant part of life of individuals, then being comfortable within the house has double effects on them. A house gets comfortable by controlling and applying adjustments that are enhancing the quality of living spaces, in order for the elderly to achieve psychological and physical comfort. This factor depends mainly on the number of comfort amenities (air conditioning and dishwasher), but is also affected by the amount of space available, measured by the number of rooms, any maintenance work done in the home and the number of necessary amenities (heating, bathtub, hot water, washing machine, television, fridge).

The most common features of comfortability for elderly within their houses is having enough amount of space. This acts as an essential part of their needs and requirements, it affects their levels of satisfaction and enjoyment towards their homes. According to the study of Hrovatin, Širok and Jevšnik, et al. (2012) on elderly people and their surroundings. They concluded that, those spaces which are inconveniently designed in houses can cause major health issues such as, back pain or accidents that lead to injuries.

Moreover, the overall aesthetic appearance of the indoor environment can also directly influence people's subjective sense of happiness. In a study by Weenig and Staats (2010) on the effect of refurbishment on well-being of the individuals. The purpose of those refurbishments was to modify the aesthetic view of spaces and provide control over the house for the individuals. They concluded that those modifications had positive effect on aesthetic and residential quality regarding the individual's

perception. Adding to this, they suggest that these changes also affect the subjective well-being of the individuals.

According to the study of Bailey (1995) in elderly's visual environment. He suggests that some aspects such as handles or frames of doors, stairs and steps with walking paths should be illustrated in a convenient way through applying different coloring and brightness techniques in order to generate a visual contrast among them in order to make them more highlighted. Also the glare from bulbs and those surfaces that can shine or windows should be modified in a way that their degrees are controllable when needed. Those types of lights can be provided that can be locally regulated according to the needs of the older individuals.



Figure 28: Visual Contrast in Elderly Interiors (URL 20)

2.8.2 Neighborhood

Another major predictor of quality of life within a residential environment, is the neighborhood. It has essential impact on lives of the individuals through differing aspects of their lives. According to Sampson et al. (2002) in their study on effects of the neighborhood. They suggest that neighborhoods consist of places built according

to the people or by some determined components, that are familiar by influencing and get influenced through the residents that live there.

An ideal environment for elderly in their neighborhood is recognized as being able to promote participation and activities of the individuals in their older ages. According to Rantakokko, Iwarsson and Kauppinen, et al (2010) on the obstacles of the urban environment in older ages. They concluded bad quality of life perceptions within those individuals who stated that they had barriers in their external environment meaning neighborhood. They reported facing challenges in their physical activity through having bad conditions of the environment. Adding to this they were being exposed to fears in their ideas of going out, within this regard it was leading to having bad physical health and chronic diseases. On another hand according to Gabriel and Bowling (2004) when they investigated the perceptions of elderly towards their quality of life. they concluded that an adequate neighborhood which provides enjoyment, safety and convenient access to services and facilities is an essential domain for good quality of life in older ages.

On another hand Taylor, Repetti and Seeman (1997) in their study on the effect of environment on individuals. They suggest that inadequate characteristics of neighborhood influence the people through their health and daily lives, either directly or indirectly. In other words, it can be said that, weak neighborhood environment has direct effect on decreasing functions of body. Mobility is the main function affected in many ways such as, decrease in outside activities range due to environment challenges. Adding to this according to Toma, Hamer and Shankar (2015) in their study on neighborhood perception and wellbeing among elderly, they concluded that insufficient health situation was directly related to poor neighborhood conditions. In

another study by Gao, Ahern, and Koshland (2016) on aging and neighborhood design, they investigated life quality and the built environment regarding various forms of neighborhoods. They concluded that quality of neighborhood environment was directing mental and physical well-being. In another way, the neighborhood environment directly affects the individuals especially elderly through its physical characteristics such as its location, services and facilities, safety, the natural features within it and aesthetic appearance (Figure 29). These are the direct responsible aspects of neighborhoods that affect the elderly and their living.

2.8.2.1 Location

Along with the development of the human needs, their desires for housing is also growing. People's perspectives towards their houses is directed by its location and whether they want to spend their lives there or not. But with the community changes, also people's desires and preferences for the locations of their houses gets modified. According to Putra (2018) in his study on residential choice of the people. He found out these modifications include adequacy of neighborhood location, having benefits of accessibility to center of the city and other places. He concluded that these factors that affect a person's desires for choosing the location is totally directed by economic and income conditions. Those with limited levels of income decide to live in those locations of residence which are more cheap due to their difficulties in being able to pay. In contrast, those with higher levels of income demand those locations which are near all the places and facilities they require. Also according to the study by Bina, Kockelman and Suescun (2006) on choice of the location. They concluded that choosing a residential location is directed by the economic level of the person in order to buy the house. Those with better financial conditions are capable of buying homes in those locations which are close to public facilities and visa verse.

According to the study of Lawton, Nahemow and N-yeh (1980) on elderly and neighborhood environments. They concluded that, those locations that are quite with low level of crime risk, located in small communities had more positive relationships with elderly's satisfaction with their lives and active aging. Adding to this, in a study by Ristimäki, Tiitu and Kalenoja et al. (2013) on urban zones. They conclude that, people aged older than 75 tend to live in housing districts in center of cities or sub centers. As they get to live near transport and local services. A lot of elderly activities and movements take place in their surrounding neighborhoods.

Having better dimensions to the main places of daily life, has the ability to improve elderly daily activities, which in turn directs their residential satisfaction and better mobility conditions. Within this regard, another logic behind choosing a residential location, is for it to be nearby with their main activity places such as places of working. Most of the places to work are located in the city center, this means those living far from center of the city have to spend more time trying to reach their demanded places.

In return those locations that are distanced from center of the city have limited conditions of transportation, which means facing more challenges in reaching desired facilities. There is a direct relationship between the choice of location and those available resources of travel there. But again it gets directed by financial issues, having houses in the city center means short distance from transportation points but high price for the land. But moving away to city edges means more distance for transportation but better price. According to the study by Haider and Miller (2000) on the location and transportation. They found out that, having the distance of 1.5 Km from a transportation spot was directly related to the price of housing. They also concluded that households decide their residence location according to their best available

choices for using transportation. This gives an illustration that people decide their residence through some characteristics of the neighborhood and the location has the main part within those characteristics.

2.8.2.2 Access to Services and Facilities

Accessibility is a term used by planners and geographers in order to define the circumstances faced by the individuals to get to their daily services places, either in an easy way or hard way. According to Haynes (2003) in his study on accessibility. He concluded that, there is good level of accessibility in case people live nearby to the available services. Also having the transportation mediums can affect the levels of accessibility to those services. As, reaching services is more easy for those that own cars than those who do not. Also those services that can be reached through using public transport systems are more accessible than those which cannot be reached through public transport. He also suggests that, an ideal version and definition of accessibility in an ideal world, is for services to be reached by their targeted populations without any obstacles or challenges, especially for those who are in major needs for it. Also, Talen (2002) emphasizes this point. He suggests that providing access to services and facilities, has to be studied and planned according to demands and characteristics of the population that lives there.

Having adequate access to needed services is a major quality of a neighborhood that directly affects residential satisfaction within those environments. In the study by Michael, Green and Farquhar (2006) on design of neighborhoods and aging actively. Their findings show that having various types of services within the neighborhood, contributed in elderly's capability to try to walk in the neighborhood. Half of their participants expressed that having those facilities within those distances have

contributed in their being able to fulfill their daily needs and do their exercise at the same time. Some others were not having positive perceptions about having to walk a distance to get to their needed facility. Some expressed the long dimensions for needing to walk such as a mile or blocks to walk. Some of those participants, who were not driving, expressed that without any doubt, they would choose their living neighborhood according to the availability of their desired services within a walking distance that they can walk. Most of the participants had the same perspective about being able to access their daily services, which was if the neighborhood was not having their desired services or if they were located in unsafe districts with high range of crimes. These aspects would decrease their desires to go outside and their being able to walk, instead they would get depressed from staying home.

Having access to local services within the neighborhood broadly directs the elderly mobility and daily activities. It also leads their neighborhood and urban satisfaction. As a study by Golant (1984) on environment experiences and activities of elderly. He concluded that if those facilities that they need to reach are not located within an efficient walking distance, they express dissatisfaction with their residential environment. Various services within approved walking distance have the ability to ease of elderly movements and reaching daily needs.

Also access to the daily engineering services has direct potential in changing perceptions about neighborhoods and the levels of satisfaction with it. According to a study by Gandelman, Piani, and Ferre (2012) on those neighborhood aspects that influence quality of life. They found out that there were differing levels of satisfaction and happiness with overall life recorded. These differences were mainly directed by the neighborhood having access to the available public services. Within these services

were, running water, electricity, the systems of discharge and drainage, continuous services of garbage removal and lighting of streets. Another study by Powell and Sanguinetti (2010) on quality of life in urban neighborhoods. They concluded that adequate access to sewage and running water facilities provide better housing conditions and have more expensive price of housing.

Having access to transportation points within the neighborhoods is particularly affecting their life aspects, just as in the study of Michael, Green and Farquhar (2006). Some participants repeatedly highlighted the value of public transportation for them. In their view, it was relating them to the outside world especially for those with limited physical conditions and mobility. Some other participants expressed that economically poor districts had problems with challenges in reaching transportation services. Others described that due to the need to walk a lot in order to reach public transportation, it makes leaving the neighborhood dangerous for them. They were agreeing that adequate public transportation conditions were significant aspects for them to choose and stay in those neighborhoods as long as they can.

According to Tsunoda, Tsuji and Kitano et al. (2012) on environment and transportation regarding elderly. They concluded that adequate conditions of traffic safety increased walking levels. According to a study by Shigematsu, Sallis and Conway, et al. (2009) in their study on neighborhood environment according to different ages. They found out that elderly spent much more time in walking in order to get to the transportations point to reach the places they wanted to get to. They also suggest that having the required destinations of elderly within an adequate dimension of walking has the ability to support their physical activity levels very much.

Having access to health care within neighborhoods, is one of its characteristics that directly influences health. With having more far dimensions to the services of health care, there would be lower levels of the service's usage. According to Hiscock, Pearce and Blakely, et al. (2008) in their study on health care access and neighborhood. They concluded that with having longer distances to the health care centers, people were not visiting in order to get the consultations they need or other medical needs. on another hand according to Korda, Butler and Clements, et al. (2007) in their study on health care and its impact in Australia. They concluded that having health care had major effects in decreasing the rates of death. Within this regard it can be said that availability or unavailability of health care centers within the neighborhoods has the ability to influence the results of urgent health accidents.

2.8.2.3 Safety

Being able to feel safe and secure in their neighborhoods are demonstrated to be essential aspects regarding elderly. According to a study by (Güner & Güler, 2002) on safety, they concluded that every year, a lot of elderly face injuries within their residential environment. In order for the elderly to have the feeling of relief and security, there is need to control those aspects that externally contributes in providing feelings of safety for the elderly. According to a study by Deal (2012) in the United States, in order to determine the connection between neighborhood safety and residential satisfaction regarding elderly. He found out that variables of safety regarding neighborhood were determinants of residential satisfaction for the elderly. Barriers for safety are constructed for elderly due to their fear of injuries, traffic accidents or fear of crime within their built environment.

Fear of Crime

There is lots of emphasis on crime fears from elderly, between those researchers who argue safety of neighborhoods for elderly is Frustenberg (1971). He argued that crime levels were directing people's perception about their neighborhoods, as thinking about crime was increasing their anxiety levels, which in turn was affecting their health. Also fear of crimes affects their physical health as it reduces their desires for walking. According to the study of Michael et al., (2006), they concluded that elderly perception towards their being compromised to crime risks in places of their neighborhoods contributes in lowering their desires for walking. In another study by Mota, Lacerda and Santos, et al. (2007) on elderly neighborhood environments. Through their analysis, they found that safety of neighborhood was directed by their overall range of daily activities and exercise. Within this regard the levels of activity of elderly decreases in case of insecure perception about their environments. According to a study by Foster and Corti (2008) on neighborhood crime and physical activity. They found out that perception about safety influences activities of those people who have fear of crimes and limits their physical activity ranges.

Injuries

Being afraid to fall in case of going out is another aspect of elderly insecure perception about their neighborhoods. In their study Wijlhuizen, Chorus, and Hopman-Rock (2008) on elderly perception about falling. They concluded that elderly try to avoid conditions such as walking on bad pedestrian or stair climbing, due to the challenges they face, and their fear to fall or lose control. Other researchers highlight pedestrian conditions and agree on the point that cross walks should be designed in a way safe for elderly. Providing more smooth sidewalks also helps maintaining safety for elderly

especially those with physical limitations (Brettschneider and Messner, 1988). Walking dimensions should be direct, short and safe in order to encourage elderly to do physical activities within outside. On the other hand, in a study by Bird, Kurowski and Feldman, et al. (2009) physical activity and built environment. They concluded that there was no connection between walking and perceived safety among elderly from Australia.

Traffic

Another element among safety is safety from car traffic, which its influences on people continue to rise, especially regarding their levels of physical activity. According to a study by Hoehner et al. (2005) on urban environment and physical activity of the elderly. They found out that physical activities to service points are directed by those environmental obstacles faced by elderly, developing these obstacles to better conditions results better physical activity for the elderly.

Adding to this having good traffic conditions, helps in decreasing transportation barriers facing elderly transportation in case of car or motor accidents. According to Yee, Cameron and Bailey (2006) in their study on elderly and traffic injuries. They suggested that with aging, there was increase in elderly victimization of vehicle accidents. The study proved that their number of accidents was more than younger ones. With their injuries being, more in the form of chest wall damage.

Also, according to the study by Michael, Green and Farquhar (2006), lots of their participants looked into heavy traffic and busy roads for a neighborhood as unrelaxing and unsafe characteristics. Lots of them indicated their avoiding to walk on heavy traffic roads according to day times such as rush hour. Others indicated that there are

no replacements for heavy traffic as their main service places are located on them. Some others counted wide sidewalks as an escape from traffic. While some others indicated that availability of a zone which is buffered between the street and the side walk could facilitate safety for elderly and promote their walking.

2.8.2.4 Greenery, Open Space and Semi- Open Spaces

Lots of people perceive the gardens as flourishing spaces, filled with flowers and plants, the natural world in the body of a mini world both physically and psychologically, a space which reliefs minds. Integration of greenery within human environments is counted as a tradition from past used for various reasons. It is believed that there is a strong bond between nature and humans, which is seen through their functional processes when being exposed to nature. Adding to this gardening includes both physical activity and association with nature at the exact time.

These open areas are also counted as areas, which are common between houses of a neighborhood. According to a study by Leslie, Sugiyama and Ierodionou, et al. (2010) on greenery and neighborhoods. They suggest that it creates a place for relief, socialization and enjoyment in neighborhoods. Also, According to Lo and Jim (2010) in their study on urban green spaces. They conclude that parks in the older residential communities were the more frequently visited. Besides providing people with open space and landscape, greenery has a touch in the whole city view and cleaning its air with reducing levels of noise.

Those environments that have natural aspects such as greenery and flowers as controlling elements are believed to be having healing effects on people. Other researchers argue the environment's role in assisting health of its human beings, according to Rappe and Topo (2007) in their study on people with dementia and their

exposure to greenery. They concluded that exposure to the natural outdoor environment has beneficial effect on individuals with dementia.

Recently, Specialists such as landscape architects were trying to create gardens within the standards of medical caring. Between the most used elements of design, is having a pathway, which is loop as people with dementia have their losing way as their most mentioned challenges. Surfaces for walking are preferred to be tinted or dark as those people have eye glare problems. Adding to this, it is especially highlighted that un toxic plants should be used, as people with advanced stages of dementia attempt to put differing stuff in their mouths. Those evaluations that have been done to these cities describe these gardens as life quality enhancers as they contribute in elderly physical health and even helps their family in taking care of them.

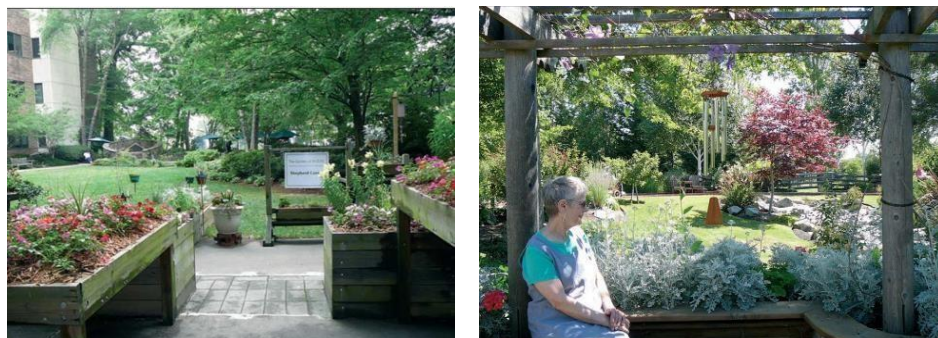


Figure 29: Gardens for Healing (Hartig & Marcus, 2006; 10)

Gardens can be designed in lots of areas and neighborhoods with that have already other facilities. Experts in landscaping and environmental psychologists need to be hired those who have backgrounds about methods and theories about the effect of gardens on the elderly. Having lots of greenery and spaces that are open provide a living environment, which is healthy. They create a connection between nature and individuals that promotes a peaceful relationship between environment and people

(Kaplan and Kaplan., 1989; Jim, 2004). According to Burgess, Harrison and Limb (1988) on their study about greenery and people. They suggest that neighborhoods need various types of natural settings with emphasizing the capability of green urban space in enhancing life quality of the people. A great need for diversity of both natural settings, and social facilities within local areas and highlights the potential of urban green space to improve the quality of life of all citizens. Having adequate quality of greenery surrounding houses and buildings have major values that helps to create even better decisions of planning and please the people.

However, going out requires having enough ability to stay outside as they are in their phases of life that they lose strength. Although open spaces create opportunities for people to engage with the outside world, but they can also create barriers. As their physical limitations increases, the environmental challenges usually become barriers that affects their going out and makes it very difficult (Shumway-Cook et al, 2003). According to Shaftoe (2008) public open spaces are linear parks, squares that are open, semi covered spaces, linked spaces or streets. These open spaces need to have a kind of function, that they be able to provide all kinds of access to different ages of people from youth to old with physical limitations.



Figure 30: Open Parks (URL22)

For example, according to Thompson and Travolu (2007) in people and open spaces, they suggest that elderly like to use open spaces for physical activities such as walking. That is why they should have basic facilities such as washroom sites.



Figure 31: Availability of Facilities
(URL 23)

There should be seating spots and urban furniture provided for the elderly in lots of the spaces in order to provide comfortable atmosphere for the elderly (Kwok & Ng, 2008, Clarke & Nieuwenhuijsen, 2009). Adding to this having adequate privacy provided for the elderly takes part in their feeling relaxed within the environment (Andersson, 2011, IDGO, 2007). Also in availability of those areas for resting creates obstacles for the elderly and their physical activities (Giles-Corti et al., 2005, Su et al., 2010). Also, it is better for the available seats to have those characteristics that supports elderly physical limitations such as arm rests. They should also be put in ways that supports social interaction.



Figure 32: Urban Seating (URL24)

There should be also directions and signs about the spaces provided for the elderly in order to provide a clear image about the place for the elderly, also elderly adequate tools should be provided such as handrails or changes in colors or textures. Also indicators about the paths and their levels for them to choose according to their ability. This shall make them create a map of the open space within their minds. As indicated by Cattell et al (2008) clearness, safety and comfort are essential aspects for elderly to remain in open spaces.



Figure 33: Differing Textures (URL25)



Figure 34: Clear Paths (URL26)

It should also provide areas that encourages or discourages meetings, as people's mentality changes some want to interact with others while others avoid it. Adequate greenery designs improve elderly life through its providing more encounter chances between the people in the neighborhood (Woolley, 2003).



Figure 35: Encourage Privacy (URL27) Figure 36: Encourage Interaction (URL28)

To provide a connection between outdoor environments and elderly, they need some points to be focused: there is the need to be having diverse spaces outside; relaxation in shade or sun in groups or alone, the space should be according to their age and abilities. The major aspect that is important for elderly is natural environments such as gardening or gardens to view. Plant choices and landscaping should be free of hazards in order to have a clear visual perspective for the elderly. They should be able to be redesigned during changes in life. Hierarchy should be in the space planning, with good relation of functional changes from public to private spaces. This way those living nearby will gain control over those spaces.

The materials should be secure and safe, greenery and landscaping be consistent with nature, site should be natural and attract their attention to neutrality, comfort and beauty. The plants should be able to contribute in providing privacy, shade, clear areas; they should change according to seasons and block velocity of wind. Trees that have lots of leaves falling may cause the pedestrian to be trippy and for elderly to fall on it. Therefore, those types of greenery should be chosen that does not have many leaves falling. It is better for height of plants to be at a level that does not needs elderly or those in wheel chairs to bend in order to touch them or smell them. A height of 635-890 mm might be good. The roads should be adequate for the elderly and those with wheel chairs, it is better for all the paths to be connected inside and also outside, with

various views. Also adequate lighting should be provided for safe use within evenings. Roads be that much wide that two wheel chairs have no trouble for passing at once.

2.8.2.5 Aesthetics

Attractive neighborhoods increase enjoyment while walking as in the study of Micheal et al., (2010), some participants stated that they would prefer to walk in neighborhoods that are attractive. They defined multiple aspects of attractiveness; among them were aesthetically appealing greenery, streets and building designs, also attractive things for their eyesight. Examples of neighborhoods that are visually delightful included having different styles of architecture inside one block, smooth streets and ancient resembles. Also having these kinds of streets creates a more appealing activity area for walking. Further, traditional grid systems can be developed within these streets to more long points. As elderly stated that unattractive neighborhoods reduced their inspiration for walking.



Figure 37: Attractive Neighborhood (URL 29)

Next to natural views, a place's aesthetic appearance impacts people's mentality in doing their activities. According to a study by Borst et al (2009) on the effect of characteristics of street being the reason to attract elderly for walking. Their findings suggested that view of the neighborhood and its greenery were directly affecting the

elderly and attracting them. Adding to this Nasar (1987) on urban design and its aesthetic views, he investigated the emotional impact of existing physical features of urban scenes. He interviewed many people around the scene and requested to evaluate the emotional quality of the place, which they were standing. Their chosen scenes were close to each other's characteristics through their physical aspects. They found out that quality of the scene was negatively responding with availability of vehicles, but were positively related with taking care of the area.

In addition, the level of neighborhood's maintenance affects its visual appearing as according Herzog (1992) in his study on urban space preferences by the people in United Kingdom. He distributed various photos regarding various urban spaces among them. He investigated people's preferences of those spaces, his findings revealed that visually attractive and interesting spaces with new characteristics were mostly preferred. Within this chapter of literature review, a brief background about quality of life and its domains with having residential environment and satisfaction with it as the main component within the chapter have been discussed. The domains of residential environment which were house and neighborhood have been discussed also with their own components. After this chapter and within the next chapter a brief overview about Northern Iraq and its architecture with emphasizing its residential architecture is presented.

Chapter 3

NORTHERN IRAQ AND ITS ARCHITECTURAL CHARACTERISTICS

This chapter is giving a brief description about Iraq and Northern Iraq as part of it. It is presenting the architectural characteristics and residential development within the area from the ancient times to the current time. The developments in housing are divided to four periods. It is presenting a descriptive analysis of architecture and housing in Iraq and Northern part of it.

3.1 The Historical Background of Iraq

The lands that nowadays compose Iraq were called Mesopotamia, meaning land between rivers. It is a large region, and an origin of many of the earliest civilizations in the world between them Assyria, Babylon, Amjad and Sumer. It is surrounded by Turkey from North and by Kuwait and Saudi Arabia from South. By Iran from east and by Jordan and Syria from west.

It is a region wealthy in fertile plains, which became a significant aspect of wider royal community, between them empires of Greek, Persian and Roman. It became a significant and central aspect of the Islamic population after the 7th century. Baghdad is its capital which became Abbasid caliphate's Capital within the 8th century. The modern state of Iraqi nation starts after World War I (1914–18) from the provinces of Ottoman Empire. Its name derived from the terms used for it in the pre modern times, which was used to define the region (Mesopotamia).

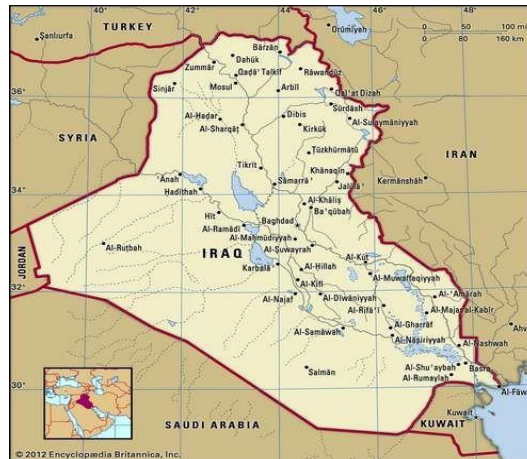


Figure 38: The Geographical Map of Iraq (URL 30)

3.2 Northern Iraq

Northern Iraq is located in Middle East, consists of a generous area with high mountains. It is the part of Iraq, which has hills, mountains and productive plains. With an area about 40,000 square kilometers (KRG, 2013). Lengthens between the top of Zagros Mountain to Taurus Mountain. It consists of four bordering states meaning Northern Iraq, North-West of Iran, South East of Turkey and North East of Syria. The part of north –north east is the array of Zagros Mountains with a height of 3600 meters above the level of sea (Wright & Minneapolis, 1961). The morphology of this array is rocky with small valleys and sharp slopes, the tops are consisted of forest and greenery with covers of snow (Travaglia and Dainelli, 2003).

Reaching the center of it, will become more smooth in morphology. Its maximum height is the top of Hasarost Mountain with the dimension of 3,607 meters above the level of sea and its minimum height is Kifri region with the dimension of 140 meters (Nqshbandi et al, 1998). The span of valleys increases throughout this area and directed by tectonic control. This region in Republic of Iraq is identified constitutionally as a region of the Northern Part of Iraq which is semi-autonomous

with a population of 5.1 million (estimated in 2012). It has been enjoying a semi-independent status in recent years. described as a source of peace and development in the Middle East. In reality, its long history of war and violence has left incredible marks and scars. At the same time, however, it has created a unique situation marked by a free market and developing opportunity (Recchia, 2012). Three governorates form this region, which are Sulaimanyah, Erbil and Duhok (KRG, 2013). The population consists of Kurds, Arabs and other cultures. Kurds consist of the world's biggest ethnic group that have no state with identity, culture and traditions in common. Kurdish is their first language of speaking which has many dialects such as Hawrami, Sorani and Badini etc. With their main ethnicity being Muslim (Nooraddin, 2012). After the liberation process of Iraq in 2003, there have been consistent developments in these cities in the form of transformations.



Figure 39: The Geographical Location of Northern- Iraq (URL 32)

3.3 Sulaimanyah as Cultural Capital of Northern Iraq

the city was built by a Babanese prince called Ibrahim Pasha in 1784. It became Baban principality's capital and received its name from Ibrahim Pasha's father Suleiman pasha. the city was built because of increasing the range of domains of Babanese. lots of neighboring village's residents were invited by Ibrahim Pasha to live in the city. Kurds of lots of the surrounding countries such as Iran and Turkey were invited to live and dwell in Sulaimanyah, as the city was offering them much more opportunities and security. This led to existence of a population of various ethnicities in Sulaimanyah such as Muslims, Christians and Jews, this in turn flourished market and industry in the city.



Figure 40: The Old City of Sulaimanyah (URL33)

These dwellers were producing various products such as wheat, soap, ice, clash and tree gum. Although comparing to others it is a new city, but its touch is reflecting among all over Kurds and was the cause of appearance of some of the most important personalities in Northern - Iraq such as poets and writers, activists and freedom fighters. The appearance of these educated minds and their participation and contribution in cultural and artistically aspects of the society led to the city's recognitions as a center of literature and culture. The city is also famous by naming its

main streets according to the names of these people. Its beauty and scenery was a source of inspiration of many artists and poets from history.



Figure 41: The City of Sulaimanyah
(URL 34)

It houses the largest university in Northern- Iraq. adding to this, it is known for its having two gate dams, Darbandikhan and Dukan, they are set as attractive and wonderful tourist land marks in the city.



Figure 42: Dukan Dam
(URL 35)



Figure 43: Darbandikhan Dam
(URL 36)

3.4 Geography and Climate

Situated in South part of Northern - Iraq. Bordered by Iran from west, and also counted as its nearest country neighbor, and from South bordered by Turkey. Its level is 830 m above sea level. its area is 13368 with a population of 745, 687 according to Sulaimanyah Official Statistics office. It is surrounded by beautiful and long ranges of

mountains that add unique natural scenery to it, especially during the winter when the mountains wear their white dress of snow. With availability of lots of fertile lands.

Its climate is just as the other parts of Northern - Iraq, four seasons, mostly sunny and semiarid (Abdullah, Abdulrahman and Omer, 2018). High levels of heat and dryness from June to August, with 31.5 °C as total temperature. Throughout winter, these levels decrease to 7.6 °C with snowfall, more windy, wet and colder atmosphere throughout the months of December to February. With occasional rain falls beginning lightly from October and increases in November with continuation till May, approximately 400 – 600 mm per annum (JAU, Sulaimanyah Governorate Profile. 2015).

3.5 Economy and Education

since the past, Sulaimanyah was consisting of breeding and agriculture works, significant produce of agricultural product supplies such as wheat and worked as a hub for trading between Iraq and Iran. Although it saw reduction in its economic levels due to the previous higher authority's limitations, because of its being the center which revolutions began. But from 2003 and with destruction of the previous authorities, economy in this city flourished. today its economy besides agriculture depends on tourism and industrial trades (JAU, Sulaimanyah Governorate Profile, 2015). within 2004 food security and analysis of it comprehensively, adapted surveys the governorate of Sulaimanyah. its results indicated the previous mentioned economic developments in 2003.

Regarding education its free from the stage of primary school until the stage of university graduation. its university was opened in 1968 with instructors from different

nationalities such as Kurdish, Arab and English. Housing the faculties of medicine, engineering, arts, agriculture and science. due to the transportation of the university in 1980s another one was established within 1991 with the same characteristics. Later, The American University of Iraq – Sulaimanyah was opened as a new branch for the series of Middle East's American Universities. With English being their first curriculum of studying. Then, University of Human Development was opened, after that komar University followed, which is also a private University with English curriculum.

3.6 Elderly in Northern Iraq

Elderly or the people aged above 60 years old are a population which has just newly started to increase due to their better life decisions and medical care. According to the Demographic Survey regarding Northern Region of Iraq in 2017, the pyramid of population is a wide ranging. At the bottom it, is expanded and gets triangular when reaching higher. Which is regular for a growing population. Analyzing between the previous years and 2017, it was less triangular in construct, as from the bottom it is rectangular and broader from top, which reflects a transitional organization.

With a compelling gap of the age groups of 55- 59 regarding males. The range of ages from 64 years old and younger decreased from 57.6% in 2003 to 56.7% in 2006, but the range of older than 65 years old reduced from 4.4% in 2003 to 4% in 2006 and to 3.9% in 2008. If more detailed look is given to governorates, the three governorates are reflecting more stable and larger base.

As the elderly since the past were a minority within the Kurdish society. In some times due to the education status of the society or due to the bad economic situations, they

were suffering in their lives. Some still are living in poverty or in bad economic situations which have affected their whole lives, but it can be said that the circumstances are in their ways to be better.

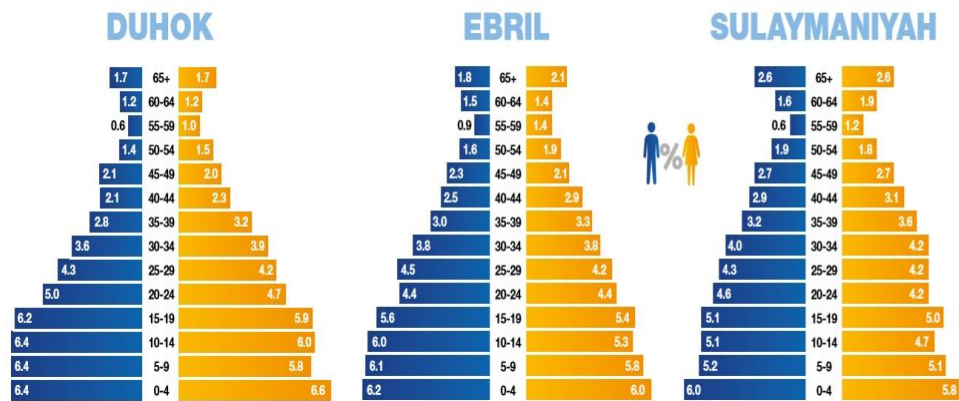


Figure 44: The Population Pyramid Regarding Three Governorates of Northern Iraq (URL37)

Some studies refer to the situation of elderly as hard to try to live a normal daily living due to the security concerns of the country, and their being in war and facing displacement. According to a study by Hussain (2016) on health and socio demographic characteristics of the elderly in Iraq. According to his reviewed data, he concluded that the demographic characteristics related to elderly were listed as follows: the people aged between the ranges of (55- 64) were composing 4.2 % of the whole Iraqi population. Those aged more than 65 years old were composing 2.8% due to the newest available figures for that year. By comparing the available studies, available services for the elderly and their demographic characteristics, he concluded that: Iraqi elderly population are victimized for bad health care conditions, due to their large number and not enough hospital amenities. Lack of centers of Rehabilitation. Lack of doctors or physicians that are specialized in geriatrics. Lack of developed community services.

According to another study by Help Age International Program in Iraq in 2005 on situation of elderly in Northern Iraq. It was mostly focused on the poor communities within Northern Iraq. They concluded that people aged older than 60 years old have a share of (6%) of the whole population in Northern Iraq and are a very sensitive minority. They have certain requirements are in need to be fulfilled, but neglected from their families of governorate. Majority of them have negative feelings about their perceiving themselves and their capabilities. In some of their findings they found out that their surrounding adults had major parts and contributed in these negative perceptions. As there is a gap in the understanding between the elderly generation and the younger ones. According to their findings from the poorest communities, more than half of the families were in poverty and low economic income. There is not efficient space and privacy within their housings, lack of facilities for their entertainment, they were suffering from major chronic diseases also.

These studies that were previously done, under lined the situation of elderly in Iraq in general and in Northern – Iraq in particular. Due to the limited resources and newest published figures and consensus about the elderly population, there is still lack of convenient approaches towards the elderly in the major fields of their lives.

3.7 General Development of Architecture in Northern Iraq

Up until the last years of nineteenth century, craftsmen from local areas were the most common forms of designers for buildings. Iraqi local architecture was transferring from previous generations to new generations. As social groups from differing cultures were composing the society in Iraq, each one had their own architectural heritage. According to Bianca (2000) this was the facilitator for the existence of various forms in its urban and architectural views. Destruction of Ottoman Empire in 1918 led

colonization of the British in large areas, which the Ottomans have been controlling; today's Iraq was one of those areas. 1921 was the year of establishment of the boundaries surrounding Iraq; it consisted of differing ethnicities, but mostly Kurds, Turkmens and Arab. With differing language, culture and history regarding each one of them. The ruling system was processing in a way that, the population was neglected during decision-makings and only small groups were the focus points. This was the reason for neglecting the Kurdish architectural heritage, as they were one of the ignored minority in the population. Due to the absence of democracy in systems of making decisions, all society aspects were reflecting this situation (Nooraddin, 2012).

Within 1930, the ruling system decided to adopt international architecture in order to develop their local architecture. However, the adopted architectural features again ignored the point that Iraq was a multi-cultured society and had variety in its architectural heritage. It first began in Southern parts of Iraq and then reached other parts by time. This development in urban fabric and local architecture reached its peak after World War II. As the previous actions taken in order to develop their architecture were mainly adding to existing buildings. However, twentieth century, was a turning point, due to the process of modernization. New ways that interfered the existing city fabrics were exposed.

The period of 1950's was the time the area saw extensive adoptions of proposals for planning cities, and many cities were built, between them were the cities of today's Northern part of Iraq (Doxiadis, 1968). Many well-known architects were invited to take part in designing major projects in the cities especially in Baghdad, between them were Alvar Alto, Robert Venturi, Le Corbusier, Gio Ponti, Frank Lloyd Write, Ricardo Bofill and Walter Gropious. Their designs were expressing the era of war, and through

their forms, they were giving the expression that modernism is an international style and its ideals are based universally to fit any background.



Figure 45: Buildings from Iraqi Architecture (URL38)

3.7.1 The Appearance of Modernity in Architecture

After changes in the ruling system in 1958, nationalist groups were controlling the new system. Their process of making decisions and ideology influenced various sectors and between them was architecture. The heritage of Iraqi architecture was proposed as Arabic heritage and again neglected the status of modern Iraq, which is, multi culturality. This led to neglectance of the architectural heritage of those groups in all other aspects such as development projects or education system. Adding to this a number of Iraqi architects who were studying abroad returned back to Iraq with their western ideology in architecture (Nooraddin, 2012).

By 1950s few Iraqi architects started coming home after being educated in the West. This was the facilitator of a new period of Iraqi architecture, as Iraqi architects themselves were applying the principles of international architecture (Chadirji, 1985), and to create the new modern Iraqi architecture. These new architects had one perspective, which was reforming and modifying the applied principles in architecture,

in order to establish a built environment that represents the advanced modern society in Iraq. Although some of those architects had impressions on political, social and economic ideology but the main, aim was to develop a local architecture of Iraq.

Even though these architects attempted to develop a local architecture, which is modern, but their perceptions were only affected by traditional architecture of Arabs in Iraq. Again, the multi culturalism of Iraqi population was set aside. The idea that each of those cultures throughout the past have developed their personal architectural identity, which was their several centuries' cultural construction, was neglected. Within this time, each city in the parts of Iraq attempted to create their own identity in architecture. This is the reality of architecture in all cities of Iraq from the Islamic and old cities in its North and South parts. Highlighting and analyzing the architectural features of these cities displays significant distinctions regarding various aspects. These images (figure) represents two buildings in two Iraqi cities with their obvious differences in characteristics and typology.

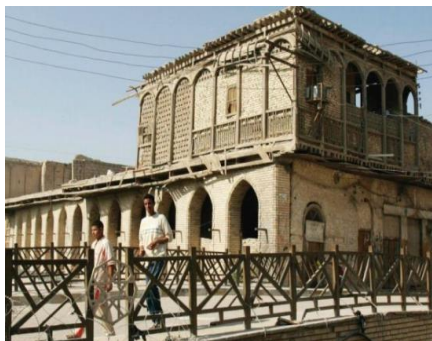


Figure 46: Residential Buildings Of Iraqi Architecture (URL 39)



Figure 47: Buildings from Northern Iraq (URL40)

Still the multicultural characteristic of Iraq was neglected by its young architects. This is why the adoption of those projects in cities of Iraq can be seen as national style of architecture in local Iraq. Any application of this style in the other areas of Iraq with

different culture characteristics were counted as attempts to change the characteristics of local architecture in these places. This style continued in the education programs in all schools of architecture in local places especially in the Southern part of Iraq. As it was controlled, by the ruling system which had an Arabic ideological nationality and again the characteristic of multiculturalist of Iraqi population was neglected. Due to this situation, the Northern part of Iraq had its architectural heritage neglected. This was the reason for destruction of many built areas within the Northern part, in order to develop their identity. Within these were Kirkuk citadel and villages within Northern part's mountains.

3.8 Architecture in Sulaimanyah as a Part of Northern- Iraq

As mentioned before, there were transitory architectural styles appearing because of political issues regarding Northern Iraq's dependency. Each person was building according to their own perception. The reason of this can be because of architecture being a product of person's thinking, and its attracting others who see them through their society's identity and culture (Sleiman & Alhankawi, 2008). There is the need to state that, due to the multi-cultured characteristic of the area with differing ethnicities and each had their own ideology, according to these perceptions and needs, they were building their structures and buildings. What they were building was directed by environmental factors, culture and their beliefs.

For example, Ahmed Pahsa who was the son of Suleiman Pasha built the Serah of Sulaimanyah in (1838-1842), which consisted of one floor without the availability of interesting architectural characteristics and functioned as a prison and police station. Since then this building remained an ancient architectural heritage of Sulaimanyah, and higher authorities are in attempts to register it in the world's ancient architectural heritage. After 1919, the building was rebuilt by the Iraqi authorities and the local Iraqi architectural style can be seen in its characteristics.

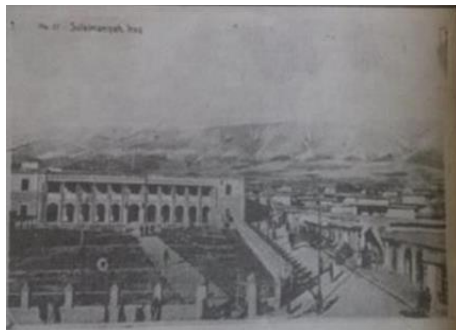


Figure 48: Sulaimanyah Serah (archives of Sulaimanyah serah)

The new building was cubic in shape, consisted of two floors, there are 23 rooms within the ground floor, in total it consists of 43 rooms and long corridors. Availability of two inner courts, the overall view of the building has taken the shape of a fortress.

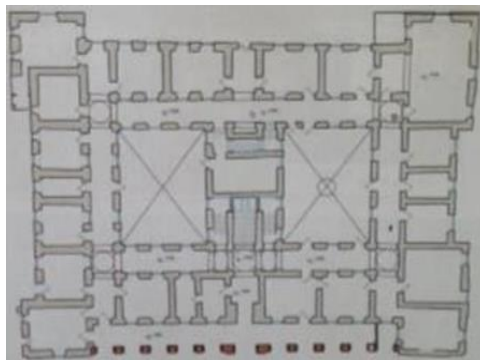


Figure 49: Serah Building Plan (Archives of Sulaimanyah serah)

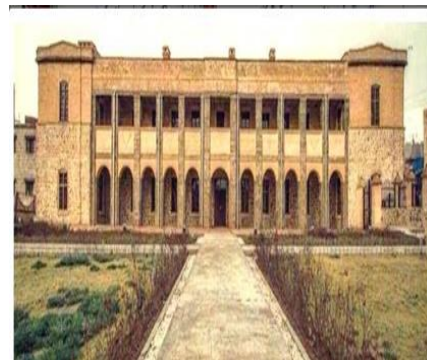


Figure 50: Serah Building View (URL41)

Un even stones and rocks were used for its ground floor, specially designed to absorb the sun heat and glare. Fried bricks are used for its first floor to reduce its heavy weight and maintain a good temperature within the seasons. This gives an interesting view to the building through using two different materials within one façade. From its construction techniques, scientists believe this is due to its being able to hold the floor above it. Today this building is rehabilitated just as its previous traditional style and serves as a museum for the city.



Figure 51: Inner Court
(Archives of Sulaimanyah Serah)



Figure 52: Different Materials for
Façade (URL42)

Another landmark and resemblance of architecture in Sulaimanyah city is Hotel Farah, it was the first hotel built in Sulaimanyah city in 1934. It served as a hotel until 1982 but due to the war a part of it was destroyed. Then 2012 the hotel got renovated again, just according to its style without changing anything. Again the building is cubic in shape, consists of two floors and again has the characteristics of Iraqi architecture which is influenced by Arabic architecture. Although Kurdish architects have built this hotel, but still its elements are from Iraqi architecture which is Islamic architecture. Inner court and shanashel are its most significant building elements.



Figure 53: Hotel Farah Shanashel (URL 43)



Figure 54: Inner Court (URL44)

Nowadays differing architectural styles are appearing in Sulaimanyah high towers are being built and more organic shapes with differing building materials which are influences from western styles are shown in the design of its buildings.



Figure 55: Grand Millennium Hotel (URL45)



Figure 56: City Star Mall (URL46)

With neglecting Kurdish architecture by the policies of government and architectural school for a whole century, resulted in a gap between the traditional architecture of Northern- Iraq and its rebuilding in this century. This is why there are multiple architectural styles showing within this century. Although in the rehabilitation works of those traditional buildings. The attempts to maintain the traditional architecture but with new materials is seen. But still they are creating some kind of confusions with the new styles.



Figure 57: Decoration of Serah Building (URL47)

3.9 Residential Architecture in Northern Iraq

The residential architecture started from ancient villages and then developed to houses. Kurdish people and their style of living have been highlighted by travelers from west, they described that rocky hills were places for villages and each house was surrounded by walls of heavy stone and extraordinary materials (Shiel, 1836). Kurdish local architecture consists of stone walls of rubble and roofs of wood beam which were applied according to the seasons (Izady, 1992). In his study Lafforgue (2010) highlights some old settlements of Kurdish architecture in villages, their materials and significance in culture in Northern- Iraq in general.

Analyzing these settlements and their buildings describes the social and cultural characteristics of the individuals in these areas. Towns like Tewelle are examples of these settlements, its residents built the houses with masonry bricks. Such as villages of Tewelle and Biyare on the mountains of Northern- Iraq. They were consisting of cubic shapes of houses, located on a mountain which was sloped, the purpose of using this slope was to absorb the sun in mornings and to maintain a small area for using all the area they had for agriculture purposes. Analyzing their housing conditions shows

that used materials for building, differs according to the area's temperature and climate. The most used materials were timber, stone and mud brick.



Figure 58: Tewelle Village (Tuli, 2010)

Within this regards, residential architecture is divided into three periods:

3.9.1 The Traditional Period

With human society's evolution and development of cities and villages in previous Iraqi civilizations, new conditions of housing were in need to emerge as people's requirements from life were developing with time. This means that changing needs of human being and requirements were facilitators for development of various designs of housing for the people. As Islamic civilization dominated a broad range of the world, the people who were known to not complain or ask for anything in their life, were living in traditional buildings dating back to before emergence of Islam. They thought it is suitable and efficient. Although those techniques that were used in them, focused on the conditions of local environment, yet, these type of housing continued to exist (Mzoori, 2014).

Iraq is known for its different characteristics regarding architecture. There are differing levels of development of various buildings, specifically buildings that are residential (Potts, 1997). Discoveries from archeologists in the city of UR, show that

developments of house layout and patterns in this city dates back to 3000 BC. This is the reason why it is thought to be the place where architecture was born (Ujam, 2006; Shepperson, 2009).

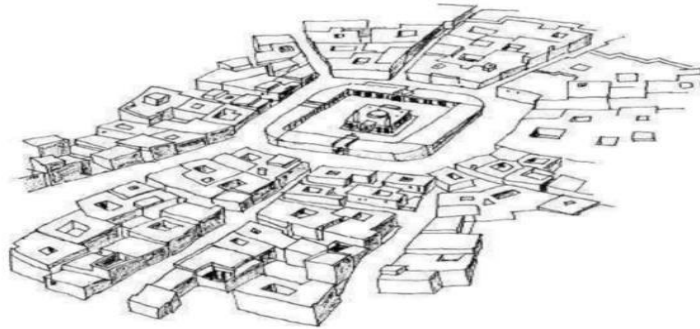


Figure 59: Courtyard House Dating Back to Before 3000 BC (Ujam, 2006)

As throughout 19th century and beginning of 20th century, the Iraqi society was suspended from any of those developments occurring in western societies such as economic, cultural, technical, political and social (Bornberg & Arif, 2007). This was the reason for the people to settle with those minimum civilization characteristics they had. Although developments in needs and experience occurred for them, but adopting modifications were rarely happening just for urgent cases. That is why the developments took lots of time for being adopted and adjusted (Bianca, 2000). The characteristics of Iraqi houses are known to be inside orientated towards a courtyard, this remained a significant aspect of housing patterns for centuries (Ragette, 2003: Razzouqi, 1987;; Al-Rawaf, 1972).

Therefore, social privacy and community values echoed in Kurdish housing designs (Hassan, 2004). Large external walls border the house of a traditional style; this means the absence of exterior spaces and existence of inner courtyard (Mzoori, 2014) (Figure

63). This is why it can be said that flat roof was the most significant characteristic about their form.

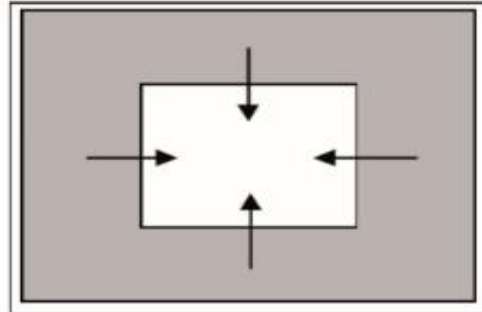


Figure 60: Surrounding Walls as Boundaries (Mzoori, 2014)

Clay mortar and mud brick are their most common used building materials, commonly houses consist of one storey, their facade contains minor openings with thick walls (Aljanabi, 1987; Al haidary, 1983;). Bedroom and storage rooms were located at first floor (Ujam, 2006; Unwin, 2009).



Figure 61: Visual Connection in Kurdish Traditional Houses (HCECR)

Some spaces located in the level of underground and were functioning as service zones, or sleeping during day time to avoid the extensive heat from the sun. it can be said that using underground as a housing element was originally developed by Iraqi

architecture in ancient centuries (Mzoori, 2014). It became a significant element of architecture regarding North part of Iraq, due to their climatic condition (Figure 64).

The ground floor consisted of living room, bordered by Guest bedrooms or family gathering spaces and individual's rooms were placed in first floor (Fathy, 1986; Al Hussayen, 1995). Kitchen and bathrooms placed near the entrance or bedrooms and also a storage.

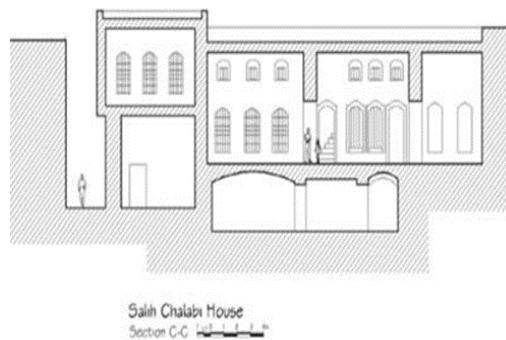


Figure 62: Basement of Traditional Houses (HCECR)



Figure 63: Enclosed Façade from Outside (Author)

3.9.1.1 The Main Elements of Traditional Houses

There are some elements that houses within this period are specified of, it goes as follows:

Courtyard

Most of Iraqi houses were a type called courtyard house, they had short span roofs of timber and mud being used for walls and roofing. The inner court is a significant aspect where all family activities occur. It is a lighting source with fresh air and gives them privacy with protection (Warren and Fethi, 1982). Commonly it is formed as a broad square or rectangle, which stones, marble or brick are used for its pavement.



Figure 64: The Courtyard of a Traditional House (Author)

It is the zone of individual's activities regarding daily life and social interactions. Many activities and circulation occurs in the courtyard such as cooking, dining, sitting playground for kids, that is why it is considered the core of the house (El-Dessouki, 2000). The inner courtyard is one of the salient features of the traditional pattern of houses. It is the only outlet for air and light, and the main regulator for controlling temperature of the house in summer and winter (Givoni, 1994).

Dolan

Which is the entrance of large houses; it is the main element inside the house and was designed due to the socio climatic status (Nevett, 1997). It functions as a road between the inner court and alley. Its characteristics differ according to the houses, but crooked entrance is the prevalence form of it (Saxon, 1983) (Figure 68).

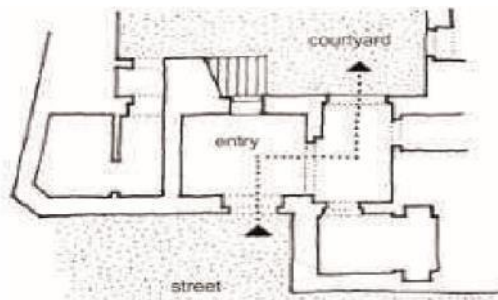


Figure 65: Crooked Entrance (Reynolds, 2002)

Mejaz

which is the passageway of entrances, Moreover, the hierarchy nature of the social relations. Begins from the alley and passes through the entrance passageway. This element was designed to confirm the principle of privacy. It links the outside indirectly with the inner courtyard, which can be considered the key node of circulation in the house.

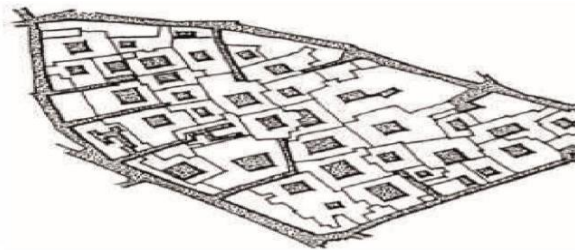


Figure 66: The Connection Between the Alleys and Courtyard (Ragette, 2003)

Tarma and Talar

which is a balcony creating view to the courtyard which are those rooms that make the balcony function as a space for use and bedrooms (Mazumdar & Mazumdar, 2001). Tarma consists of a gallery or corridor, surrounds the courtyard and placed in front of the rooms (figure). in order to shelter the individuals from radiation of sun waves or rainfall according to the weather, also functions as a place for sitting (Janabi, 1982; Ragette, 2003).



Figure 67: Tarma (Author)

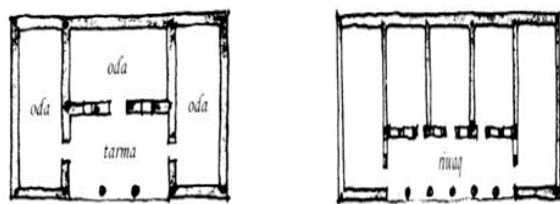


Figure 68: Tarma in Courtyard Houses (Ragette, 2003)

Iwan

Which is a structure rectangle in shape with an entrance and clearing vision to the courtyard. Surrounded by three walls, opens to the inner courtyard. It is a significant element within traditional houses and has more than one (Al-Asha'ab, 1975; Al-Azzawi, 1996).

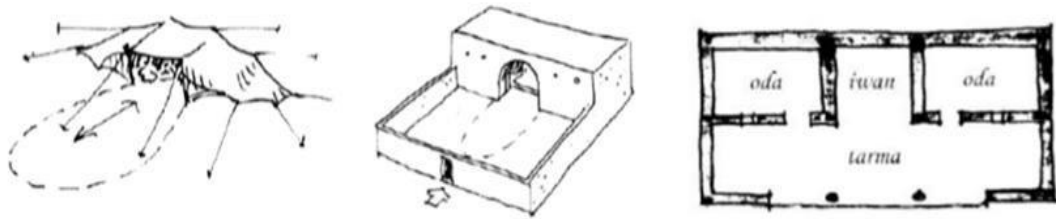


Figure 68: The Stages of Iwan Evolution, from Tent Until Iwan (Ragette, 2003)

Roof

Top surfaces in these type of houses were exposed to the sky and open, bordered by parapits and had many levels because of their construction techniques (Evans, 1980). It functioned as a place for sleeping in summer nights (Figure 74), also for hanging clothes to be dried or relaxing in winter days (Warren & Fethi, 1982).

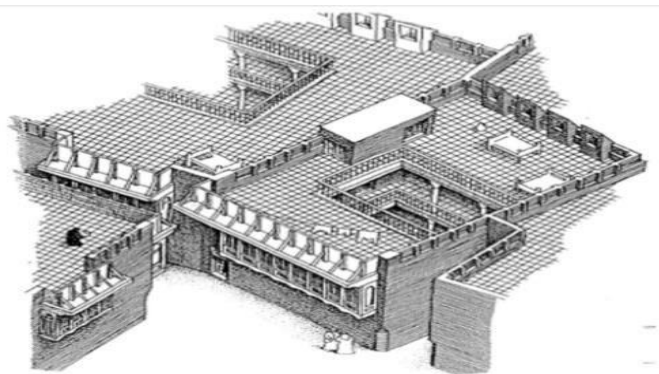


Figure 69: Roof Surface in Traditional Houses (Ragette, 2003)

3.9.2 The Adjustment Period

During the period of 20th century and after the first world war ended, a new city with new independency appeared, population growth increased with social, cultural, economic and political changes which contributed in expansion of the city. Significant changes in structure such as roofing techniques became stronger which led to avoiding using productions of pure brick such as arches and vaults. Adding to this with modern styles, tile paving, decoration from plaster, doors and large windows were convenient to use. Although there was continuation in use of courtyards inside houses, but eventually it disappeared in (HCECR, 2009).

The characteristics of traditional housings were being replaced by new construction materials such as, reinforced slabs of concrete, blocks of concrete, painting colors and transparent windows developed those traditional characteristics. these new approaches were developing difference in ideas about tradition and modernity (Al-Sanjary, 2008). Eventually, their characteristics were large openings with simple forms General, which are counted features of modern movement in architecture. Housing design and layout developed in response to these changes especially regarding functional connection between the spaces.

On another hand the appearance of cars as a target for ease of movement, due to increasing of people's requirements and demands from life. These factors led to changing the urban fabric of the city from the compact pattern which was traditional to grid system consisting of cars because of its effect on layout of house (Mzoori, 2014). According to the experience of the ruling system which were British, architects pursued their working on the developed policies and regulations regarding planning

and designing new residential districts affected by the modern western ideas and styles of architecture and planning (Nooradin, 2004; Isenstadt & Rizvi, 2008).

These regulations were the foundation of applying planning concepts from modern western styles (Al-Haydari, 1985). Although, neighborhoods and residential districts were designed according to styles of modernity. The running roads between those neighborhoods developed to be more wide and straight comparing to their past which was narrow and twisted.

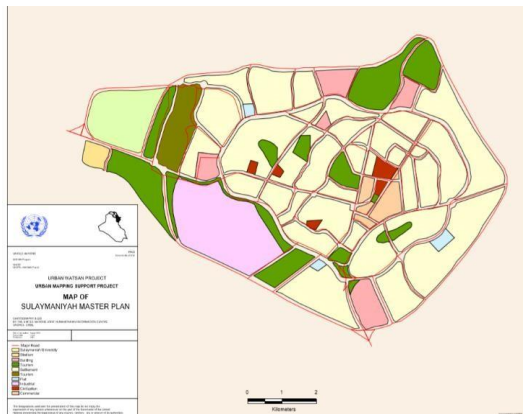


Figure 70: Sulaimanyah Master Plan



Figure 71: Traditional Narrow Paths in Sulaimanyah (Author)

Houses became either detached or semidetached, and gardens were added either from front or back to maintain a new style of privacy (Mzoori, 2014). This new aspect of exposing towards outside was directly affected by the Western style. Movements became more functional and more than one exit and entrance was added, with its link to inside zones. Adding to this other spaces that were not existing in previous times appeared such as dining and reception room. Parking spaces were provided in front sides of houses.

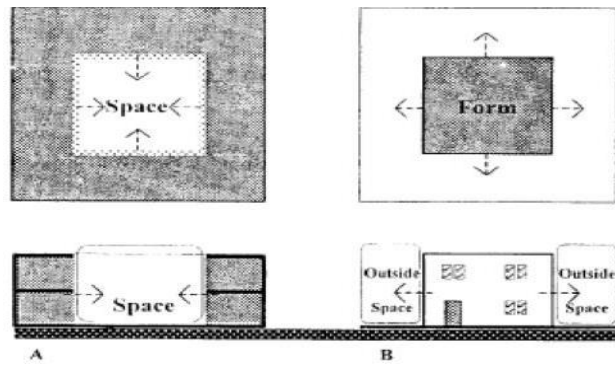


Figure 72: Difference Between Courtyard and Modern House (Bahammam, 2006).

The most significant feature of this period is the changing of location of kitchen from back of the house where it was hidden to the front of the house, a more expose and open to garden or garage in front of the house. At this point it was serving both as a kitchen and as an entrance. This was due to the wide usage of cars which was developing the usual patterns of shopping and storage. Kitchen activities became of major significance as its location was developed and its functions developed to be used of cooking and dining.



Figure 73: Kitchen from Adjustment Period (Author)

3.9.3 Transitional Period

This was the period where Iraq was place for destruction and sanctions due to wars. Generally, within the last century, Iraq was an economically unstable city and wars were destroying it (Stansfield, 2003). Sulaimanyah was also affected by these situations, as migration from those who lived in villages began to the cities which were large. This needed a built environment that was urbanized in order to shelter them (Chadirji, 1986). This was the reason for builders from those rural areas who became migrants, to take control over this process and contributed to the cities through their self-perspectives on urbanization, with the visual perception as a significant aspect of it. Different models of housings were presented with various elements that affected the scape of the city though their visual appearances. But within the poor neighborhoods of the city, these elements were neglected, and their only purpose was to have a cheap and simple design without any aesthetic values.



Figure 74: Houses of the Transitional Period
(Author)

In the middle of this period and as Iraq got into troubles with other nations, its economy began to decrease. The northern part was no exemption from this. Levels of housing construction decreased, but rich people were still building their own villas. Again after Iraq's connections with the other countries got better, its economy flourished also. Again, housing sectors began to build, but their regulations were more strict. House

layouts in this period are pure examples of this situation through the division of plot areas due to their higher prices, this was more economic. More floors were added to the houses so they became higher in levels and lots of the spaces inside houses were used for more than one function. Number of bathrooms increased within various areas of the house. The houses were surrounded by three walls, plans got open due to the reflection on western styles, car parks were added to the front of the house connected to the kitchen. this reveals the truth that the society members and ideology aims to imitate western ideas. these characteristics all can be called hybrid design (AL-Shwani, 2011).

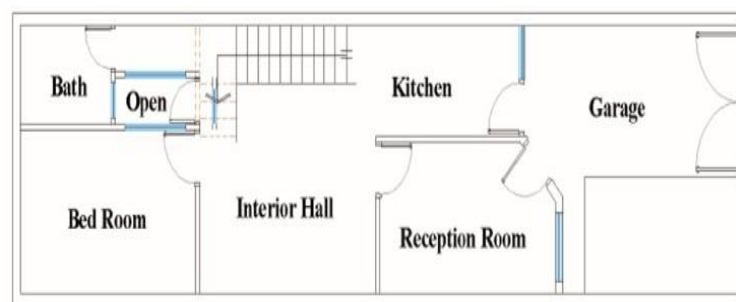


Figure 75: Small Sizes of House Layouts
(Mzoori, 2014)

3.9.4 The Period of Modernity

After 2003 and with Iraqi liberation, architecture and building in the city of Sulaimanyah have been through lots of changes and revolutions because of developments in economy. By time, democracy, growth and peace began to flourish in the region (Gunter, 2004). This period can be described as golden era of the city evolution. This region compared to other regions in Iraq became the safest region in the area. The peaceful security situation in the region has had a positive effect on the local community and has help to restore Northern- Iraq natural between and has helped to boost its economy. Lots of construction and development processes have been built

and urbanization reached its peak. Housing and construction sectors rapid growth, were the reason to reach a state of conflict and difference in architectural forms. New forms and shapes were integrated with the traditions. The developments of housing projects were results of reflection of western ideas and neglecting the traditional style. Those developments that occurred in economic were the reason for developing the styles of living, which affected people's demands and built environment. As with economic developments, people's living conditions were developed also. The multi-level characteristic of housing from the previous period got extended to this period also. Plot areas were developing to larger plots. With increasing in prices of real estate, their prices were getting higher.



Figure 76: Modern Kurdish House (Mzoori, 2013)



Figure 77: Advanced Modernity (Author)

Low income people continued to live in subdivided houses. Visual appearance of houses was changed by this approach and new styles appeared such as units which were multi layered. Adding to this, in this period there is a new type of residential housing which was getting popular, it consisted of residential complexes such as German Village, Garden City, Goizha City and many others. They recreated European styles of living with neglecting the existent society culture and characteristics. The houses are in created in villa forms with western space distributions with more areas

of plots (Mzoori, 2014). More than one main entrance was added and interior zones connections were developed by techniques in structures. Plans got more open and mostly all of its characteristics were coming from western ideas, the local architectural ideas and characteristics got completely neglected. Adding to this it can be said that also safety and privacy was a very significant aspect, in this period it is in the peak more than any other period.

It can be said that with the previous ruling system's devastation in 2003, A total and fundamental change has introduced in all aspects of the country including social, political, economic, decision making, and educational sectors. Areas of Northern- Iraq has got autonomous identity where the local population has achieved large control over their territory. Yet architects and schools of architecture in this area couldn't manage till now to benefit from this historical change in Iraq that can support building modern local national architectural identity. It is clearly seen that there is loss in identity of residential architecture in Northern- Iraq, the main reason of this is because of the lack of rules and regulations Ibrahim, Zebari and Abdulkareem (2016).

Adding to this the current authorities have lack of attention towards the importance of this aspect for the society and its ability to use their democracy as an advantage point. Also the lack of authority's awareness about the importance of this issue for the society and how to benefit from the new democracy to support the process of building modern local Kurdish architecture and how integrate this with developing a sustainable urban growth. But it can be said that Northern Iraq in the last ten years has witnessed unprecedented improvement in housing and infrastructure. Planning, funding, and the hard work of citizens have helped to build new road networks, a system of clean water management and distribution, enormous improvement in the electricity grid, better and

more modern information and communication systems, and of course the construction and reconstruction of housing units and buildings throughout the Region. This led to major variances in visual appearance of the city.

Chapter 4

ANALYSIS OF HOUSING SATISFACTION AND LIFE QUALITY OF ELDERLY IN NORTHERN IRAQ

This is a chapter written in order to present a broad explanation about the applied methodology for the study. The methodology consists of six parts. The research design is explained in detail within the first part. Context of the study is explained within the second part followed by descriptions about the participants within the third part. Data collection tools are described in the fourth part and applied procedures regarding data collection are explained in fifth part and finally, data analysis procedures are explained in the sixth part.

4.1 Research Design

As mentioned before, this study aims to investigate and provide information about the elderly's residential conditions and its reflection on the quality of their life, in Sulaimanyah city in the Northern part of Iraq. In order to achieve this aim, a research design of mixed method is applied for the study.

Mixed method research takes advantage of both qualitative and quantitative data. According to Johnson and Onwuegbuzie (2004) in their study on mixed method. They suggest that mixed method is the third criterion for research, and the purpose of its usage is to determine a portrayal. Which in turn is to show the strong points of the research, and reduce weaknesses of research by integrating quantitative and qualitative methods both in one study. Fraenkel, Wallen and Hyun (2012) conclude that through

this method, researchers are able to gather various kinds of data with less challenges by applying both of these methods. It also shields their findings with more reliability and validity. It is counted as a triangulation method which is concurrent used by a researcher to coordinate, navigate, justify or verify the findings through using two different methods in one study (Creswell, 2003). Also, as indicated by Mc Kim (2017), it enables better and more in depth understanding for the researchers with enriching the research itself.

Qualitative research highlights descriptions rather than quantifying while analyzing and collecting data (Bryman, 2004). But, on the other hand quantitative research is the research that for the aim of investigating a hypothesis, variables get manipulated, analysis is numerical and data go through quantification (Mackey & Gass, 2005). According to the suggestion of Fraenkel and Wallen (2003), in researcher's perspective, quality of research is more preferred rather than alternative assessments or consistency of a precise activity.

There are a number of ways that qualitative and quantitative data can be collected through them. Regarding quantitative research, the typical tool used for it is test, for example psychological or language tests, such as propensity or personality batteries. Another common used tool for this type of method is through applying surveys, and using differing types of questionnaires. On another hand and regarding qualitative research, the frequently used tools in order to gather data are observations, interviews, journals and diaries (Dornyei, 2007). Within this research, qualitative and quantitative data collections are used both, meaning semi- structured interviews, observations with physical analysis and survey questionnaire are being applied in order to collect data.

4.2 The Elderlies in the Research Context

The current study is focused specifically on the elderly living in the Northern part of Iraq. The cohort consisted of all types of elderly aged more than 60 years old , living in different districts in Sulaimanyah city. Perspective of elderly varies according to their perception about their lives and differences in people's understanding of them and their conditions.

With world's growth, the aging population is also directly affected, the numbers of aging people are increasing every year especially in urban areas. Lots of scientists have tried to build a perspective about the background of people at specified age journeys, such as physical and mental wellbeing, adding to this specific worries regarding old age. Some people refer to getting old as a phenomenon which occurs in a certain age. While others believe it does not have beginning or endings. Eventually, it is a theme which needs special focus from higher authorities, and those people who are able to make a difference in lives of these elderly. As each have their own personal characteristics and sometimes their ideas and thoughts about life changes. Some feel positive about their future while some feel negative about their coming years, and some just have prepared themselves for death in any moment.

Within Northern Iraq, recently there have been some changes in numbers of elderly through previous years. Because, considering the previous period of time, people were just reaching a certain age of their lives, and died before finishing a few late years of their living period. Doctors and medical sciences think that this increase in their number and living years is due to several factors, such as: Improvement in providing health services, increased awareness of the danger of foods that cause diseases that

shortens life. Control of chronic and communicable diseases, increased awareness of the risks of smoking and illicit drugs.

Besides of these medical issues, according to Iwarsson, Horstmann and Slaug (2007). When they studied those housing aspects that have significant roles in continuity of elderly living. They suggested that, the home environment has a direct effect on elderly regarding their aging actively, independence and autonomy. Adequate design for places of living contributes in elderly lives, it helps them achieve their activities of daily life, and it even enhances their social life through enhancing their social interactions. As stated by Parry (2015) who conducted a study on elderly quality of life. He refers to aging as a biological process occurring naturally and influences the appearance of a person through its bodily reaction towards illness, wear and tear.

The elderly's in this context have been included and excluded according to some characteristics, for example the study includes elderly aged 60 and above, but excludes the age of under 60. Elderly from the central governorate of Sulaimanyah are included, but the surroundings are excluded. Apartments, detached and semidetached types of housing are included in order to compare between them, but commercial buildings that are being used for residential purposes are excluded.

Table 4: Exclusion and Inclusion Characteristics

Include	Exclude
Aged 60 +	Aged 60 -
Residential built environment	Non-residential built environment
Sulaimanyah Governorate	Surrounds of Sulaimanyah Governorate

4.3 Participants

The participants that were involved in this study were 384 elderlies living in the central governorate of Sulaimanyah city. Convenience approach was adopted in order to select the participants. According to the official Sulaimanyah statistics office and as it can be seen in their official website (Sulamar.com) the population of Sulaimanyah governorate in 2018 is 745, 687 with the population of the people aged 60 and above consisting of 20000 people. According to the Cochran formula which was put in 1977 in his book for determining sample size:

$$p = (Z)^2 pq / (e)^2$$

$$p = (1.96)^2 *$$

$$0.5(0.5) / (0.05)^2$$

$$p = 384$$

where %95 confidence level and %5 margin of error is determined. The sample choice of this study is based on convenience approach as Dorneyi (2007) explains it as a kind of nonprobability or nonrandom sampling where members of the target population that meet certain practical criteria, such as easy accessibility, geographical proximity, availability at a given time, or the willingness to participate.

From 384 selected elderly, 300 responds were collected. It needs to be mentioned that this number was due to difficulties in convincing the participants to participate, as they were having complicated cultural backgrounds. And due to the traditions in Northern Iraq where they prefer to keep personal information private instead of sharing it. 52.3% of the responders were male and 47.7% were female, again this was also due to cultural and society conditions where female prefer privacy and safety instead of giving information about their lives. Regarding their age, majority of them (43.7%) were

belonging to the age group between (60 – 65), also many (31.0%) belonged to the group age of (71+), another range of (25.3%) were belonging to the age group of (66-70).

Regarding nationality of the participants, majority of them (74.7%) were Kurdish and minority of them (25.3%) were Arabic. Considering their marital status, a percentage of (54.7%) were married, with average of widow (22.0%), few of them (13.3%) were divorced and a minority (10.0%) were single.

their education levels were also differing, lots of them (31.0%) were university graduates, many (25.3%) were elementary schooled, (17.7%) were those who only pursued education until high school. (15.0%) were those with post graduate certificates and a minority (11.0%) were secondary schooled.

Regarding their status of job, (31.0%) were employed by the government and having governmental works, (29.3) of them were retired due to their old age, with a percentage of (22.0%) not working.

Regarding their status of living or living arrangement, (45.0%) were living with husband or wife, (32.3%) were living with either children or relatives, (15.0%) were not living with anyone and living alone, with a minority range of (7.7%) living with a house keeper.

Considering their economic status, their monthly income was according to the following, (39.3%) of them were receiving a monthly salary ranging between (500,000 – 799,000 IQD), and a percentage of (25.7%) were monthly receiving (1,000,000+),

adding to this (19.7%) were having no income, with (15.3%) receiving a range between (800,000 – 999,000 IQD). Their periods of receiving salary were also as following, (71.0%) were receiving their salary once in one month, (19.3%) were receiving no salary and (5.7 %) were receiving salary once in two months, with a small percentage (4.0%) of those who receive it once in three months.

Regarding their health status, (25.7%) were not having any complaining about their health and did not have any issues, (18.0%) were having blood pressure issues. (16.3%) were having heart disease issues, (13.3%) were having other issues, (10.7%) were having physical disability. (8.7%) were suffering from diabetics, (4.7%) were having depression and (2.7%) were suffering from dementia.

Table 5: Participants Demographic Data

Variables	Sub- Variables	No of cases	Percentage (%)
Gender	Male	157	52.3
	Female	143	47.7
Age	60 – 65	131	43.7
	66 – 70	76	25.3
	71+	93	31.0
Identity	Kurdish	224	74.7
	Arabic	76	25.3
Marital Status	Married	164	54.7
	Divorced	40	13.3
	Widow	66	22.0
	Single	30	10.0
Education level	Elementary school	76	25.3
	Secondary school	33	11.0
	High school	53	17.7
	University	93	31.0
	Post graduate education	45	15.0
Job status	Own work	53	17.7
	Governmental work	93	31.0

	Retired	88	29.3
	No work	66	22.0
Living status	Alone	45	15.0
	With husband/wife	135	45.0
	With children/relatives	97	32.3
	With a house keeper	23	7.7
Monthly income	No income	59	19.7
	500, 000 - 799, 000 IQD	118	39.3
	800, 000 - 999, 000 IQD	46	15.3
	1, 000, 000 +	77	25.7
Salary receiving period	No salary	58	19.3
	Once in one month	213	71.0
	Once in two months	17	5.7
	Once in three months	12	4.0
Long term health issue	Heart disease	49	16.3
	Blood pressure	54	18.0
	Dementia	8	2.7
	Diabetics	26	8.7
	Physical disability	32	10.7
	Depression	14	4.7
	Don't have any	77	25.7
	Other	40	13.3

4.4 Data Collection Tools

The present study conducted the survey consisting of 50 questions among 300 elderly home dwellers in different places of the governorate of Sulaimanyah. Semi- structured interviews with 36 participants were also conducted, and an observation with physical analysis procedure of 30 houses which are seen have been conducted. Three types of tools are used for the purpose of collecting data:

4.4.1 The Questionnaire Survey

In order to obtain the purpose of the study, survey as a quantitative data collection tool was used to collect the required information. It has been developed according to the theoretical framework and review of literature. They were having elderly's use of space, experiences of falls, their activities within their houses. the frequency of their going out, their perception about their house and neighborhood, availability of daily life services needs and equipment and perception about their personal lives within their houses. The survey is divided into three types of questions:

- Multiple choice questions
- Yes/No question with giving a reason behind the (Yes) choice
- Likert scale

4.4.1.1 Multiple Choice Questions

This type of question is divided into five sections as following, the first section is general information as a profile background for the participants meaning demographics. Ten variables regarding elderly's general information are: Gender, age, nationality, marital status, education, job status, living status, monthly income, salary receiving period and long term health situations. Elderly have been divided into three age groups of (60 -65), (66 – 70) and (71+), which have been determined according to the limitation of the previous literature about elderly in Northern Iraq.

The second section, investigates the residential characteristics of their built environment. According to five variables that are affecting their residential satisfaction, housing status, housing type, living period, size, house circulation and number of rooms. The third section, consists of availability of the necessary equipment that should be provided for the elderly in case of being needed. It consists of five variables which are set in order to investigate the availability of equipment which are

specified for the elderly with the purpose of ease for their life. Five variables resemble this section which are mobility aids equipment, special changes for house because of those equipment, special beds, shower and WC. The fourth section is studying the social life of the elderly through measuring their frequency of going out. It consists of three variables, daily going out, weekly going out and factors prevent going out. The fifth section is investigating the materials used within interiors of elderly houses regarding their floor and wall. It consists of three variables (living spaces, outdoor spaces and wet spaces).

4.4.1.2 Yes/No Questions with Giving a Reason Behind (Yes) Choice

The main purpose behind this part is to determine their housing adequacy, the quality of their living and time spent inside their houses. It was also in turn divided into two questions, a Yes/No question and an open ended question. The reason behind choosing this type of question was to know, whether they are spending their days in doing beneficial activities inside specific rooms. Whether their house is not adequate, even dangerous for them, because of some factors in the housing characteristics which affects their quality of life. It is divided into four variables, two variables investigating those activities they do inside house, it is expected to get information about the use of the home and favorite spaces which they spend more time in. Another two variables are investigating whether the house conditions are dangerous according to elderly physical conditions or not.

4.4.1.3 Likert Scale

This section is highlighting the overall satisfaction level of the elderly within their life and residential condition. It consists of four main variables which are: Economy, health, location and architectural quality of housing. Each one of these variables are

divided into sub variables. The evaluation within the Likert scale is according to five scale points, meaning they are (4 = Very Satisfied, 3 = Satisfied, 2 = Rather Satisfied, 1 = Dissatisfied, and 0 = Very Dissatisfied).

4.4.2 Semi- Structured Interviews

This part consists of five questions to assess the elderly's own thinking and their preferences of what they need and what makes the most comfort zone for them. Also to hear more about their opinions about the residential satisfaction and the quality of life in Sulaimanyah. The questions were specified for people older than 60 years old rather than younger ones. It was semi –structured form, set in order for the elderly to be comfortable expressing their opinions. Dorneyi (2007) suggests that interview questions which are semi structured, provide more freedom of expression for the participants in order to arrange their thoughts in more analytical aspects. Adding to this, it allows responders to skip repeated questions or in other words, those question that have been previously answered. As Cresswell (2003) suggests, it prevents boredom for participants.

Mainly, five questions contribute in the making of the interview. Special attention has been paid to the elderly being both genders and between the age groups of (60-65, 66-70 and 71+). It begins with the participant's preferences according to their decision of living in their houses, after that it highlights their perception about their house, through studying their idea about it. It continues to discover their thinking about comfortability within their house. Then, it aims to study the background of the elderly about their own lives and needs, through asking them about their idea of their residential needs. Finally, participants are asked to feel free about adding any other points that they want it to contribute to the research.

4.4.3 Observation

In this part, the researcher personally after taking permission from the participants by the consent letter, enters the residential environments (houses or apartments) of the elderly. This is done in order to, assess their spaces and current situation, and finding out how the elderly respond to their needs and daily livings. Within this prepared frame of characteristics of the residential environment. In order to achieve this aim, an inventory table is prepared and the spaces of observation are studied according to their: House and living type, entrance, circulation inside house, usage of elderly equipment and furniture, engineering services, aesthetic characteristics of the house and the used materials. With ending by finally assessing the neighborhood characteristics.

4.5 Data Collection Procedures

The procedures regarding data collection were applied during the fall semester 2019/2020 academic year. Prior with research application, the researcher applied for the ethical committee in EMU approval and received its confirmation. Next, the researcher began collecting her data from the participants, but before starting the survey, interviews and observations, consent forms were prepared for the participants. They have been asked to give signatures on those consent form (Appendix) and give it back to the researcher before starting the survey, interview and observation.

As mentioned previously quantitative data was collected with survey. The researcher in person got to meet the participants and gave clearance and explanation about aim of the study. After receiving their consent, administration of the survey was done according to comfortability and availability of the elderly. They were handed the survey and requested for answering it. After that, the researcher collected all the answered forms in order to analyze them. Willingly and without any pressure, a

number of 300 participants out of 384 selected sample answered and finalized the survey. The rate of response was 78% with only 84 missing forms due to unwillingness of participation.

The qualitative data was collected firstly through semi- structured interviews with 35 elderly, who have previously filled in the survey. The point was to highlight elderly with differing aspects and levels in life. Due to their not cooperating with the whole subject as they thought it is against the culture of Northern Iraq to ask about personal questions like these, that is why only a limited number of response was received. The participated elderly was those who responded positively with the questions in the interview. The interviews were conducted by the researcher among the participants according to their availability. Each one of the interviews took approximately 10- 15 minutes and were written in order to be analyzed in later time.

Secondly, another part of qualitative data was collected through observations by doing physical analysis to a number of 30 houses/apartments. They were belonging to differing years of construction of the house in different areas of the governorate. The aim of this section was to analyze houses of elderly from various characteristics and types of living, but again due to culture and mind of the people, only 30 houses have agreed to participate in the analyzation. Physical analysis of those houses have been done after they have agreed. The observations were done according to appointments that have been set according to the approval and availability of their participants. Each observation lasted about 15 – 20 minutes.

4.6 Data Analysis

The data of the current study was collected and analyzed according to both qualitative and quantitative methods of research. Data which was quantitative meaning the survey was analyzed according to the Statistical Package for Social Sciences (SPSS, version 25 with Chi- square tests). Adding to this, qualitative data was collected according to semi structured interviews with the elderly and their responses were analyzed by the help of content analysis according to the following instructions.

The quantitative data collected via survey were analyzed by the help of descriptive statistics with using percentages for the purpose of measuring their life quality and level of residential satisfaction. Regarding the Significant sets of data, differences are approved as being significant if P-value and \gt is less than 5 % (0.05). Then it can be said that there is a significant difference. The sets of data (i.e. reject the null hypothesis). If P-value $\&$ \gt ; (0.05) then we can say that there is no significant difference between the sets of data (i.e. accept the null hypothesis).

After that, content analysis has been used to analyze the collected data from semi-structured interviews. First, the documented information from the participants were reviewed in order to explore the described topics as points for their life and residential conditions. After that, the explored points were organized. In order to ensure the reliability of the researcher's coding, a fellow student from MS in architecture program was requested to study the documented data from interviews of five participants and independently code the points. Later, comparing then coding of two (conducted by both colleague and researcher) were applied. Findings show that agreement levels were high (80%) regarding two arrangements of coding, that result facilitated the

researcher to proceed her work individually. After that the concluded information were organized in a conceptual arrangement, which according to Hennink et al., (2011) it is creating an understanding which is conceptual for the aspects of the study. In final step, the theory of the study was set by the researcher in order to make a contribution for a wider perceiving vision about the studied social experience.

Coverage of analysis of the received answers will be shown in the next chapter, and participant quotes will be identified as P1, P2, P3 ...etc., the P character resembles 'participant'.

The houses were analyzed according to inventory tables/forms, which were created from measures taken from the studied houses/apartments which were set according to literature review indicators. The characteristics of residential buildings were identified according to the survey and literature part. It was set in two parts: one table comprises of general background of the house such as location, built year, location, residential type and home owner ship. The second part was analyzing their plan characteristics, usage of elderly equipment, aesthetic characteristics and neighborhood aspects.

Within this chapter, design of the research study has been described. Also highlighting of the study framework, its participants, tools regarding data collection, and those agendas used for analysis and collection of data. Within the coming chapter, the findings of data collection results will be described and analyzed broadly according to the gathered information from the techniques and methods explained in this chapter.

Chapter 5

FINDINGS OF THE STUDY

Within this chapter, the main findings of the study from questionnaire, interview and observation with physical analysis is discussed in a compact way. According to those specified variables for them and then the perceptions of the elderly and their levels of satisfaction is determined, also correlations between variables are analyzed and studied.

5.1 Analysis of the Results of the Study

As the main aim of the study is to investigate residential condition and quality of life of the elderly in their residential environment through an architectural point of view. Within this regard and in order to determine the quality of life. it needed to be studied according to objective and subjective standards. Within this study the main determined domains for quality of life are:

- The surrounding environment (Social surrounding and Residential Surroundings)
- Health
- Economy

These domains have been investigated according to subjective and objective measures in order in order to reach a full image of elderly quality of like in Northern Iraq. Within this regard the subjective quality of life is investigating the individual's perception meaning and satisfaction towards their living environments. Objective quality of life within this regard is determining the quality of the observable data is they are adequate

or not. If explained in another way, generally the subjective domain of quality of life is the one concerned with individual's personal opinions about their conditions of life and objective quality of life deals with individual's impartial assessment of their conditions regarding differing aspects of life. Within this study the objective parts are investigated according to their determined variables and the subjective aspects are studied according to a response format of five-point scales and, set as 'very dissatisfied= 0' and 'dissatisfied= 1' with 'rather satisfied= 2' and 'satisfied= 3' with finally 'very satisfied= 4'. Within this regard each one was determined through their main components. After determining those components and the satisfaction level with them, the overall satisfaction level with home and neighborhood have been determined according to quantitative data collection methods. Within this regards each domain is studied accordingly:

5.2 The Surrounding Environment

The surrounding environment of the elderly is the main domain of their life as it affects each and every aspect of their living. The surrounding environment within this regard needs to be divided into two parts which are the social and residential surrounding:

5.2.1 The Social Surrounding of the Elderly

In order to investigate the social surroundings of the elderly, the variables gender, age, identity, marital and living status from their general background was investigated. To provide more information about their social status. Within the results more than half of the participants (52.3%) were male participants and (47.7%) were female, this result is due to some cultural concerns in northern Iraq and privacy and safety aspects. Majority of age of the participants (43.7%) was belonging to the age group of (60 – 65) with (74.7%) having Kurdish nationality. (54.7%) were married and (10.0%) were single. Adding to this, through their arrangements of living (45.0%) were living with

their husband or wife and (7.7%) were living with a house keeper. This provides an image of the elderly lives within these cases as preferring being surrounded by their relatives and not living by themselves.

Table 6: The Social Variables

Variable	Sub- variable	No of	Percentage (%)
Gender	Male	cases 157	52.3
	Female	143	47.7
Age	60 - 65	131	43.7
	66 - 70	76	25.3
	71+	93	31.0
Identity	Kurdish	224	74.7
	Arabic	76	25.3
Marital Status	Married	164	54.7
	Divorced	40	13.3
	Widow	66	22.0
	Single	30	10.0
Living status	Alone	45	15.0
	With husband/wife	135	45.0
	With children/relatives	97	32.3
	With a house keeper	23	7.7

Then the study investigates how the elderly were living within their homes and doing those activities that might increase their opportunities for interaction with the family members or avoid interaction. Within this regard it shows us if the elderly are bonded to their social ties or do not care about it. It can be said and as it is shown in the table, most of the elderly (59.3%) did not have any certain type of activities they like to do, but (40.7%) had it. Among those who positively answered this questions, majority of

them answered by differing types of activities and lots of the activities were those that increase interactions between the family members such as (cooking, exercise, watching T.V, gardening. etc).

Table 7: Desired Activities and Rooms within the House

Questions	Answers	No of cases	Percentage (%)
Do you like to do certain activities in your house	Yes	122	40.7
	No	178	59.3
If yes, what type of activities	Cooking	23	7.7
	Exercise	21	7.0
	Watching T.V	13	4.3
	Reading and writing	19	6.3
	Raising birds	12	4.0
	Gardening	21	7.0
	Other	11	3.7

Again in order to study their social surrounding, the participants were asked if they have a specific room where they spend most of their time in. within this context, it can be known that they spend their daily time in those rooms where they promote social interaction such as living room or kitchen. Or if they spend their time in those private rooms that promote silence and quietness without any social interactions. More than half of them (55.7%) responded positively about having favorite rooms that they spend most of their time in . On another hand less than half of them (44.0%) responded negatively that they did not have a favorite room where they spend their day in.

A good number (100) of those who responded positively which is (33.3%) of them again said they spend most of their time in the living room. And when they were asked

about what they like to do there, (27.3) said they liked to watch T.V and gather with family there. Within this regard it can be said that the social surrounding has its own importance for the elderly.

Table 8: Time Spending

Questions	Answers	No of cases	Percentage (%)
Do you have a room where you spend most of your time?	Yes	167	55.7
	No	132	44.0
If yes, which room is it	Kitchen	13	4.3
	Bed Room	24	8.0
	Living Room	100	33.3
	Office Room	16	5.3
	Balcony	7	2.3
	Garden	11	3.7
What do you like to do there	Cooking and cleaning	13	4.3
	Reading and writing	32	10.7
	Relaxing and sleeping	23	7.7
	Watching T.V and gather with family	82	27.3
	Watching out side	7	2.3
	Knitting	3	1.0
	Look after my plants	4	1.3
	Checking social media	5	1.7

After that, and with interviewing the participants, they were referring to their houses as places for socializing especially women. As they were saying that through their houses they were able to gather with the rest of their families and grand kids. They

were expressing the social bond as a significant aspect within their lives and perceived housing conditions as tools to maintain those bonds.

Being with my beloved ones

The main theme of the social surrounding expressed mostly by the elderly was being with their loved ones. Because due to working and making living when kids grow older and start to work and build a family, they start moving away from old parents. That is why those who were still living with their kids were saying that it was all they needed from their lives and were satisfied with every other aspect of their house:

“I am happy that I live with my kids and grandkids around me without any body interfering us, that is why I do not need anything else from life.” (P4, P31, P33, P34, P36)

Also from the observation cases of the 30 houses, in 29 of the houses the elderly was living with their family together and only in one house he was living alone without any body.

5.2.2 The Residential Surrounding of the Elderly

In order to investigate the residential physical surrounding of the elderly it has been divided into its main components according to its domains and then satisfaction with these domains have been investigated:

5.2.2.1 House

Housing once again appears to be the most essential element in elderly lives, because its characteristics affect the individuals through many ways, and lots of the elderly emphasize them. In the beginning in order to determine the housing conditions in Sulaimanyah a brief analysis both quantitatively and qualitatively have been prepared.

Both to determine its level of adequacy and its effect on elderly lives according to (general background, size, planning, vertical and horizontal circulation, engineering services, natural lighting and exterior aspects such as form and quality of house.

5.2.2.1.1 General Background about House

In order to study the general background about the house, the variables of housing status, type, floors of living and period of living have been investigated. From the total respondents of the questionnaire, most of them meaning 252 cases (84.0 %) were having ownership of the house, 46 cases (15.3 %) were being tenants and 2 cases (0.7%) were having other conditions. For periods of living within the house, majority (35.0%) were living in the house for a period of more than (17+) years. (25.3%) were living in the house for a period between (11-16 years). And (24.3%) living in the house for a period of (6-10 years), with only (15%) living there for a period of (0-5 years).

Table 9: Housing Background

Variables	Sub- Variables	No of cases	Percentage (%)
Housing status	Owner	252	84.0
	Tenant	46	15.3
	other	2	0.7
Living period in the house	0 - 5 years	45	15.0
	6 - 10 years	73	24.3
	11 - 16 years	76	25.3
	17 + years	105	35.0

Regarding their types of housing 102 cases (34.0 %) were having semi-detached houses, 69 cases (23 %) were living in apartments and 62 cases (20.7 %) were living in detached houses with 67 cases (22.3 %) choosing other types of housing. Among housing dwellers (25.7 %) were having two floors, (20.3 %) were having one floor,

(5.7 %) were having three floors. And apartment dwellers, (9.0 %) were living in ground floor, (3.3 %) were living in third and eighth floor, (2.0 %) were living in tenth floor, (1.7 %) were living in first floor and (1.3 %) were living in seventh and ninth floor with (1.0 %) living in fifth floor.

Table 10: General Housing Characteristics

Variable	Sub- variable	No of cases	Percentage (%)
Housing Type	Apartment	69	23.0
	Detached house	62	20.7
	Semi- detached house	102	34.0
	Other	67	22.3
it is an apartment, on which floor do you live	Ground floor	27	9.0
	First floor	5	1.7
	Third floor	10	3.3
	Fifth floor	3	1.0
	Seventh floor	4	1.3
	Eighth floor	10	3.3
	Ninth floor	4	1.3
	Tenth floor	6	2.0
If it is a house, how many floors do you have?	Ground floor	9	3.0
	One floor	77	25.7
	Two floor	61	20.3
	Three floor	17	5.7

From the observation procedures, it can be said all the thirty houses were having ownership for the houses, ten of them (Inventory from: 1- 10) were apartments and twenty of them (Inventory from: 11 – 30) were houses. Among the houses only one case (inventory form: 16) was detached. Eight cases were semi- detached house. Eleven cases were attached house. Three of the apartment dwellers were living in the ground floor (Inventory form: 1, 2, 3), another three of them were living in the third

floor (Inventory form: 4, 7, 10). Another two were living in fifth floor (5, 9), one was living in the 13th floor (Inventory form: 6). Another one was living in 9th floor (Inventory form: 8). Among the houses, eight of them had one floor. Eleven of them had two floors and one of them had three floors (Inventory form: 22). Their years of construction start from 1985 until 2016.

Regarding their living periods within the houses 9 cases were living there since the period of (0 – 5) years, 6 cases were living there for a period of (6 – 10) years. A fine number of 13 cases were occupants in the house for a period between (11 – 16) years, and only 2 cases (Inventory form: 2, 21) were occupying their house for more than (17) years.

Table 11: General Observed Characteristics

Themes	Sub-themes	
House status	Owner	Inventory form: 1-30
Period of living	0 – 5 years	3, 4, 6, 7, 16, 19, 26, 28, 30
	6 – 10 years	5, 18, 22, 23, 27, 29
	11 – 16 years	1, 2, 8, 9, 10, 11, 13, 14, 15, 17, 20, 24, 25
	+17 years	12, 21
House type	Apartment	Inventory form: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
	Detached house	Inventory form: 16
	Semi-detached house	Inventory form: 11, 14, 15, 18, 20, 21, 22, 25
	Attached house	Inventory form: 12, 13, 17, 19, 21, 24, 26, 27, 28, 29, 30

Floor of living (Apartment)	Ground floor	Inventory form: 1, 2, 3
	3 rd floor	Inventory form: 4, 10, 17
	5 th floor	Inventory form: 5, 9
	9 th floor	Inventory form: 8
	13 th floor	Inventory form: 6
Available floors (House)	One floor	(Inventory form: 12, 13, 15, 16, 21, 23, 24, 25)
	Two floor	(Inventory form: 11, 14, 17, 18, 19, 20, 26, 27, 28, 29, 30)
	Three floor	(Inventory form: 22)

5.2.2.1.2 Accessibility and Circulation

From the questionnaire, majority (45.3%) of the participants had one or two steps in their entrances. Lots of them (39.0%) were living in ground floor meaning they did not have steps for their entrances. A minority (10.3%) were living in apartments and had elevators. With only a few (1.7%) with other conditions of housing. Within this regard the questionnaire also tried to study whether the participants have added or did any modifications of their houses due to usage of any elderly equipment. (72.7%) of them said that they did not use any equipment which leads to their not doing any changes to the house. (18.0%) added handrails and (7.3%) added ramps.

Table 12: Accessibility to the House

Variables	Sub- variables	No of cases	Percentage (%)
House Circulation	There is the need to climb stairs (one or two steps)	136	45.3
	There is an elevator	31	10.3
	I'm living in the ground floor	117	39.0

	Other	5	1.7
special additions / changes for the house because of use of equipment	Not added	218	72.7
	Ramps	22	7.3
	Hand rails	54	18.0




On another hand and from physical analysis of the observed houses, 18 cases (Inventory form: 3, 11, 13, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30) had to enter their houses by climbing steps. The steps were mostly one to three steps, but were missing out of hand rails.

Table 13: House Entrances with Stairs

		
Inventory form (14)	Inventory form (30)	Inventory form (26)



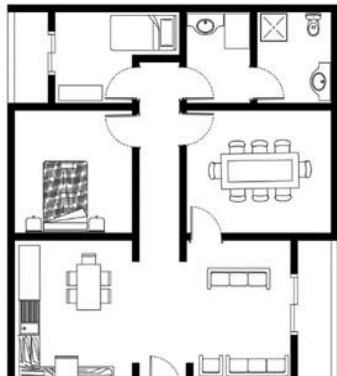
Only Three of the houses had ramps for their entrance (Inventory from: 11, 14, 29), but it should be said that they were not specially made ramps for elderly movement equipment, rather they were added for ease of entrance of their vehicles.

Table 14: House Entrances with Ramps

		
Inventory form: 11	Inventory form: 14	Inventory form: 29

Within the observed houses eighteen of them (Inventory form: 1, 2, 3, 8, 13, 16, 17, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30) had their rooms connected in a way easy for transferring from one room to another. Eleven houses (Inventory form: 4, 14, 15, 16, 20, 21, 25, 27, 28, 29,30) had adequate circulation dimensions for those elderly with mobility equipment.

Table 15: Circulation within the Houses

		
Inventory form: 29	Inventory form: 25	Inventory form: 20
Easy to transfer	Inventory form: 1, 2, 3, 8, 13, 16, 17, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30	
Adequate circulation	Inventory form: 4, 14, 15, 16, 20, 21, 25, 27, 28, 29,30	

On another hand from qualitative collected data from interviews done with the participants, many of the elderly expressed ideas about circulations inside their houses, they were saying that their movement paths should be clear and not blocked by furniture, their floors should be even and non-slippery, their floor mats should be of adequate design. They were also expressing that surfaces should be smooth for in any case they hit any surface, they be safe. Many others emphasize on stairs, they say that the less stairs within a house of old people the better it is for their safety and not to fall:

“I would like for the furniture to be in a way that they do not block my circulation and the paths that I take within the house be short for me to reach the rooms.” (P5, P8, P10)

“The less stairs in the house, the more comfortable elders get. I think that it is imperative that those who have lost their capability of walking comfortably get special needs for vertical mobility such as stair ramps and such.” (P7, P16, P31)

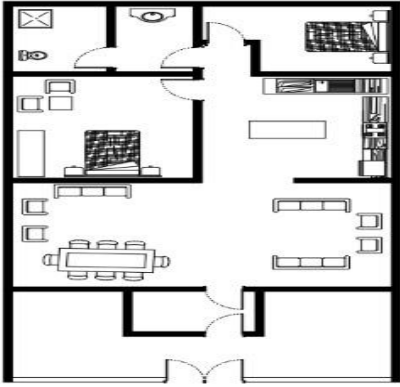
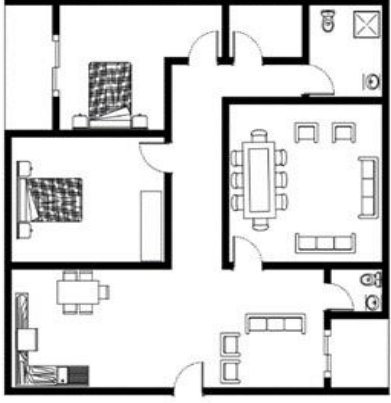
“There is too much steps and doors. We are living in the first floor and the stairs are steep and uneven, which makes me tired when I move up and down stairs. It has many doors, today we have locked some of them and are unusable, which was used to be entrance to the house and to the inside.” (P15)

“I wanted it to be located especially on the ground floor, I have no energy to climb up stairs.” (P15, P16, P18, P20, P31, P33)

5.2.2.1.3 Planning Layout

Within the concepts of planning, 14 of the houses were having open plan concepts (inventory form: 2, 8, 10, 11, 12, 13, 14, 16, 17, 19, 20, 22, 25, 26) which is added as a positive point for circulation and accessibility of the elderly and those with movement equipment. And 15 of the houses were having corridors within the house, which sometimes creates a question mark for elderly movements especially those with movement equipment. There is the need to state that according to the physical analysis these corridors were having dimensions more than 1.2 m which is counted as an adequate dimension regarding elderly equipment.

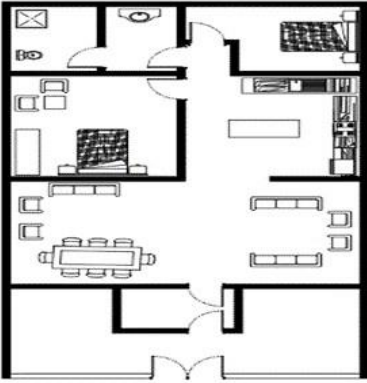
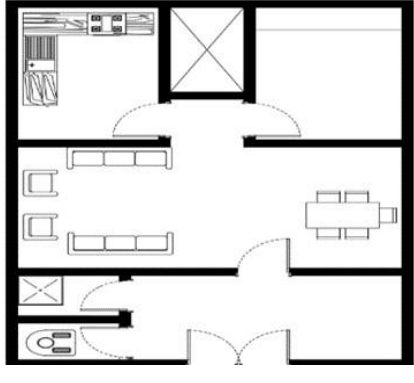
Table 16: Planning Layouts

	
<p>Open plan concept</p>	<p>Inventory form: 2, 8, 10, 11, 12, 13, 14, 16, 17, 19, 20, 22, 25, 26</p>
<p>Having corridors</p>	<p>Inventory form: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 18, 24, 26, 27, 28</p>

5.2.2.1.4 Functional Relations between Rooms

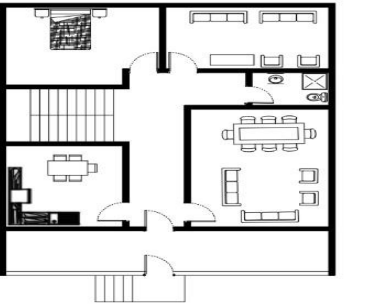
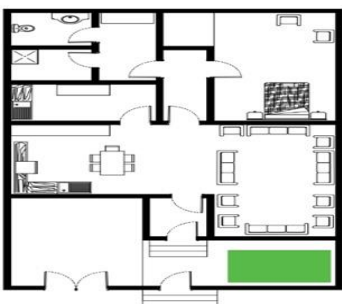
In 26 houses there were direct connection between bathroom and bedroom with only 4 houses having non direct relationship between bathroom and bedroom, among them one house which its bathroom was located at the garage of the house (inventory form: 12). It can be said that only in the case of putting a bathroom in the garage, the housing condition would reach its extreme levels of inadequacy as it does not go parallel with any of the elderly cases and might even cause them accidents (Table 17).

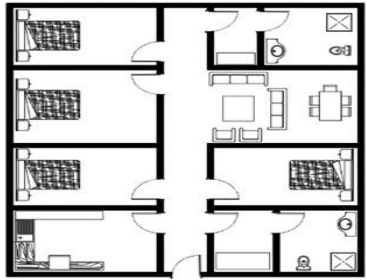
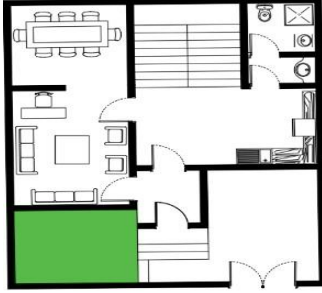
Table 17: Connections between Bathroom and Bedroom

	
<p>Direct Connection</p>	<p>Inventory form: 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30</p>
<p>Non- Direct Connection</p>	<p>Inventory form: 4, 12, 18, 29</p>

In 22 of the houses (Inventory form: 1.....9, 11, 13, 14, 15, 18, 19, 20,23, 25..... 29) were having dinning and kitchen directly attached. Only in 8 of the houses (Inventory form: 6, 7, 10, 12,16, 17, 24, 30) the kitchen and dining were not directly related, instead they were placed near to each other.

Table 18: Connections between Dinning and Kitchen

	
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Direct Connection	Inventory form: 1,2, 3, 4, 5, 8, 9, 11, 13, 14, 15, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29
Non- Direct connection	Inventory form: 6, 7, 10, 12,16, 17, 24, 30

5.2.2.1.5 Size of House and Number of Rooms

In order to determine the size of those spaces that elderly occupy, this section is set according to the variable of having rooms. (37.7%) of the elderly were having (3+1 room) plans, (34.7%) were having more, (19.0%) were living in (2+ 1 room) housing and finally (8.3%) were belonging to the group of (1+1 room).

Table 19: Room Numbers

Variables	Sub- variables	No of Cases	Percentage (%)
Number of rooms	1 + 1 room	25	8.3
	2 + 1 room	57	19.0
	3 + 1 room	113	37.7
	More	104	34.7

Also, from interviews, some of the elderly as each elderly were having differing levels of education. They expressed that they would like to have more numbers of rooms for special hobbies and activities. Some were expressing that if they had more rooms they would turn one into a gym. While others said they would turn one into a library. And others were saying they did not have enough rooms so they were using one room for differing functions and purposes:

“I would like to have lots of rooms for different purposes.” (P1, P33)

“I use my bedroom for reading and for sleeping.” (P6, P8, P10)

A lot of the elderly were those who used to be the supervisor of a family who are now coming back to them with grand kids. They were expressing that back then they decided to choose a house that is convenient regarding its size. For it to have a wide area and for us to be able to move and fit inside comfortably without any disturbance was of major importance for them:

“We needed a house large enough to accommodate all of us, as a big family requires a big house. Other standards were totally overlooked by us since it wasn’t our priority.” (P2, P7, P16, P19, P23, P25, P28)

From physical observation of the houses, twenty-five of the houses were in appropriate amount of space according to the usage of those spaces by the participants (Inventory from: 1.....11,.....18, 20, 22, 23, 24,..... 30) and according to the overall size of the houses which ranged between (100 – 175 sq.). It should also be mentioned that one of the houses consisted of 72 sq. (Inventory form: 12) and according to the number of individuals within that house it was completely inconvenient

Inventory form: 12









A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 12	Location: Kany kurda	Site Plan	Building View
Type of Residential: Attached house			
Floor No: One floor			
Construction Date: 1990			
Area: 72 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			

Figure 78: Inventory Form 12

5.2.2.1.6 Specialized Furniture and Equipment for Elderly

Among the surveyed elderly more than half of them (64.0%) 192 individual were not using any equipment in order to help them in movement. 62 elderlies (20.7%) were using walking stick and 22 (7.3%) were using wheel chair with 20 (6.7 %) using front wheel walker.

Regarding usage of special furniture for their bedrooms such as special beds that suits their physical conditions. 242 (80.7%) of the cases meaning three quarters of them were not using any type, 32 cases (10.7%) were using bedrails and 17 cases (5.7%) were using bed raisers with only 7 cases (2.3%) using bed wedge. within this regard the bathroom was also investigated, 220 (73.3%) cases were not using any bathroom specialized equipment for elderly. 37 (12.3%) cases were using shower bench with an

equal average of 18 (6.0%) of the cases using bathtub chair and rail. Also the usage of special elderly furniture within the W.C have been investigated and the results were, 224 (74.7%) cases were not using any, 48 (16.0%) were using toilet safety rails and 19 (6.3%) were using elevated toilet seats.

Table 20: Usage of Elderly Furniture

Variables	Sub- variables	No of cases	Percentage (%)
	Don't use	192	64.0
Mobility aids equipment	Wheel chair	22	7.3
	Walking stick	62	20.7
	Front wheel walker	20	6.7
use of special beds	Don't use	242	80.7
	Bed rail	32	10.7
	Bed raisers	17	5.7
	Bed wedge	7	2.3
Use of special equipment for bathroom	Don't use	220	73.3
	Shower bench	37	12.3
	Bath tub chair	18	6.0
Use of special equipment for W.C	Bath rail	18	6.0
	Don't use	224	74.7
	Toilet and safety	48	16.0
	Elevated toilet seat	19	6.3

From the interviewed elderly participants, they emphasized especially on furniture's effect on their movement inside the house. Some said that big furniture creates obstacles for their walking inside the houses as they bump into them, or it narrows their paths for walking. Others emphasize on special equipment for elderly ease of activities within their bathrooms. Some others think that having the helping specialized

furniture for elderly helps them in moving around the house and their easy access to the services within their houses:

“Availability of adequate bath and toilet furniture for the elderly with adequate furniture inside the rooms.” (P11, P13, P16P, 22)

“Inaccessibility, I believe, is one of the major obstacles that elders face, so I’d say the more within reach their daily used tools, the less helpless they become.” (P6)

From physical analysis of the observed houses, seven of the houses (Inventory form: 7, 8, 15, 16, 20, 21, 26) were having movement equipment for the elderly. Regarding elderly specialized equipment for bathroom and W.C, only one of the houses have installed grab bars for ease of lifting and standing of the elderly.



Figure 79: Inventory Form: 26

5.2.2.1.7 Safety

Considering the safety aspect or status of the house whether it caused risk on its residents or needs to be repaired, most of the participants (83.5%) said they did not get to accidents within their houses. a few of the participants (16.7%) said that indeed they got into accidents due to their housing status. Among those who got into troubles because of their housings, (7.7 %) said that they fell down on the floor, (4.3%) said it was due to slippery floor and (3.3%) got into accidents due to un even flooring and having steps between them. (2.3%) expressed having accidents such as rain water

leakage to the houses and (1.7%) had accidents due to having in adequacy in floor rugs.

Table 21: Safety Aspects within the House

Questions	Answer	No of cases	Percentage (%)
Did accidents happen to you within your house?	Yes	50	16.7
	No	249	83.0
If yes, why did it happen	Slippery floor	13	4.3
	Rugs	5	1.7
	Rain water coming inside	7	2.3
	Steps inside house	10	3.3
	Falling down	23	7.7

From the observed cases, Within the houses, one house (Inventory form: 27) has applied hand rails to their entrance stairs, this is convenient and explains the elderly's desires to remain home instead of going out.



Figure 80: Inventory Form 27

14 of the houses had dark colors used for their interior, which again creates dangers for elderly as they might miss seeing it, which in turn increases their chances for getting into accidents. The dark colors for bathroom especially are thought to be affecting circulation of the elderly.

Table 22: The Usage of Colors

	
<p>Dark colors</p>	<p>Inventory form: 3, 4, 9, 11, 13, 16, 17, 18, 21, 22, 24, 25, 27, 28</p>

Having sharp angled surfaces for furniture regarding different spaces of the rooms within 24 of the houses (1, 2, 4, 5,.....,12, 13, 15,23, 27, 28, 30) has the potential to create accidents for the elderly at many times especially when adequate lighting is not available.

In some of the cases there were furniture put in the middle of movement roads, some cases like the kitchen had small dimensions with sharp angled surfaces. In some other rooms like living rooms, there was a type of furniture used that was extra decorated which was making it having sharp edges. In some other rooms like the bedroom for example sharp edged beds were used which could create injuries in case of getting in contact with them. Another space with sharp furniture were the bathroom especially





those that had decorated washing basins their edges were really sharp and have the ability to cause injuries for the elderly.

Table 23: Furniture in the Houses

Kitchen		Living room	
			
Bedroom		Bathroom	
			
Sharp Angled Surface		1, 2, 4, 5, 6, 8, 9, 10, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 27, 28, 30	

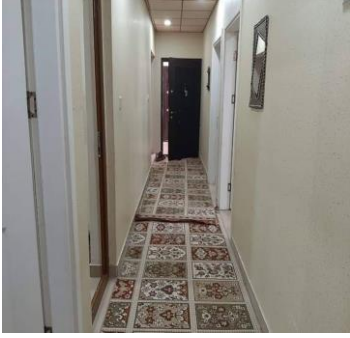
On another hand and in 13 of the houses (Inventory form: 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 29, 30) have rooms with smooth furniture which is counted as a positive point for the elderly living there.

Table 24: Furniture Inside the Houses

	
	
<p>Smooth Furniture</p>	<p>Inventory form: 10, 11, 12, 13, 14, 15, 16, 17, 21, 22, 23, 29, 30</p>

In thirteen of the observed houses (Inventory from: 6, 7, 12, 15, 16, 17, 20, 22, 23, 25, 28, 29, 30) the rugs on the floor were creating obstacles for the elderly and increasing their risks of falling, especially those with movement equipment.

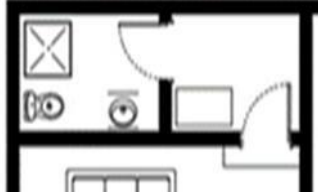
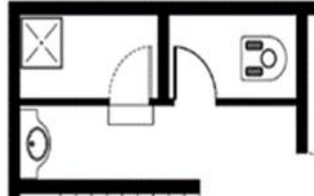
Table 25: Obstacles for Elderly Movements

		
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<p>Floor Rugs</p>	<p>Inventory form: 6, 7, 12, 15, 16, 17, 20, 22, 23, 25, 28, 29, 30</p>	

Besides of the floor mat obstacles, two of the houses (Inventory form: 17, 18) had levels in their interior especially in the bathroom which again is a negative point for elderly houses and increases their risks of getting into accidents.

Table 26: Levels within the Interiors

	
<p>Interior levels</p>	<p>Inventory form: 17, 18</p>

In another case there is over crowding of furniture (Inventory form: 5, 9, 16, 30) which is counted as major reasons for elderly to have accidents especially when there is inadequate lighting.

Table 27: Furniture Over Crowding within the Interiors of the Houses

			
<p>Over Crowding of Furniture</p>		<p>Inventory form: 5, 9, 16, 30</p>	

On another hand in three other houses (11, 12, 25) some rooms were completely without furniture, this is again inconvenient with availability of elderly in the house. It leads to their sleeping or sitting on the floor, especially for those with physical limitations or those who have their bones in certain situation might cause accidents for them.

Table 28: Furniture Absence within the Houses

		
<p>Absence of Furniture</p>		<p>Inventory form: 11, 12, 25</p>

5.2.2.1.8 Services

The absence of sufficient lighting which turned some of the houses into dark spaces and with them already using dark materials for their interior decorations and designs all creates risks for the elderly. The complete lack of electricity services especially in the houses comparing to the apartments. As the apartments have new systems of electricity and bills, but the houses have their old system and use governmental source of electricity, within this regard 28 cases had lack of lighting and 11 cases (1, ..., 10, 20) had efficient amount of lighting available.

Table 29: Inadequate Lighting

	
<p>Inadequate Interior Elements</p>	<p>Inventory form: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20</p>

Not being able to have complete access to efficient engineering services (water and electricity) within their houses, can be counted as the most common problem in Northern- Iraq. Lots of the people suffer from lack of these accesses within their houses especially the elderly. Due to the reason that the younger ones spend most of their times outside working, while the elderly especially those who are retired spend most of their times inside their homes. They say that they cannot achieve their daily activities in an essential way due to not having complete access over these services.

Especially the electricity was creating big problems for them. Due to the reason that those who are disabled cannot do other activities to spend their times, so they were saying they like to watch T.V as a hobby or activity, but in adequate access to it does damage to us as we do not do anything else. Others who did not have adequate access to sunlight were expressing that not having complete access to electricity is affecting our psychology as the house gets dark, and they were saying that it even affects their safety as they were not able to see clearly in the dark, so they were afraid from falling or even having thief to come and rob them. The participants were also emphasizing having internet access especially the post graduates which was helping them in their scientific works and the others levels of education were expressing that it helps them in connecting to the world through social media:

“Continuous supply with electricity and water including warm water (in Iraq this is not self- evident), air conditioning (winter and summer), internet access, the household waste is easily disposed.” (P10, P11, P16, P17, P19, P20, P27, P33)

From the observation study, 12 houses (Inventory form: 1- 10, 20, 23) were having adequate amount of heating and cooling conditions, 11 houses (Inventory form: 1 -10, 20) were having their sufficient amount of lighting from electricity services. Adding to this, 13 houses (Inventory from: 1,.....10, 14, 18, 20) were having their adequate amount of water for their daily use.

Table 30: Services within the Houses

Engineering services	Adequate heating/cooling	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 23
	Adequate amount of lighting	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20

	Adequate amount of water	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 14, 18, 20
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Among the 30 studied houses only two houses (Inventory form: 21, 12) were in need of modifications and maintenance works. This is because of those houses being occupied for a long time without any renovation works for a long time. As in his study Golant (2011) concluded that these types of housings can affect elderly healthy aging, as the house ages with them.

Table 31: Needs for Maintenance

	
Maintenance	Inventory form: 21, 12

5.2.2.1.9 Comfort and Relax

From the interviewees, people were seeing comfort within their houses as an essential element for them. They were repeating it in lots of their housing characteristics, in fact it was what their housing was all about. They were seeing it as their number one point in their life quality. Some were saying we have especially arranged our housing elements in such a way that we be comfortable in every space of it. Others who were not comfortable within their houses were demanding it also a lot and giving it priority over their lives:

“Every aspects of the house should be comfortable for me such as furniture, equipment, availability of services.” (P21, P22, P33, P34).

“Coziness, a sense of relief away from our anxiety and tiredness.” (P6)

On another hand from physical observation, two of the houses (inventory form: 17, 16) had inconvenience elements in design by adding elements into the middle of the room in order to function as separating or partition walls that divides two spaces. within this regard, its aesthetic view has no trouble and adds interesting view to the house but considering the elderly and their probability to hit these elements and cause injuries for them, especially when these have sharp angled ends might compromise life of the elderly within these houses.

Table 32: Interior Elements

	
<p>Inadequate added elements</p>	<p>Inventory form: 16, 17</p>

5.2.2.1.10 Aesthetics

The aesthetic part of the house investigates those used designs and materials with elderly perspectives about them as following:

Housing Finishing Materials

The finishing materials of the house were investigated according to their division to interior and exterior zones with the wet spaces having their own shares. Within this regard, for the normal rooms of the interiors, 191 (63.7%) cases were having ceramic tiles as their main used material for floor, 64 (21.3%) were having marble tiles, 33 (11.0%) were having concrete and 10 (3.3%) of the cases were having other materials used such as wood. For the used materials for the interior walls, 143 (47.7%) were using cement, 78 (26.0%) were using tiles, 24 (8.0%) were using stone. 20 (6.7%) were using cladding and 19 (6.3%) were using concrete with 5 (1.7%) using other choices for materials such as using both cement and tile.

Table 33: Finishing Materials for Interior Rooms

Variables	Sub- Variables	No of cases	Percentage (%)
Materials of interior rooms (Floor)	Marble tiles	64	21.3
	Ceramic tiles	191	63.7
	Concrete	33	11.0
	Other	10	3.3
Materials of interior rooms (Wall)	Tiles	78	26.0
	Concrete	19	6.3
	Cement	143	47.7
	Stone	24	8.0
	Cladding	20	6.7
	Other	5	1.7

Coming to the outdoor spaces, 158 (52.7%) of the cases were using tiles, 107 (35.7%) were concrete and 27 (9.0%) cases were cladding.

Table 34: Outdoor Finishing Materials

Variables	Sub- Variables	No of cases	Percentage (%)
material for the outdoor spaces (garden or garage) floor	Tiles	158	52.7
	Concrete	107	35.7
	Cladding	27	9.0

Regarding used materials for floor of the wet spaces, 267 (89.0%) of the cases were using tiles, 16 (5.3%) were cement, 8 (2.7%) were concrete and 9 (3.0%) were stones. For walls of the same spaces, 268 (89.3%) were using tiles, 18 (6.0%) were using concrete and 10 (3.3%) were using other materials.


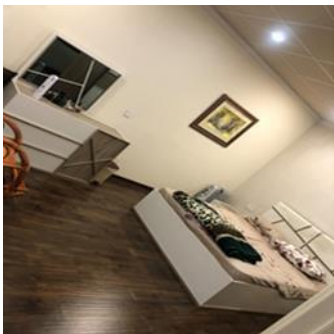

Table 35: Finishing Materials for Wet Spaces

Variables	Sub- Variables	No of cases	Percentage (%)
Materials of bathroom or W.C (Floor)	Tiles	267	89.0
	Concrete	8	2.7
	Cement	16	5.3
	Stone	9	3.0
Materials of bathroom or W.C (Wall)	Tiles	268	89.3
	Concrete	18	6.0
	Other	10	3.3

From observation of the case studies for flooring of the houses 20 cases (Inventory form: 1, 2, 7, 8, 9,....12, 15,....., 22, 27,.....,30) were having ceramic tiles for their floor. 26 of the houses (Inventory form: 3, 4, 6, 7, 8, 10,, 30) among them from the previous part also use other materials such as wood for their flooring. Three houses (Inventory form: 13, 14, 23) were using marble tiles and another three (Inventory form:

24, 25, 26) were using concrete. For walling materials of the same observed cases all the thirty cases (Inventory form:1-30) used tiles for their walls of wet spaces especially. Five cases (Inventory form: 9, 10, 11, 12, 14) were using cement, another five (Inventory form: 7, 8, 9, 14, 24) were using cladding. Also 26 of the houses (Inventory form: 3, 6, 7,....., 30) were using other options of materials mostly cement with tile.

Table 36: Finishing Materials of the Observed Houses

					
Materials	Flooring	Marble tiles	13, 14, 23		
		Ceramic tiles	1, 2, 7, 8, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 22, 27, 28, 29, 30		
		Concrete	24, 25, 26		
		Other	3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30		
	Walls	Tiles	1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30		
		Cement	9, 10, 11, 12, 14		
		Cladding	7, 8, 9, 14, 24		
		Other	3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30		

5.2.2.1.11 Orientation

Another aspect of the aesthetic part of the house and most demanded by the people from interviewing them, is for Lots of their houses to be facing the sun, they say that having daily access to natural health is a positive aspect of their daily living and health. Some think having access to sunlight helps in lightning their houses and reduces their electricity bills:

“Availability of sun light inside the house especially in morning inside house, is a crucial element in my opinion. It helps us start a fresh day and starting a fresh day is a sure-fire way to getting comfortable the rest of the day.” (P7, P20, P22)

On another hand, From the observed houses, 20 houses (Inventory form: 1, 3, 5, 6, 8, 10, 11, 14,....17, 20, 21, 23, 24, 26,....., 30) were facing North which lets adequate sunlight to come in. Also 11 of the houses (Inventory table: 1, 3, 4, 7, 8, 10, 11, 14, 20, 21, 30) had convenient visual communication with outside. Another 11 of the houses (Inventory form: 3,...., 8, 10, 11, 20, 21, 23, 27, 29) had enough amount of natural light from the sun coming through the windows (table 34).

Table 37: Natural Sunlight within the Houses

		
		
		
		
<p>Towards North</p>	<p>Inventory form: 1, 3, 5, 6, 8, 10, 11, 14, 15, 16, 17, 20, 21, 23, 24, 26, 27, 28, 29, 30</p>	
<p>Convenient Visual Communication</p>	<p>Inventory table: 1, 3, 4, 7, 8, 10, 11, 14, 20, 21, 30</p>	
<p>Enough amount of natural light</p>	<p>Inventory form: 3, 4, 5, 8, 10, 11, 20, 21, 23, 27, 29</p>	

5.2.2.1.12 Greenery

Having greenery is also an essential domain for the house as it focuses on their psychological part and helps them in relaxing. Within this regard and from the observed houses, only 7 of them (Inventory form: 13, 17, 20, 21, 24, 26, 28) had their own private garden.

Table 38: Availability of Greenery within the Houses

		
Greenery	Inventory form: 13, 17, 20, 21, 24, 26, 28	

Also from the interviews, the participants were talking about gardens and greenery within lots of aspects about their houses. Even those who were not having one expressed that they wished to have one to go to. They were expressing that having a garden helps a lot in reliving their minds and beneficial for them doing activities as spend time there with planting flowers and other gardening activities. They said it helps them to avoid getting bored:

“A small garden in my house, for whenever I get bored, I can go there and sit or plant flowers as a hobby.” (P16, P17, P22, P24, P25, P26, P27, P30).

5.2.2.2 Determining the Levels of House Satisfaction through The Investigated Domains

After objectively determining the domains of the house, within this regard, (68%) of the participants. Then the research tried to determine their levels of satisfaction with these main domains or elements of the house. (Table) were satisfied with their size of spaces and (5.0%) were very dissatisfied. Then for satisfaction with the functional relations of the spaces, (42.0%) were satisfied about the relations and (5.3%) were very dissatisfied. For availability of adequate horizontal circulation, (48.0%) were satisfied with it and (4.0%) were very dissatisfied. After that, the vertical circulation has been examined which (42.7%) were satisfied and (6.0%) were very dissatisfied. Regarding satisfaction with the engineering services, (25.7%) were dissatisfied about availability of adequate heating/ cooling conditions and (10.7%) were very satisfied. then the satisfaction with water and electricity have been investigated, within the results (29.7%) were very dissatisfied and (6.0%) were very satisfied. considering the aesthetic part which is lighting from windows, (31.7%) were satisfied with their amount of received light and (6.0%) were very dissatisfied. Then for visual communication with outside and its satisfaction, (38.7%) were satisfied and (7.0%) were very dissatisfied. Then for the aesthetic appearance of the house (37.7%) were rather satisfied and (5.0%) were very dissatisfied. Finally, for satisfaction with the housing quality, (41.7%) are satisfied and (5,3%) were very dissatisfied (Table 36).

Table 39: Satisfaction Levels of House

Questions	VD	D	RS	S	VS
	N(%)	N(%)	N(%)	N(%)	N(%)
Are you satisfied with the size of the spaces?	15(5)	34(11.3)	68(22.7)	141(47)	40(13.3)
Are you satisfied with the functional relation of the spaces?	16(5.3)	38(12.7)	83(27.7)	126(42)	34(11.3)
Are you satisfied with horizontal circulation (corridors, ramps,...)?	12(4)	41(13.7)	67(22.3)	144(48)	33(11)
Are you satisfied with vertical circulation (elevator, stairs,...)?	18(6)	50(16.7)	80(26.7)	128(42.7)	22(7.3)
Are you satisfied with the heating and cooling conditions?	53(17.7)	77(25.7)	70(23.3)	65(21.7)	32(10.7)
Are you satisfied with the amount of water/electricity supply?	89(29.7)	65(21.7)	55(18.3)	70(23.3)	18(6)
Are you satisfied with the amount of light from the windows?	18(6)	47(15.7)	93(31)	95(31.7)	44(14.7)
Are you satisfied with the visual communication with outside?	21(7)	37(12.3)	78(26)	116(38.7)	45(15)
Are you satisfied with the architectural form/aesthetic characteristics of your house?	15(5)	21(7)	113(37.7)	107(35.7)	42(14)
Are you satisfied with your housing quality?	16(5.3)	24(8)	103(34.3)	125(41.7)	31(10.3)

After investigating these factors, the degree of overall housing satisfaction in Northern Iraq have been achieved, which (62.0%) were satisfied and (38.0%) were not satisfied. the satisfaction variable which is (House) have been collapsed into two categories:

- Not satisfied :(by recoding scores of less than 3)
- Satisfied :(by recoding scores of greater than or equal to 3)

Table 40: Housing Satisfaction Level

Questions	Scale	No of cases	Percentage (%)
Housing	Not Satisfied	114	38.0
	Satisfied	186	62.0

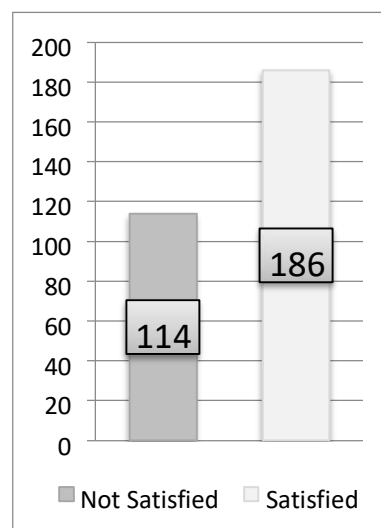


Figure 81: Satisfaction about Overall Housing

Within this regard, correlations between satisfaction levels of the house have been investigated. Which another technique statistically used in order to define the levels of connection between two variables. With P level being significant at (0.05) level (2-tailed). Within this technique, the dimensions of relativity of two variables can be known, which is either linear or reversed meaning that they increase with each other,

or if one increases, the other decreases. It ranges between (-1 to +1) with positive or negative relations meaning linear or reversed.

There were positive weak correlations between all the domains of house satisfaction with an average positive correlation (0.36) between satisfaction with form and functional relations. Another average positive correlation (0.32) was between satisfaction with quality with functional relations, and quality with heating conditions (0.32). Another positive average correlation (0.32) can be seen between satisfaction with form and quality of house. There is another positive average correlation (0.37) between horizontal circulation and functional relations. With another correlation of (0.38) between horizontal and vertical circulation. There were also average positive correlations (0.31) between heating/cooling with horizontal and functional relations (Table). In general, it can be said that all the domains contribute with each other in increasing satisfaction levels with the other domains of housing satisfaction (Table 35).

Table 41: Correlations between Variables

	S	F.R	H.C	V.C	H/C	W/E	L	V	F	Q
Size	1									
Functional R.	0.18	1								
H. circulation	0.10	0.37	1							
V. circulation	0.10	0.29	0.38	1						
Heating/cooling	0.16	0.31	0.31	0.24	1					
Water/electricity	0.09	0.07	0.18	0.03	0.13	1				
Light	0.26	0.20	0.05	0.10	0.05	0.17	1			
Visual	0.18	0.28	0.14	0.12	0.12	0.21	0.21	1		
Form	0.09	0.36	0.26	0.24	0.16	0.25	0.08	0.16	1	
Quality	0.16	0.32	0.32	0.29	0.24	0.20	0.14	0.24	0.32	1

5.2.3 Neighborhood

Another point of the residential environment is the neighborhood it is counted also as an essential point for the elderly. As many of them were expressing differing thoughts and opinions about it. Some were emphasizing its location; others take its psychological aspects as being quite for relaxing as crucial point. A minority seem to have a positive perspective about their future where they were expressing opinions about their neighborhoods for future, and its having a beautiful view:

“In the future if God give me health, I wish to live in a flat house with a panoramic view, some bit distant from the city and away from crowdedness.” (P33)

Others just emphasize other aspects of their neighborhoods such as adequate access to daily services and safety. According to the responses from participants these characteristics are classified into other sub themes as following:

5.2.3.1 Location

In order to investigate the location of housing of the participants, first of all their frequencies of going out was investigated, to find out whether they go out or not and to what domains does the location of house affects this activity of going out. Also to find out their degree of going out activities whether they go out often or not.

Accordingly, those aspects that affect the participant's responses about their locations of housing are as follows: the people's average of going out was investigated according to their daily and weekly going out. Considering daily going out, again the results were near to equal as (36.3%) said they did not go out and (34.7%) said they go out once in a day. Some other minor responses were recorded also, as (4.3%) chose more going out option, (2.3%) was the percentage choice for again two groups which were those who go out three times a day and those who occasionally go out. With only (2.0%) of the participants going out twice in a day. On another hand, about the participant's weekly going out, the results were close to each other again, (23.7%) were going out once in a week and (21.3%) were not going out at all. (6.0%) were going out more than 5 times in a week and (3.7%) were only going out when they were in need to go out. With a percentage of (3.0) between those who go out (2-4) times in a week and those who have other occasions for going out.

Table 42: Frequency of Going Out

Variables	Sub- variables	No of cases	Percentage (%)
Daily going out	Don't go out	109	36.3
	Once in a day	104	34.7
	Twice a day	6	2.0
	Three times	7	2.3
	Occasionally	7	2.3
	More	13	4.3
Weekly going out	Don't go out	64	21.3
	Once in a week	71	23.7
	2 - 4 times in a	9	3.0
	More than 5 times	18	6.0
	According to need	11	3.7
	Other	1	3.0

Then, to find out about the reasons that prevent those participants from going out, they were asked to choose from multiple options and their answers were accordingly, majority (42.7%) of the elderly said they did not have enough energy for going out, (18.3%) had no preventing reasons. (10.3%) had physical limitations and (10.0%) were saying that the location of their house was a preventing factor for their going out. (4.0%) were having disease and (1.3%) said they did not have efficient vertical circulation which created obstacles in their paths for their going out (Table 37).

Table 43: Going Out Aspects

Variables	Sub- variables	NO of cases	Percentage (%)
Factors prevent going out	Housing location	30	10.0
	Not enough energy for going out	128	42.7
	Physical disabilities	31	10.3
	Not efficient vertical circulation	4	1.3
	Having diseases	12	4.0
	No reason	55	18.3

Then from interviews and as elderly were assessing their neighborhood characteristics in various perspectives, they were expressing different opinions. Lots of them had their background about the locations previously from their minds and desired to live at those spots. As they stated that they liked its location:

“I chose to live in this house based on its location, design and area. Almost that is Iraqi standards.” (P5, P2, P8, P11).

Others had their working positions as major importance in their lives and connected every aspect of their residential environments according to being near from their working places. Even their houses to be near the center of the city was due to their being able to reach their working areas in the shortest amount of time:

“I chose to live in this house because it is near to my working place and center of the city.” (P10, P12, P11)

While others took their aesthetic perception about the area of significant importance, as they were expressing that, they thought the location of their neighborhoods were had a beautiful view:

“I liked the neighborhood as it was beautiful, places surrounding it were nice and it was wide and had lots of greenery.” (P19, P16, P31)

5.2.3.2 Safety and Privacy

Accordingly, participants were asked about the adequacy of the location of their housing whether it was safe for them or they felt they were in risk. Majority (83.3%) said they were not afraid of accidents and a minority (16.3%) said that yes indeed they were afraid from getting into dangerous situations. Among those who predicted possibilities that puts them into risk, (11.0%) said they were afraid from falling, (3.3%) said they were afraid from not being able to find home again and get lost. (2.0%) were afraid from getting into car accidents and (1.0%) said they would get tired.

Table 44: Going Out Risks

Question	Answers	No of cases	Percentage (%)
Are you not going outside of the house because of fear of accidents	Yes	49	16.3
	No	250	83.3
If yes, what type of accidents	Falling down	33	11.0
	Not finding home	10	3.3
	Getting tired	3	1.0
	Car accidents	6	2.0

Some others emphasized other aspects of safety, they explained that the whole region should be safe and some flee from unsafe places. While others stated privacy and safety of their neighborhoods as essential aspects, this point was emphasized exactly by females of the house:

“Safety of the region and location is the most significant aspect for my house. I feel secure in it as there are guards available in the neighborhood.” (P1, P10)

“I did not choose the house. I had to escape from my town for security reasons and had to buy a house as soon as possible in a safe region.” (P3)

“There is a lot of privacy and personal space, we decided to choose this house according to safety and privacy standards.” (P36)

5.2.3.3 Accessibility to Daily Life Services

The demands for daily life services is another essential aspect in elderly perspectives. As they state that having good access within their houses to shopping, health and daily living services is crucially important for helping to make their lives a little bit easier and for their loads on their surrounding get a little lighter. As they express:

“I am an old person and there should be services near to me such as markets and hospital. Near to transportation points especially bus stations and taxi.” (P12, P20, P22)

Within this regard and from the observed studies 26 houses had full access to daily shopping services only 4 (Inventory form: 4, 16, 19, 24) houses did not have complete access to these services. Regarding access to open services 10 cases (Inventory form: 1, 2, 3, 4, 5, 6, 7, 9, 10, 21) were having access to these services which were mostly the apartments.

Table 45: Access to Open Spaces and Greenery

		
		
		
Access to Open Spaces	Inventory form: 1, 2, 3, 4, 5, 6, 7, 9, 10, 21	
Access to Shopping Services	Inventory form: 4, 16, 19, 24	

Only 6 of the cases (Inventory form: 15,18,21,23,27,29) had access to nearby health centers or hospitals, mostly this was due to the location of the houses which were hard to place health centers in. adding to this, only 10 cases (Inventory form: 14,15,16,17,18,21,22,28,29,30) having adequate access for public transportation centers near them that can be reached in a convenient way without obstacles.

Table 46: Available Hospitals and Transportation Spots

	
<p>Access for health centers</p>	<p>Inventory form: 15,18,21,23,27,29</p>
<p>Access for public transportation spots</p>	<p>Inventory form: 14,15,16,17,18,21,22,28,29,30</p>

5.2.3.4 Quietness

Others counted that having calm and quiet surrounding of their houses helps them a lot and clears their minds. They mentioned that living without any disturbance or vehicle noise is a major goal for their lives, especially when they are spending most time indoors, this is why they consider living near main streets as negative points:

“The less noise pollution, the more comfortable I feel, and given the fact that there is a main road across the house, this can be difficult at times.” (P6, P12, P18, P19)

5.2.4 Determining Neighborhood Satisfaction level

After investigating the mentioned domains of neighborhood, the perception of the elderly towards their neighborhoods were studied to measure their level of satisfaction with it. According to the answers, (35.3%) were rather satisfied about their location of housing and (3.0%) were very dissatisfied. Regarding the availability of open parks and spaces (34.7%) were dissatisfied and (7.3%) were very satisfied. Then for availability of daily life services within fair dimensions to be accessed (34.0%) were satisfied and (6.7%) were very dissatisfied. About availability of health centers within

adequate dimensions (28.7%) were rather satisfied and (8.7%) were very satisfied. Then for availability of public transportations spots within ease of access points (32.7%) were rather satisfied and (8.7%) were very dissatisfied. And finally they have been asked if they were satisfied with neighborhood quality (38.3%) were rather satisfied and (6.7%) were dissatisfied.

Table 47: Satisfaction Level with Neighborhood

Questions	VD	D	RS	S	VS
	N (%)	N(%)	N(%)	N(%)	N(%)
Are you satisfied with the location of your house?	9 (3)	20(6.7)	106(35.3)	105(35)	58(19.3)
Are you satisfied with the availability of activity centers/ public parks/ gathering spaces near you?	54 (18)	104(34.7)	68(22.7)	50(16.7)	22(7.3)
Are you satisfied with the availability of shopping /daily needs places near you?	20(6.7)	38(12.7)	86(28.7)	102(34)	52(17.3)
Are you satisfied with the availability of health centers/ hospitals near you?	31(10.3)	67(22.3)	86(28.7)	85(28.3)	26(8.7)
Are you satisfied with the availability of public transportation stations near you?	51(17)	73(24.3)	98(32.7)	50(16.7)	26(8.7)
Are you satisfied with your neighborhood quality?	23(7.7)	20(6.7)	89(29.7)	115(38.3)	51(17)

Then the overall level of satisfaction of the elderly with their neighborhood have been determined, which the results were near to equal (51.3%) were not satisfied and (48.7 %) satisfied. the satisfaction variable which is (Neighborhood) have been collapsed into two categories:

- Not satisfied :(by recoding scores of less than 3)
- Satisfied :(by recoding scores of greater than or equal to 3)

Table 48: Satisfaction Level with Neighborhood

Questions	Scale	NO of cases	Percentage (%)
Location	Not Satisfied	154	51.3
	Satisfied	146	48.7

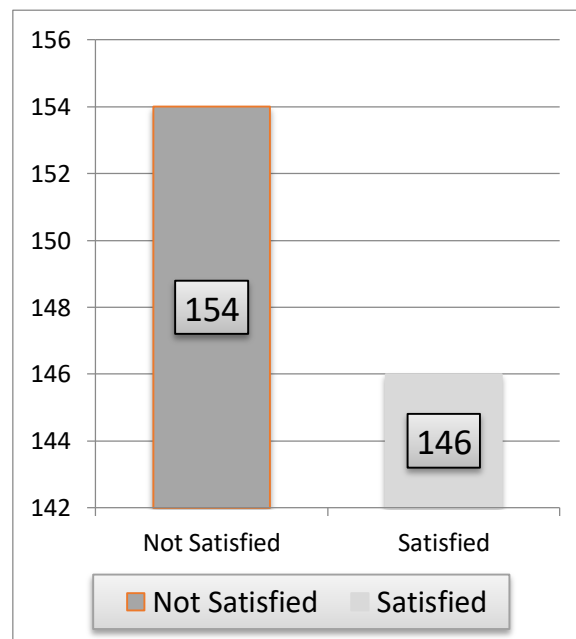


Figure 82: Satisfaction Status about Location

After that correlations between the domains of neighborhood satisfaction have been investigated in order to understand their effects on each other. There were negative weak correlations (-0.05) between public spaces satisfaction and location of the neighborhood. Also negative correlation (-0.08) between satisfaction with public transportation spots and satisfaction with location. The other variables were having positive correlation with each other such as the correlation (0.28) between neighborhood satisfaction and availability of shopping places satisfaction. Or correlation (0.27) between satisfaction with public health centers and public transportation services.

Table 49: Satisfaction with Neighborhood

	L	P	SH	H	P	N
Location	1					
Public Spaces	-0.05	1				
Shopping Places	0.24	0.18	1			
Health Centers	0.11	0.13	0.22	1		
Public Transportation	-0.08	0.24	0.10	0.27	1	
Neighborhood	0.26	0.13	0.28	0.16	0.10	1

After that correlations between the satisfactions between the domains of house and neighborhood have been investigated. There was negative correlation (- 0.03) between size of spaces and availability of shopping centers. Negative correlation (-0.02) between functional relations and location of the house and availability of health centers. Also negative correlation (-0.02) between heating and cooling conditions and location of the house. Also, negative (-0.11) availability of services like water and electricity and location of the house. Again negative correlation (-0.01) between

housing quality and location. The other variables were positively correlated such as, size of the house and neighborhood (0.29) or lighting and location of the house (0.22) or water and electricity with availability of public spaces (0.30). lighting and neighborhood satisfaction (0.29). with average correlation (0.53) between quality of the house and functional relation.

Table 50: Correlation Between Variables

	L	P	SH	H	P	N	S	F.R	H.R	V.R	H/C	W/E	LI	V	F	Q
L	1															
P	-0.05	1														
SH	0.24	0.18	1													
H	0.11	0.13	0.22	1												
P	-0.08	0.24	0.10	0.27	1											
N	0.26	0.13	0.28	0.16	0.10	1										
S	0.08	0.03	-0.03	0.03	0.06	0.29	1									
F.R	-0.02	0.23	0.11	-0.02	0.05	0.18	0.42	1								
H.R	0.20	0.07	0.23	-0.01	0.04	0.10	0.37	0.47	1							
V.R	0.00	0.21	0.15	0.05	0.16	0.10	0.29	0.38	0.39	1						
H/C	-0.02	0.27	0.10	0.10	0.13	0.16	0.31	0.31	0.24	0.35	1					
W/E	-0.11	0.30	0.08	0.15	0.18	0.09	0.07	0.18	0.03	0.13	0.53	1				
LI	0.22	0.04	0.16	0.12	-0.06	0.26	0.20	0.05	0.10	0.05	0.17	0.19	1			
V	0.18	0.06	0.12	0.14	0.04	0.18	0.28	0.14	0.12	0.12	0.21	0.21	0.46	1		
F	0.06	0.10	0.06	0.12	0.07	0.09	0.36	0.26	0.24	0.16	0.25	0.08	0.16	0.43	1	
Q	-0.01	0.05	0.04	0.05	0.03	0.16	0.32	0.32	0.29	0.24	0.20	0.14	0.24	0.32	0.53	1

5.3 Economy

This section was set in order to investigate the economic situation of the elderly in Northern Iraq to analyze its effect on their lives and residential satisfaction. Regarding their status of job, (31.0%) were employed by the government and having governmental works, (29.3) of them were retired due to their old age, with a percentage of (22.0%) not working. Considering their economic status, their monthly income was according to the following, (39.3%) of them were receiving a monthly salary ranging between (500,000 – 799,000 IQD), and a percentage of (25.7%) were monthly receiving (1,000,000+), adding to this (19.7%) were having no income, with (15.3%) receiving a range between (800,000 – 999,000 IQD). Their periods of receiving salary were also as following, (71.0%) were receiving their salary once in one month, (19.3%) were receiving no salary and (5.7 %) were receiving salary once in two months, with a small percentage (4.0%) of those who receive it once in three months (Table 45).

Table 51: The Variables of Economy

Variables	Sub- variables	No of cases	Percentage (%)
Job status	Own work	53	17.7
	Governmental work	93	31.0
	Retired	88	29.3
	No work	66	22.0
Monthly income	No income	59	19.7
	500, 000 - 799, 000 IQD	118	39.3
	800, 000 - 999, 000 IQD	46	15.3
	1, 000, 000 +	77	25.7
	No salary	58	19.3
Salary receiving period	Once in one month	213	71.0
	Once in two months	17	5.7
	Once in three months	12	4.0

Also from Interviewing the participants, they chose their housings according to it. Especially as lots of them chose it long time before and they were limited in their economic potentials. That was why it emphasized their current housing conditions.

The two most repeated economic limitations between the elderly were as follows:

5.3.1 Financial Issues

Due to lots of the participant's financial potentials being limited because of their job status in life. they were forced to choose their housings according to it. Even for their current life they were expressing the price as the major point about their house:

“It was the best option available for me due to my limited economic status and its convenient price.” (P4, P5, P17, P29, P34, P36)

5.3.1.1 Land Given by Government

There is another occasion where the previous university teachers who are retired now, received land from the previous government as an award and the locations of the lands were put by the government randomly. That is why they chose to build a house on it and lots of them haven't moved from back at that time. It should be also said that the residential environment and everything else about the house was according to that economic condition:

“The land was given to me long time ago by the government as I was a university professor, and I built it by my own and haven't moved from back then.” (P9, P24, P26, P33)

5.3.2 Determining the Level of Satisfaction of the Elderly with Economic Conditions

In order to determine the satisfaction level of the elderly with their economic surrounding, they have been asked about their perception towards their financial and economic situation. When they were asked to express satisfaction about the price of their house (41.3%) were rather satisfied and (4.3%) were very dissatisfied. Then they

were asked about their perception towards their current financial status. (38.7%) were rather satisfied and again (4.3%) were very dissatisfied.

Table 52: Satisfaction about Economy

Question	VD	D	RS	S	VS
	N(%)	N(%)	N(%)	N(%)	N(%)
Are you satisfied with the price of the house?	13(4.3)	25(8.3)	124(41.3)	110(36.7)	25(8.3)
Are you satisfied with your financial status?	13(4.3)	50(16.7)	116(38.7)	91(30.3)	27(9)

Then the overall level of satisfaction of the elderly have been determined, half of them (52.0%) were not satisfied with their economic condition and (48.0%) were satisfied with it.

Table 53: Level of Satisfaction with Economy

Questions	Scale	No of cases	Percentage (%)
Economy	Not Satisfied	156	52.0
	Satisfied	144	48.0

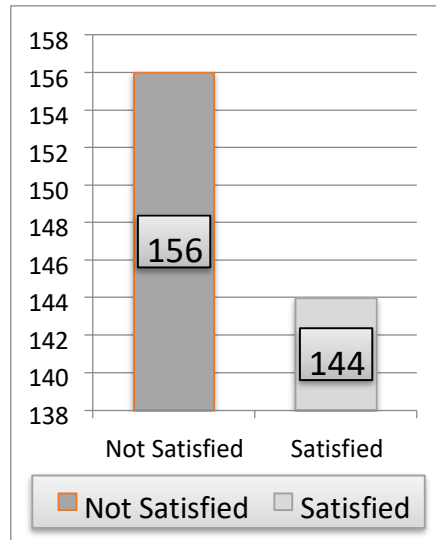


Figure 83: Satisfaction with Economy

5.4 Health

In order to determine the health situation of the elderly their background about health have been studied. Among them (25.7%) were not having any issues with long term health. (18.0%) were having blood pressure disease, (16.3%) were having heart disease and (13.3%) were having other conditions such as having two or three of the mentioned diseases all together.

Table 54: Health Conditions of the Elderly

Variables	Sub- variables	No of Cases	Percentage (%)
Long term health issue	Heart disease	49	16.3
	Blood pressure	54	18.0
	Dementia	8	2.7
	Diabetics	26	8.7
	Physical disability	32	10.7
	Depression	14	4.7
	Don't have any	77	25.7
	Other	40	13.3

Also from interviewing the participants and due to those biological changes that were happening with them, lots of the elderly were concerned about their lives and chose to remain in a place where they could be with their relatives for being taken cared for. As they were saying they were not able to live and provide the living activities for their selves without their relatives. While others were considering health as a measure of good housing as they were expressing that it needed to fit well with their physical limitations and health:

“I need a house that goes well with my insufficient health and physical needs.” (P1, P4)

“There is no choice for me. I need someone to take care for me and my relatives live here also. So, it is a compulsory for me to stay in the same place of my relatives.” (P24, P31)

“Their physical and mental health should be considered.” (P7).

5.4.1 Determining Satisfaction about Health

After investigating the variables then perception of the people about their health situation have been taken according to two variables which are their satisfaction about their daily life activities. The answers were (29.7%) were rather satisfied and (8.0%) were very dissatisfied. Then about the variable of comparing their health with their previous times, (28.7%) were dissatisfied and (6.0) were very satisfied.

Table 55: Satisfaction about Health

Questions	VD	D	RS	S	VS
	N(%)	N(%)	N(%)	N(%)	N(%)
Are you satisfied with your daily life activities?	24(8)	73(24.3)	89(29.7)	83(27.7)	28(9.3)
Are you satisfied with your health situation? regarding these past few years?	53(17.7)	86(28.7)	67(22.3)	74(24.7)	18(6)

Then the overall level of satisfaction with health for the elderly in Northern Iraq have been determined which the results were, more than half (62.3%) were not satisfied about their health and (37.7%) were satisfied about their health.

Table 56: Satisfaction Level about Health

Questions	Scale	No of cases	Percentage (%)
Health	Not Satisfied	187	62.3
	Satisfied	113	37.7



Figure 84: Satisfaction Level about Health

Within this regard after getting the overall satisfaction about the main domains of quality of life, their correlations with each other have been determined in order to understand their effects on each other. Accordingly, there were negative correlation (.182) between gender and satisfaction about economy and also negative (-.150) between health satisfaction and gender. Also negative correlation (-.035) between

neighborhood satisfaction and gender with again negative correlation (-.202) between housing satisfaction and gender. Again negative correlation (-.029) between age and economic satisfaction, and (-.271) with health satisfaction and (-.090) with neighborhood satisfaction and (-.076) with housing satisfaction. Again marital status also was havin negative correlations with satisfaction about housing neighborhood, health and economy. Within this it can be said that the variables of social relations had negative correlations with satisfaction about the other domains.

Then regarding the economic satisfaction, it was having negative correlations with the social relations domains as mentioned before. Also, there was positive weak correlation (.327) between satisfaction with economy and satisfaction with health. There was also positive correlation (.127) between neighborhood and economic satisfaction, with again positive correlation (.271) between economy and housing satisfaction. There was positive correlation (.185) between housing and neighborhood satisfaction with positive (.169) between housing and health satisfaction (Table 51).

Table 57: Correlations between Satisfaction Variables.

variables	G	A	M	E	L.H	S.E	S.H	S.N	S.H
Gender	1								
Age	.095	1							
Marital Status	.200	.190	1						
Education status	-.356	-.302	-.053	1					
Long term health	.024	-.003	.141	.070	1				
Satisfied Economy	-.182	-.029	-.129	.061	.072	1			
Satisfied Health	-.150	-.271	-.184	.177	.084	.327	1		
Satisfied Neighborhood	-.035	-.090	-.022	-.108	.134	.172	.110	1	
Satisfied Housing	-.202	-.076	-.009	.117	-.044	.271	.169	.185	1

Chapter 6

CONCLUSION AND DISCUSSIONS

Within this chapter an extensive discussion of the main findings from the data collections is highlighted and discussed. The results will be referred to in accordance with the study's main research question. Then, it will continue to the conclusions, implications of the study and finishes by approaches to suggestions for future research.

6.1 The Domains of Quality of Life

In order to investigate the level of satisfaction with residential environment and quality of life of those elderly living in Northern part of Iraq. The domains of quality of life had to be investigated, although Vincent, Phillipson and Downs (2006) argue that quality of life is an aspect that cannot be measured scientifically. This is due to its being a subjective aspect of individuals lives that is directed by those circumstances they face with their getting older. But, still there are attempts to refer to life satisfaction as the degree of the individual's perceptions about their experiences of life and their quality.

Within this regard the residential environment of the elderly is their most immediate surrounding environment, which they spend most of their time in, due to their physical limitations this is the reason that residential satisfaction is a main domain of quality of life. It had to be investigated both objectively and subjectively. First according to objective information about it, then according to subjective perception about it which means satisfaction levels. The highlighting of the satisfaction of residential

environment comes from the idea of Raphael et al. (1997) who suggests that quality of life means individuals satisfaction levels towards their surrounding properties. Also in the literature review, it can be indicated that achieving the desired needs and satisfaction with it are subjective aspects that determine quality of life.

The results of any reviewed research from the literature has proved the complicated ideas about defining the main domains of quality of life. But, with reviewing many sources and studying the conditions of the people in Northern Iraq, the researcher have decided to determine quality of life within this research according to three themes that directly affect quality of life which are the surrounding environment, economic situations and health. According to the multi facet ability of the concept of quality of life, both subjective and objective aspects of these domains were highlighted especially the residential surrounding environment. as in their study Netuveli and Blane (2008) on elderly quality of life. They concluded that the elderly express their ideas about their quality of life through subjective and objective domains. And as mentioned previously according to Farquhar (1995) quality of life is the level of people's satisfaction regarding various dimensions of their lives.

There is also the need to focus on the concept of quality of life through various ranges of ages and the older ages should be highlighted mostly. Especially in those countries which are newly developing, and there is not sufficient amount of information about its population's demands and desires. Northern part of Iraq also can be counted as an area which is newly developing in all the aspects and architecture, this is why it is important to highlight the conditions and quality of life of their individuals. As also, Massam (2002) suggests that through highlighting the idea of quality of life, there can be sufficient amount of information obtained to help designers to understand the

impact of their designs and their circulations in planning on lives of the individuals and the places also.

6.1.1 Residential Satisfaction

The residential satisfaction according to the study consisted of house satisfaction and neighborhood satisfaction. The results showed adequate levels of satisfaction within the elderly especially for housing conditions, but for neighborhood conditions the results were near to equal as it can be said half were satisfied and another half were not satisfied.

The majority of the elderly were satisfied with their housing, as they were not caring about their needs or desires from the house, instead they were looking at their situations from the points that they have a house to live in with their relatives and beloved ones. Regarding neighborhood satisfaction, the results were close to each other, the level of dissatisfaction of the elderly within the neighborhood was mostly related to the absence of appropriate services within those neighborhoods (Table 52).

Table 58: Housing and Neighborhood Satisfaction

Housing Satisfaction		Neighborhood Satisfaction	
Satisfied = 62.0 %	Not Satisfied = 38.0 %	Satisfied = 48.7 %	Not Satisfied = 51.3%
<p>A bar chart showing housing satisfaction levels. The y-axis ranges from 0 to 200. There are two bars: a dark grey bar for 'Not Satisfied' with a value of 114, and a light grey bar for 'Satisfied' with a value of 186. A legend at the bottom identifies the colors.</p>		<p>A bar chart showing neighborhood satisfaction levels. The y-axis ranges from 142 to 156. There are two bars: a dark grey bar for 'Not Satisfied' with a value of 154, and a light blue bar for 'Satisfied' with a value of 146. A legend at the bottom identifies the colors.</p>	

6.1.2 Economic Satisfaction

From the investigated variables of this part, the economic conditions of the elderly is average, as majority of them were having monthly incomes of differing ranges, according to their education levels. Their job statuses were convenient and It can be said that the participated participants within this study, most of them are those with qualified education certificates and have adequate ranges of salary. But the reason for their not being satisfied from their economic conditions is due to that, most of them are those who live with their kids and grandkids and need to support those also. As due to the limited employment range for the younger generation in Northern Iraq, they need financial support from their head of families.

It can be said that the nature of human beings themselves at any age, they would like to adequate economic conditions through receiving high salaries and lots of the people's goals within this life is to have good payment in order for them to enjoy life. according to the society, if you have good money then you have good life and you are a complete independent person. The findings are clear proof for this reality as (52.0%) of the participants are not satisfied with their economic conditions. Although it can be said within the culture of the society and especially elderly, a good range of them think that their life does not consist of only money and are satisfied with their economic conditions. There is a really popular phrase within every person who is getting old in Northern - Iraq which refers to the economic conditions not being of that much of importance

6.1.3 Health Satisfaction

Within this regard, most of the elderly have long term health issues such as blood pressure or diabetics. But regarding physical health issues they are in good conditions. Mostly this is because they are elderly in their early stages of getting old, as most of them are not using mobility aid equipment. But their negative perception about their health is due to the reason that they compare themselves with their previous times. According to White, Wojcicki and McAuley (2009) physical health has main effect on reducing quality of life.

The reason for this negative perception of the elderly is also due to that, they are not looking into their situations within the future years and their increases levels of physical limitations. Instead they want to be living with adequate conditions within their current times. This result supports the findings of Kreschner and Pegues (1998) who stated that for elderly to have a convenient aging period, they demand adding quality to the years that they have for their current time and later years instead of adding years to their remaining life. also supports the conclusion by Schalock and Verdugo (2002), who suggest being able to perform activities of daily living in a desired way regarding all the conditions is a significant aspect of quality of life.

Table 59: Satisfaction with Health and Economy

Health Satisfaction		Economic Satisfaction													
Satisfied = 37.7 %	Not Satisfied = 62.3	Satisfied = 48.0 %	Not Satisfied = 52.0%												
<p>A bar chart showing the number of participants for Health Satisfaction. The y-axis ranges from 0 to 200. The 'Not Satisfied' bar (orange) has a value of 187. The 'Satisfied' bar (blue) has a value of 113. A legend at the bottom identifies the bars.</p> <table border="1"> <tr><th>Satisfaction Level</th><th>Count</th></tr> <tr><td>Not Satisfied</td><td>187</td></tr> <tr><td>Satisfied</td><td>113</td></tr> </table>		Satisfaction Level	Count	Not Satisfied	187	Satisfied	113	<p>A bar chart showing the number of participants for Economic Satisfaction. The y-axis ranges from 138 to 158. The 'Not Satisfied' bar (orange) has a value of 156. The 'Satisfied' bar (grey) has a value of 144. A legend at the bottom identifies the bars.</p> <table border="1"> <tr><th>Satisfaction Level</th><th>Count</th></tr> <tr><td>Not Satisfied</td><td>156</td></tr> <tr><td>Satisfied</td><td>144</td></tr> </table>		Satisfaction Level	Count	Not Satisfied	156	Satisfied	144
Satisfaction Level	Count														
Not Satisfied	187														
Satisfied	113														
Satisfaction Level	Count														
Not Satisfied	156														
Satisfied	144														

Within this regard the correlations between satisfaction with the main domains of quality of life have been investigated in order to determine their effects on each other and on the overall quality of life. there were positive correlations between satisfaction with the main domains of quality of life meaning economy, health and residential. This indicates that increase in the level of any of them is increase in the level of the others, and in turn is positively affecting the overall quality of life. but there were negative relations between the social domains such as age, gender and marital status with these variables. This indicated that with increase in aging of the participants their levels of satisfaction with these domains decreases, although it needs to be said that the correlations of the type of weak ties.

6.2 The Elderly in Northern- Iraq and their Residential Needs

Within this study majority of the participants were male, the reason for this range of participation with gender is due to the cultural obstacles within the mind of the people, as they feel they will be exposed to threats and some just did not accept to participate due to their thinking that the style of the questionnaire and its question especially those questions investigating private areas within their house created many difficulties in convincing the people to participate in the study specially, women. (74.7%) were Kurdish this is due to the reason that majority of the people living in Sulaimanyah are Kurds and since those other nationalities that exist there, are those internally displaced people who have flee from war live in the surrounding areas of Sulaimanyah, only a few minorities live within the governorate of Sulaimanyah with adequate housing conditions that could be investigated. the major range of the elderly were married, this was again due to the cultural habits of the society, as back at their time those who got separated or live alone, were seen as odd elements within the society and there was much talk about them. Due to this reason, people back at then, even though they faced lots of obstacles and difficulties in getting alone, but they chose to fix their problems instead of taking other paths.

As mentioned before, an aim of the study was to find those principles of having a good quality of life regarding elderly perspectives among their houses in Northern - Iraq. Generally speaking, mostly the elderly was satisfied about their lives, although some of them were facing limitations and challenges towards their housing conditions, but it can be said they are a generation who are not asking for much and were satisfied about their part of life that they were living.

However, when, they were asked about their residential needs, some of them expressed external factors that could affect their residential situations and make it better, such as a participant who suggested that, when people are building houses, they should consider the future as they will grow old and the house might not remain comfortable for them:

“I wish that anyone who builds or buys a residence realizes that one day he day he or she will get older and develop special needs.” (P4)

Another one considers their being neglected by higher authorities and suggested that the government responsible institutions should have people who are experts in designing public spaces for the elderly:

“Presence of free state government special personnel for entertainment of the elderly people, e.g. theater and cinema, cultural activities, organizing trips and travels.” (P10)

Some of them were unaware about their needs within their houses, but heading towards the future in their houses was making them worried:

“I have no idea, but I am worried about my future when I get older alone in this flat.” (P5)

While a minority were that much interested that they were giving architectural opinions even though, they were not specialized in the field. Such as one participant, who suggested that worldwide specialized people should consider a unified house layout for the elderly by perceiving the conditions of every state and country:

“I suggest that there should be an international association which holds a conference to speak about a unified plan layout for all the elderly according to climate weather of each area, which means if there are areas around the world that are having the same characteristics should have the same plan layout for the aim of creating a sense of equality among elderly around the world.” (P31)

“Elderly and handicap people should live in accommodations with no stairs, specially designed toilets and baths, purpose built kitchens and suitable beds.” (P3)

Some due to their limited economic situations were thinking, that they would add extra parts to their houses as they can be able to do gardening activities there or doing daily exercises. Another one suggested that he would like to be able to develop the houses floor plan into more open plan:

“I would like to be able to remove the walls from some rooms for the house to become more open and for me to be able to add more furniture to its rooms.” (P18)

Another one who was a post graduate retired, expressed that his family helped him build an office room within their house, due to his desires for continuous reading and writing:

“After my retirement, I am more in need to have my room I used to work in, and decided to continue editing the books I have decided to publish. My family also continued preparing the room for me. Because of that I could publish my first book and started the second.” (P9)

Another participant with totally different thinking from the above mentioned participants believed that the economic condition was above all the other aspects of the house:

“Having total ownership and control over your house is all what being comfortable in your house mean.” (P5)

6.3 The Factors that Affect Residential Satisfaction of the Elderly in Northern Iraq

The highlighting of the satisfaction of residential environment comes from the idea of Raphael et al. (1997) who suggests that quality of life means individuals satisfaction levels towards their surrounding properties. Also in the literature review, it can be indicated that achieving the desired needs and satisfaction with it are subjective aspects that determine quality of life. Within this regard and according to the study, first there is the need to discuss the level of residential satisfaction of the elderly in Northern Iraq.

6.3.1 Housing Satisfaction

To determine the level of residential satisfaction both the major components of the residential environment which are house and neighborhood have been investigated. The results showed adequate levels of satisfaction within the elderly especially for housing conditions, but for neighborhood conditions the results were near to equal as it can be said half were satisfied and another half were not satisfied. These results have been determined according to investigations of both the domains of house and the domains of neighborhood. The investigated major components of the house environment in this city were house background, Accessibility and circulation, planning layout, functional relations, size and number of rooms, elderly specialized furniture, safety, services, comfortability, Aesthetic characteristics such as, housing finishing materials and orientation, and finally availability of greenery.

Table 60: The Domains of Housing Satisfaction

Theme	Sub- Theme
Housing Satisfaction	house background
	Accessibility and circulation
	planning layout
	functional relations
	size and number of rooms
	elderly specialized furniture
	safety
	services
	comfortability
	Aesthetic characteristics
	greenery

These domains were all investigated objectively in the beginning then their levels of satisfaction were investigated. According to background of the houses

6.3.1.1 General Background

Most of the elderly in Northern Iraq have ownership of their houses, they look at it as the main domain in their life to have an adequate living. they demand it that much that some of them said they have eliminated lots of other expenditures until they raised enough money for their buying a house and avoid being tenants. In this city and all the other cities this can be seen as a symbol of independence and power of the head of the family.

Most of the elderly desire to live in houses rather than apartments and this is due to reason that the concept of apartment housing have newly arrived in Northern – Iraq and the elderly are having hard times accepting to live in these compacted spaces. they think, apartments are small and does not let them act freely.

Living in semi- detached housing as a broad phenomenon of housings in Sulaimanyah, this is due to its being more economical in price as detached houses were expensive. Another point about this issue is that these houses were bought long time ago and back at then the prices were not high as much as now, if they would've be bought now, they would have needed to be wealthy people or else they could not buy this type of housing. Lots of them had two floors in their houses, again this is due to had lots of individuals dwelling in it, that is why they needed to have convenient space for them.

Also majority continued to live in their houses for periods more than (17+) years which relates of the elderly's desires to remain in their same own places that they are attached to instead of moving. They get connected to the houses either because once upon a time it was a house that gathered all of the family and now they have all grown up with their own private lives. some think that because its location is very convenient for them and now they would not find another good location like that with an economical price, due to the increase in land prices. Some have chosen the house with a beloved spouse and now he/she has passed away and they do not want to break the bond with that beloved one through changing their houses, while others say that their current house is convenient with their current physical condition, they got used to it and would not want to start over again with other surroundings. This is due to the effect of social surrounding on elderly decisions

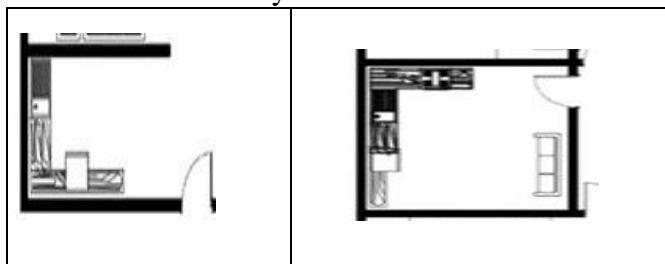
6.3.1.2 Accessibility

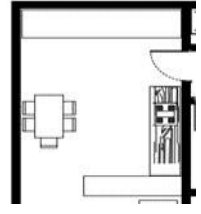
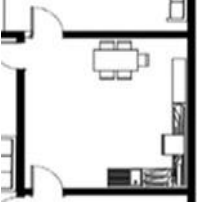

For access to the houses, in most of them there were in need to climb one or two stairs in order to reach the house, this is very common for houses in Iraq as they raise the level of the main floor through these steps according to construction techniques. The availability of these trends even in houses occupied by elderly is due to the reason that those houses were created or chosen in a time that today's old people were young and in their complete strength unaware of their future limitations that they might face. This is counted as obstacles in front of their entrance, because the stairs are without adding handrails to them. This is against the instructions of the scientists such as Grobe, Regan & Smith et al, (2008), who when evaluating physical access to their houses, they suggest that absence of handrails or ramps can affect the elderly's chances for going out and cause accidents such as falls.

6.3.1.3 Plan Layout

Comparing to kitchen layout samples from Bonenberg (2015), the most convenient kitchen layouts for elderly were found in 14 of houses out of 30 and their most common layouts were just like the figure. The other remaining 16 houses confirm the findings of Hrovitan, Sirok and Jevsnik for the elderly's poor education about the significance of those kitchen furniture and equipment's regarding their daily living.

Table 61: kitchen Layout



		
<p>Kitchen</p>	<p>Inventory form: 1, 3, 4, 5, 8, 10, 11, 14, 15, 17, 19, 20, 22, 29</p>	

Regarding bedrooms of elderly and as Simek (2013) was focusing on availability of good height of seats, it can be said that the explored houses were lacking of seats in the bedroom and there was not much attention given to it. Low levels of beds were also reasons for in adequacy of elderly bedrooms As for movement within the bedroom only 9 of the houses had to some point a convenient dimension for circulation of those people with movement equipment, which is again highlighted by Josephson, Fabacher and Rubenstein (1991). Although in the current world elderly are able to add some parts for their bedrooms for their ease of movement or circulation or getting out of bed such as bed cane or support rail, but still in the studied houses nobody has referred to it.

Table 62: Bedroom Conditions



	
Bedroom	Inventory form: 26, 24, 20, 17, 5, 1, 16, 19

There is another phenomenon in the bedrooms in the studied houses, which is, the bedrooms do not have any furniture in it, the reason for this is to save space, due to limited amount of space so the people gather to sleep in one room and this is totally against any rules of the elderly bedroom designs. It can compromise their safety and their comfortability all in once by increasing their risks of getting into accidents due to their already weak bone circumstances.



Figure 85: Inventory form 12

Within this regard only one bathroom of the studied houses had some requirements of elderly furniture in bathrooms, which was the installation of grab bars. As Stevens (2002) suggested that bathrooms of elderly should have grab bars that help them in saving their lives in case of any accidents, they make movement for elderly easier and

avoid risks. These grab bars should be added either on one or two sides of the walls. According to two levels of movement which are the levels of standing and sitting.

Mostly the floor materials were of non-slippery tiles. According to Pyoons, Sabata and Choi (2005) who suggest that thresholds should be avoided in bathroom levels within this regards only two of the houses had thresholds and the others have avoided it. (Inventory form 17 and 18). Within this regard it can be said that the houses have good conditions regarding avoidance of interior levels but, bad conditions regarding not providing any elements of elderly needs and not considering they might need it even in their future.

It can be also said that the planning concepts were mostly not according to those standards who propose that the rooms should be open to each other, avoid the use of lots of doors and corridors. But in relation to their rooms connections mostly they were in adequate conditions. As the main activity rooms such as bedroom and bathrooms were mostly connected, this is a very crucial point for elderly, especially at night as they might need to hget into bathrooms and inadequate dimensions or not being directly attached might increase risks on their lives. Also kitchen and dining places were connected, which are two important daily use spaces.

6.3.1.4 Aesthetics

Within this part it can be said that the elderly did not care much for the exterior part of their house as much as they cared for the interiors. They were expressing positive thoughts about it and were saying that as long as it fulfills our needs then it is satisfying. Regarding the usage of finishing materials, they were genuinely adequate of use but, lots of usage of tiles might create slippery floor for the elderly, and recommendations would be to try to use more of wooden floor. Also the increase in

the use of bright colors or not very high levels of contrast in colors, which nowadays it is an architectural trend in Northern Iraq to try to create extreme color contrasts, but regarding those houses occupied by elderly this is a point that needs to be taken into consideration.

6.3.1.5 Safety

A total percentage of 34.7% of the elderly in this study used mobility aid equipment and the rest 64 did not use it. This has the potential of increasing the falling risks even in their upcoming years as most of them were those elderly who were in their early stages of getting old. Within this part the absence of hand rails or ramps are major points that need to be discussed, as the elderly might be unaware of their needs for it , but it has essential effects in decreasing their levels of falling. Another point about the houses is the placement of rugs on the floor in the form of layers in many of the houses. this also increases the potentiality to get into accidents especially those rugs placed on the main path movements.

Also the placement of lots of furniture in some houses again compromises safety of the elderly and increases their potentials for accidents, interior aspects such as, inadequacy in furniture or their arrangements, issues of wet spaces, with lack of mobility equipment are all accounted as major reasons for accidents to happen to elderly and affecting their safety. Adding to this it can be seen that in lots of the houses sharp ended furniture have been used at least in one of the rooms, this is another point that should be considered in these houses. Such as it is stated in the study of Northridge, Nevitt and Kelsey, et al (1995) on having internal in adequacies like this and their potential to affect safety of the elderly and increase falling accidents. Northridge et al. (1995) described that in the USA, certain home hazards such as clutter

and hall rug problems are crucial factors in predicting falls among healthy, active older adults.

6.3.1.6 Services

A major issue for the elderly in their houses is the absence of adequate engineering services, especially electric services. This has been a point that have created lots of disturbance for everyone and especially for the elderly as they spend lots of time inside their houses and they would need electricity for every aspect of their daily living Significant as according to O'Sullivan, Donnelly and Mc Gill, et al (2012) on cold housing and health of elderly. They conclude that poor heat maintenance levels or those homes that are damp homes with poor heat insulation are linked to poor health in older people.

6.3.1.7 Greenery

The availability of greenery for the elderly is of major importance, as it makes them do their daily exercises or even if they did not want to do that. They would like to take care of their flowers and water them which is somehow also counted as a level of physical activity. Especially for those who are in their early stages of getting old and newly retired. They would like to have spaces like gardens to spend time in.

When their levels of correlations were investigated, the domains were all positively correlated, meaning that increase or improvement in any one of them, increases satisfaction with the overall housing quality. When the questions about satisfaction levels with the house domains were asked to the elderly, many of them were satisfied about their available conditions of housing. Although in some houses according to physical analysis the conditions of the elderly circulation paths were not adequate for them, but they were not expressing any complaining.

6.3.2 Neighborhood Satisfaction

After that the neighborhood was objectively divided to its main components which were location, safety and privacy, accessibility to daily life services and quietness.

After that their levels of satisfaction within these domains were investigated.

Table 63: Domains of Neighborhood Satisfaction

Theme	Sub- Theme	
Neighborhood Satisfaction	Location	
	Safety and Privacy	
	Accessibility to daily life services	Public parks
		Shopping services
		Health centers
Public transportation		

6.3.2.1 Location

The location of house was determined according to the variety of people's going out and it was of major importance for them. Lots of the people were saying the location is everything about their houses. as majority of them had to go out twice or three times a day. Also lots of them were satisfied with the location of their places, while some of them had to choose it according to some limitations. But mostly with distance it was adequate the location of the places.

6.3.2.2 Safety and Privacy

Safety of the place is a very crucial element for the elderly as they are more vulnerable than the younger ones. It can be said that regarding robbery or crime, there were adequate conditions and they were safe. But regarding their being compromised to

accidents, some of the houses were located near highway streets and cars were moving very fast within those districts. This again compromises the lives of those elderly and might cause traffic accidents. As an environment that encourages outdoor traffic, increase fear of the elderly towards not going out because of not getting into accidents. Adding to this there were good privacy within the neighborhoods, they were calm and quiet and the houses were built in a way that provided full privacy from being observed for its participants.

6.3.2.3 Accessibility to Daily Life Services

Having adequate access to those open parks or greeneries that encourage physical activity and mind relief for the elderly, is another important aspect for them. According to the study elderly were expressing dissatisfaction about availability of such places for them to go and spend their time in. Especially, those who were in their early stages of getting old, they were expressing high levels of dissatisfaction. This is due to the reason that these spaces also encourage social interaction, which is another way of time spending and relaxing for the elderly. Also it has the ability to make them have better physical conditions through exercising and encouraging them for daily walking, as Mowen et al (2007) suggests that having public parks within ease of access is positively related with physical activity levels through its increasing of their desires to walk.

There were differing levels of access to these facilities, it can be said that access to shopping services was convenient as there is lots of markets and shopping places near every residential district. But access to health centers is crucial, due to the placement of the health centers in those districts that are easy to access and can attract patients, and due to the location of some of the houses, there was limited access to it. Also

regarding the availability of transportation spots that can be reached by the elderly, in some areas again due to their location there was limited access to them. As referred to by Mollenkopf, Hieber and Wahl (2011) in their study on elderly's perceptions about out of home movements within ten years. With decrease in mobility movements comes decrease in satisfaction of transportation opportunities, and those activities done outside of the home. Although in their study, they saw increasing in public transport satisfaction levels. And within their final findings they state that being able to maintain adequate movement outside of their houses is counted as major importance regarding the transferring of people's ages from the final stages of midlife to their older ages.

Then the relations of these domains were investigated in order to determine their effect on neighborhood satisfaction, within this regard the more there were satisfaction with location, the less there was satisfaction with availability of public parks and public transportation centers. This gives us the fact that although the houses were located in good locations but the availability of local open spaces for spending time or local transportation centers in order for those elderly who do not use cars be able to walk to it and use it in order to reach their desired spaces. Also there were low levels of satisfaction between the participants about having open places or greenery for them to go to and spend their times in or even to use it as a place for physical activity. Another fact that should be said is that there is adequate amount of shopping places within adequate dimensions for the elderly as in every block you might have more than one shop for your daily needs in.

In conclusion it can be said that, generally the elderly in Northern Iraq had good housing conditions, although some of the physical characteristics of their houses were not convenient for them. But the aim of the study was to find out the elderly perception

about their lives and residential environment. According to them, their houses were very good and they did not ask for anything else in it just better engineering services. The only complaining from the elderly and it can be said from the rest of the population of the elderly is inadequacy in engineering services such as heating and cooling conditions with water and electricity. The main reason for insufficient of engineering services is lack of appropriate amount of electricity, it has affected the lives of elderly in every season as in winter there is not enough amount of electricity to open the heating machines or in summer there is no enough amount of electricity to open the cooling machine. Also it has affected elderly lives within their houses, as lack of electricity makes them spend their day in dark rooms especially when there is inadequate natural sunlight coming from the rooms.

Although some were complaining about their neighborhood aspects and were dissatisfied, but again those who were satisfied, their ranges were more. Within this regard it can be said that the elderly was satisfied with their whole residential conditions. In terms of the effect of this satisfaction on their quality of life. The domains of quality of life which were health, economy and surrounding environment of social and residential were investigated. Although the levels of satisfaction with health and economy were low, but they had positive relations with the residential environment only with the social domains of gender, age and marital status they were having negative relationships. Within this regard it can be said that the satisfaction levels were directing quality of life of the elderly.

6.4 Implications of the Study

Since architecture is all about the ease of life of the human beings and their living, because they are the first users of architecture, especially regarding their living spaces, and as the life of human beings consists of childhood , youth and old age (Low, Molzahn, & Schopflocher, 2013). So they are using these living spaces in various stages of their life and old age is one of those stages. This study is expected to open more doors for studying the topic of elderly housing conditions and quality of life in Northern- Iraq, and more focus be given to the elderly residential environments especially the environment's physical characteristics.

Through providing these types of data for the civil society and non-governmental organizations they are expected to have major contributions regarding supporting the elderly and forwarding these types of issues to the higher governmental departments in order to provide reliable solutions for them. It will also guide home based care and voluntary community based programs that have access to a larger number of services that are more centered on clients. Also, deliver more support and care to older persons who are in need of these types of help and services. Adding to this, it is expected to contribute in providing more safe and healthy residential environments that are suitable with physical and cognitive needs of the elderly living in our current time or those who are getting old. As stated by Gobbens and Van Assen (2017) for supporting the older people's independent living, higher related governmental fields need to pay special attention to residents and housing that support independent living in older people. It will also promote for health and social care professionals and policymakers to carryout interventions, in particular focusing on housing, residents, what satisfies them and what does not.

6.5 Further Recommendations

This study was focused on those elderly who were living in the central governorate of Sulaimanyah and who were having adequate economic conditions. As a point for future research, it can be focused on the wider surrounding of the governorate and those who have low income conditions as they are those types who live in those areas. A larger number of late stages of elderly could be concluded to see their perception about their houses as they are the most physically challenged minority. Also a distinction could be done between the perception of men and women to distinguish if the levels of residential satisfaction are differing according to gender such as the previously made studies or not. Also, this study can promote for more attention for the dimensions and needs of those houses that are occupied by the elderly, through enlightening their surroundings about their difficulties and needs, especially when they reach higher levels of getting old.

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APPENDICES

Appendix A: Inventory form: 1

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 1	Location: Rozh City	Site Plan	Building View
Type of Residential: Apartment			
Floor No: Ground floor			
Construction Date: 2009			
Area: 110 sq.	User Status: Owner		
Toilet and Bath		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
movement specialized equipment		special beds for sleeping			
specialized equipment for WC		specialized equipment for bathroom			
Aesthetics					
size of windows is convenient		visual communication with outside			
natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix B: Inventory Form: 2

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 2	Location: Pak City	Site Plan	Building View
Type of Residential: Apartment			
Floor No: Ground floor			
Construction Date: 2008			
Area: 150 sq.	User status: Owner		
Toilet and Bath	Plan	Entrance	
			
Kitchen	Bed Room	Living Room	
			

Type of Housing				
Detached house		Semi- detached house		
Attached house		Apartment		
Plan characteristics				
Steps in entrance of the house		Hand rails are added for the stairs		
Ramp for entering the house		There is an elevator		
The rooms have adequate spaces enough for the family				
Easily transfer from a room to another				
Space for movement regarding using equipment				
The kitchen is divided according to elderly dimensions				
The bedroom is divided according to elderly dimensions				
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly		
Overcrowding of furniture		Some rooms do not have furniture		
Interior levels		Furniture have angled surfaces		
furniture have smooth surfaces		The floor is slippery		
Engineering services				
Adequate of heating/cooling		Adequate amount of lighting		
Adequate amount of water				
Elderly Equipment				
movement specialized equipment		special beds for sleeping		
specialized equipment for WC		specialized equipment for bathroom		
Aesthetics				
size of windows is convenient		visual communication with outside		
natural sunlight		There is a garden within the house		
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other
Wall mat.	Tiles	Cement	Cladding	Other
Neighborhood				
Access for shopping services		Access for open spaces		
Access for health centers		Access for public transportation spots		

Appendix C: Inventory Form: 3

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 3	Location: Heron city	Site Plan	Building View
Type of Residential: Apartment			
Floor No: Ground Floor			
Construction Date: 2015			
Area: 132 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			



Type of Housing					
Detached house			Semi- detached house		
Attached house			Apartment		
Living	Alone		With kids/partner		With house keeper
Plan characteristics					
Steps in entrance of the house			Hand rails are added for the stairs		
Ramp for entering the house			There is an elevator		
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms			The rugs on the floor create obstacles for elderly		
Overcrowding of furniture			Some rooms do not have furniture		
Interior levels			Furniture have angled surfaces		
furniture have smooth surfaces			The floor is slippery		
Engineering services					
Adequate heating/cooling			Adequate amount of lighting		
Adequate amount of water					
Elderly Equipment					
movement specialized equipment			special beds for sleeping		
specialized equipment for WC			specialized equipment for bathroom		
Aesthetics					
size of windows is convenient			visual communication with outside		
natural sunlight			There is a garden within the house		
Floor mat.	Marble tiles		Ceramic tiles	Concrete	Other
Wall mat.	Tiles		Cement	Cladding	Other
Neighborhood					
Access for shopping services			Access for open spaces		
Access for health centers			Access for public transportation spots		

Appendix D: Inventory Form: 4

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 4	Location: Gully shar	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 3 rd floor			
Construction Date: 2014			
Area: 100 sq.	User Status: Owner		
Toilet and Bath		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			

Type of Housing					
Detached house			Semi- detached house		
Attached house			Apartment		
Living	Alone		With kids/partner	With house keeper	
Plan characteristics					
Steps in entrance of the house			Hand rails are added for the stairs		
Ramp for entering the house			There is an elevator		
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms			The rugs on the floor create obstacles for elderly		
Overcrowding of furniture			Some rooms do not have furniture		
Interior levels			Furniture have angled surfaces		
furniture have smooth surfaces			The floor is slippery		
Engineering services					
Adequate heating/cooling			Adequate amount of lighting		
Adequate amount of water					
Elderly Equipment					
movement specialized equipment			special beds for sleeping		
specialized equipment for WC			specialized equipment for bathroom		
Aesthetics					
size of windows is convenient			visual communication with outside		
natural sunlight			There is a garden within the house		
Floor mat.	Marble tiles		Ceramic tiles	Concrete	Other
Wall mat.	Tiles		Cement	Cladding	Other
Neighborhood					
Access for shopping services			Access for open spaces		
Access for health centers			Access for public transportation spots		

Appendix E: Inventory Form: 5

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 5	Location: Goizha city	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 5 th floor			
Construction Date: 2012			
Area: 177 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
movement specialized equipment		special beds for sleeping			
specialized equipment for WC		specialized equipment for bathroom			
Aesthetics					
size of windows is convenient		visual communication with outside			
natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix F: Inventory Form: 6

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 6	Location: Slemani height	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 13 th floor			
Construction Date: 2016			
Area: 146 sq.Status:	User Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding using equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate of heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
movement specialized equipment		special beds for sleeping			
specialized equipment for WC		specialized equipment for bathroom			
Aesthetics					
size of windows is convenient		visual communication with outside			
natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix G: Inventory Form: 7

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 7	Location: Doctors city	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 3rd floor			
Construction Date: 2015			
Area: 150 Status: sq. Owner	User		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding using equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate of heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
movement specialized equipment		special beds for sleeping			
specialized equipment for WC		specialized equipment for bathroom			
Aesthetics					
size of windows is convenient		visual communication with outside			
natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix H: Inventory Form: 8

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 8	Location: German village	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 9 th floor			
Construction Date: 2000			
Area: 145 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house			Semi- detached house		
Attached house			Apartment		
Living	Alone		With kids/partner	With house keeper	
Plan characteristics					
Steps in entrance of the house			Hand rails are added for the stairs		
Ramp for entering the house			There is an elevator		
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms			The rugs on the floor create obstacles for elderly		
Overcrowding of furniture			Some rooms do not have furniture		
Interior levels			Furniture have angled surfaces		
furniture have smooth surfaces			The floor is slippery		
Engineering services					
Adequate heating/cooling			Adequate amount of lighting		
Adequate amount of water					
Elderly Equipment					
movement specialized equipment			special beds for sleeping		
specialized equipment for WC			specialized equipment for bathroom		
Aesthetics					
size of windows is convenient			visual communication with outside		
natural sunlight			There is a garden within the house		
Floor mat.	Marble tiles		Ceramic tiles	Concrete	Other
Wall mat.	Tiles		Cement	Cladding	Other
Neighborhood					
Access for shopping services			Access for open spaces		
Access for health centers			Access for public transportation spots		

Appendix I: Inventory Form: 9

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 9	Location: Qaiwan city	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 5 th floor			
Construction Date: 2007			
Area: 140 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

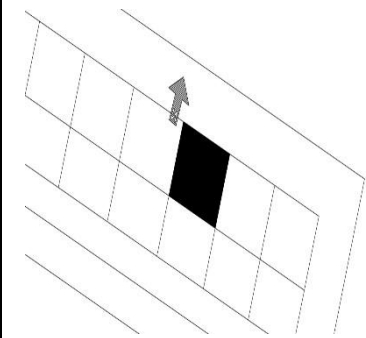


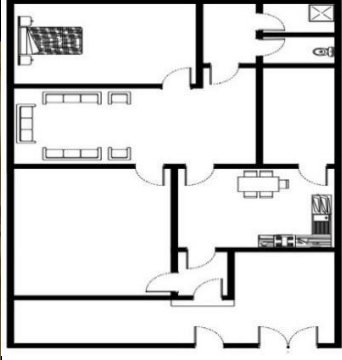



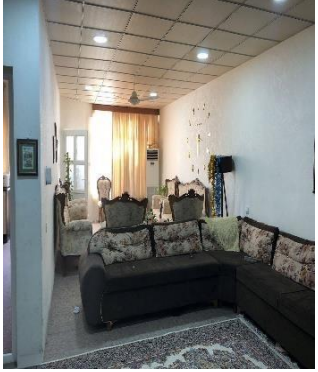
Type of Housing					
Detached house			Semi- detached house		
Attached house			Apartment		
Living	Alone		With kids/partner	With house keeper	
Plan characteristics					
Steps in entrance of the house			Hand rails are added for the stairs		
Ramp for entering the house			There is an elevator		
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms			The rugs on the floor create obstacles for elderly		
Overcrowding of furniture			Some rooms do not have furniture		
Interior levels			Furniture have angled surfaces		
furniture have smooth surfaces			The floor is slippery		
Engineering services					
Adequate heating/cooling			Adequate amount of lighting		
Adequate amount of water					
Elderly Equipment					
movement specialized equipment			special beds for sleeping		
specialized equipment for WC			specialized equipment for bathroom		
Aesthetics					
size of windows is convenient			visual communication with outside		
natural sunlight			There is a garden within the house		
Floor mat.	Marble tiles		Ceramic tiles	Concrete	Other
Wall mat.	Tiles		Cement	Cladding	Other
Neighborhood					
Access for shopping services			Access for open spaces		
Access for health centers			Access for public transportation spots		

Appendix J: Inventory Form: 10

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 10	Location: Delan City	Site Plan	Building View
Type of Residential: Apartment			
Floor No: 4 th floor			
Construction Date: 2007			
Area: 140 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			



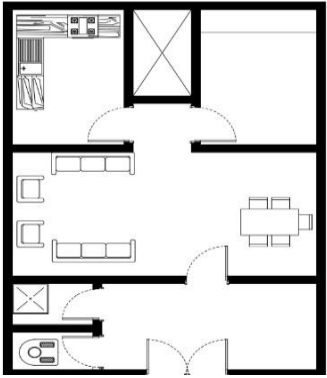




Type of Housing					
Detached house			Semi- detached house		
Attached house			Apartment		
Living	Alone		With kids/partner	With house keeper	
Plan characteristics					
Steps in entrance of the house			Hand rails are added for the stairs		
Ramp for entering the house			There is an elevator		
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms			The rugs on the floor create obstacles for elderly		
Overcrowding of furniture			Some rooms do not have furniture		
Interior levels			Furniture have angled surfaces		
furniture have smooth surfaces			The floor is slippery		
Engineering services					
Adequate heating/cooling			Adequate amount of lighting		
Adequate amount of water					
Elderly Equipment					
movement specialized equipment			special beds for sleeping		
specialized equipment for WC			specialized equipment for bathroom		
Aesthetics					
size of windows is convenient			visual communication with outside		
natural sunlight			There is a garden within the house		
Floor mat.	Marble tiles		Ceramic tiles	Concrete	Other
Wall mat.	Tiles		Cement	Cladding	Other
Neighborhood					
Access for shopping services			Access for open spaces		
Access for health centers			Access for public transportation spots		

Appendix K: Inventory Form: 11

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 11	Location: Kanyba	Site Plan	Building View
Type of Residential: semi-detached house			
Floor No: one floor			
Construction Date: 2000			
Area: 150 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
movement specialized equipment		special beds for sleeping			
specialized equipment for WC		specialized equipment for bathroom			
Aesthetics					
size of windows is convenient		visual communication with outside			
natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix L: Inventory form: 12

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 12	Location: Kanykurda	Site Plan	Building View
Type of Residential: Attached house			
Floor No: One floor			
Construction Date: 1990			
Area: 72 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
movement specialized equipment		special beds for sleeping			
specialized equipment for WC		specialized equipment for bathroom			
Aesthetics					
size of windows is convenient		visual communication with outside			
natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix M: Inventory Form: 13

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 13	Location: Mala dawd	Site Plan	Building View
Type of Residential: Attached house			
Floor No: One floor			
Construction Date: 2000			
Area: 115 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding using equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate of heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix N: Inventory Form: 14

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 14	Location: Majid bag	Site Plan	Building View
Type of Residential: semi- detached house			
Floor No: Two floor			
Construction Date: 2000			
Area: 115 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			




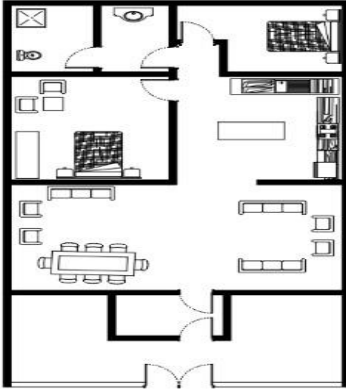




Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix O: Inventory Form: 15

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 15	Location: Raparin	Site Plan	Building View
Type of Residential: semi- detached house			
Floor No: One floor			
Construction Date: 2005			
Area: Status: sq. Owner	130 User		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix P: Inventory Form: 16

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 16	Location: Majid bag	Site Plan	Building View
Type of Residential: semi-detached house			
Floor No: One floor			
Construction Date: 2000			
Area: 150 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix Q: Inventory Form: 17

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 17	Location: Malkandy	Site Plan	Building View
Type of Residential: Attached house			
Floor No: Two floor			
Construction Date: 2005			
Area: 145 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix R: Inventory Form: 18

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 18	Location: Tooy Malik	Site Plan	Building View
Type of Residential: semi-detached house			
Floor No: Two floor			
Construction Date: 2010			
Area: 100 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix S: Inventory Form: 19

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 19	Location: Sarkarez	Site Plan	Building View
Type of Residential: Attached house			
Floor No: Two floor			
Construction Date: 2015			
Area: 145 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix T: Inventory Form: 20

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 20	Location: German village	Site Plan	Building View
Type of Residential: semi- detached house			
Floor No: Two floor			
Construction Date: 2003			
Area: 145 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix U: Inventory Form: 21

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 21	Location: Eskan	Site Plan	Building View
Type of Residential: semi-detached house			
Floor No: Two floor			
Construction Date: 1985			
Area: 175 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix V: Inventory Form: 22

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 22	Location: Tooy malik	Site Plan	Building View
Type of Residential: semi-detached house			
Floor No: Two floor			
Construction Date: 2010			
Area: 145 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen	Bed Room	Living Room	
			





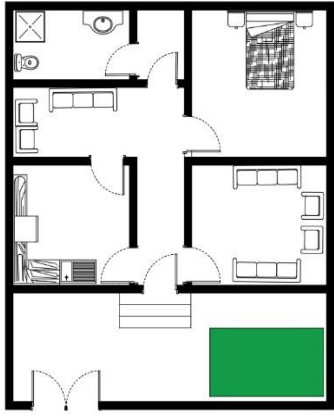




Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix W: Inventory Form: 23

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 23	Location: Sarchinar	Site Plan	Building View
Type of Residential: Attached house			
Floor No: One floor			
Construction Date: 2012			
Area: 140 sq.	User Status: Owner		
Toilet and Bath:		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix X: Inventory From: 24

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 24	Location: Raparin	Site Plan	Building View
Type of Residential: Attached house			
Floor No: Two floor			
Construction Date: 2009			
Area: 100 sq.	User status: Owner		
Toilet and bath		Plan	Entrance
 			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix Y: Inventory Form: 25

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 25	Location: Bakrajo	Site Plan	Building View
Type of Residential: Semi- detached house			
Floor No: One floor			
Construction Date: 2001			
Area: 100 m2	User Status: Owner	Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Appendix Z: Inventory Form: 26

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq				
No : 26	Location: Goizha	Site Plan	Building View	
Type of Residential: Attached house				
Floor No: Two floor				
Construction Date: 2015				
Area: 150 sq.	Status: Owner	Plan	Entrance	
Toilet and bath				
 	Kitchen			Bed Room
				

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Inventory Form: 27

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 27	Location: Tooy Malik	Site Plan	Building View
Type of Residential: Attached house			
Floor No: Two floor			
Construction Date: 2010			
Area: 150 sq.	Status: Owner		
Toilet and bath		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			



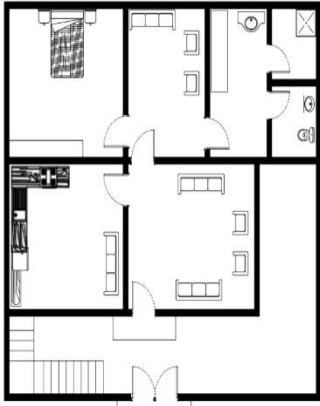
Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Inventory Form: 28

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 28	Location: Kareza wshk	Site Plan	Building View
Type of Residential: Attached house	Floor No: Two floor		
Construction Date: 2014			
Area: 150 sq.			
Toilet and bath	Plan	Entrance	
			
Kitchen	Bed Room	Living Room	
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Inventory form: 29

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 29	Location: Ibrahim Ahmad	Site Plan	Building View
Type of Residential: Attached house			
Floor No: Two floor			
Construction Date: 2010			
Area: 150 sq.	Status: Owner		
Toilet and bath		Plan	Entrance
			
Kitchen		Bed Room	Living Room
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Inventory Form: 30

A Study on Residential Satisfaction and Quality of Life of Elderly in Northern Iraq			
No : 30	Location: Bakrajo	Site Plan	Building View
Type of Residential: Attached house			
Floor No: Two floor			
Construction Date: 2015			
Area: 100 sq.	Status: Owner		
Toilet and bath	Plan	Entrance	
			
Kitchen	Bed Room	Living Room	
			

Type of Housing					
Detached house		Semi- detached house			
Attached house		Apartment			
Living	Alone	With kids/partner	With house keeper		
Plan characteristics					
Steps in entrance of the house		Hand rails are added for the stairs			
Ramp for entering the house		There is an elevator			
The rooms have adequate spaces enough for the family					
Easily transfer from a room to another					
Space for movement regarding movement equipment					
The kitchen is divided according to elderly dimensions					
The bedroom is divided according to elderly dimensions					
Adequate amount of furniture within the rooms		The rugs on the floor create obstacles for elderly			
Overcrowding of furniture		Some rooms do not have furniture			
Interior levels		Furniture have angled surfaces			
furniture have smooth surfaces		The floor is slippery			
Engineering services					
Adequate heating/cooling		Adequate amount of lighting			
Adequate amount of water					
Elderly Equipment					
Movement specialized equipment		Special beds for sleeping			
Specialized equipment for WC		Specialized equipment for bathroom			
Aesthetics					
Size of windows is convenient		Visual communication with outside			
Natural sunlight		There is a garden within the house			
Floor mat.	Marble tiles	Ceramic tiles	Concrete	Other	
Wall mat.	Tiles	Cement	Cladding	Other	
Neighborhood					
Access for shopping services		Access for open spaces			
Access for health centers		Access for public transportation spots			

Survey questionnaire

Dear Sir/Madam

I'm an MS student in Eastern Mediterranean university in faculty of Architecture in the Turkish Republic of Northern Cyprus, conducting a research under the supervision of Assist. Prof. Dr. Nazife Ozay. The topic of my study is *A Study on Residential Conditions and Life Quality of the Elderly in Northern Iraq*.

Previous research has consistently shown that the elderly spend most of their times inside their houses which has a big effect on the aging process by providing comfortable and adequate residential environments for them. Residential satisfaction has become a wide topic for researchers to study about especially for the elderly and the elderly in Sulaymaniyah city have no different than those around the world and their residential conditions should be studied. The aim of this survey is to assess, investigate and provide information about the elderly's residential conditions and life quality regarding their level of satisfaction among their residential environments. In order to provide the latest evidence and initial analysis on the housing condition and satisfaction and life quality of the elderly in Sulaymaniyah city in Northern Iraq.

Please, I respectfully ask you to complete the questionnaire and be assured that the data collected will be kept confidential and no firm, organisation or individual will be identified in the thesis or in any report or publication based on this research.

Thanks in advance for your co-operation.

Yours sincerely

Please tick (✓) the appropriate answer or provide information in the blank provided.

A- Demographics:

- 1- Gender : () Male () Female () Other...
- 2- Age: () 60- 65 () 66 -70 () 71 +
- 3- Identity: () Kurdish () Arabic () Other...
- 4- Marital status: () Married () Divorced () Widow
() Single
- 5- Education: () Elementary school () Secondary school
() High school () University
() Post graduate education
- 6- Job status: () Own work () Governmental work
() Retired () No work () Other....
- 7- Living status: () Alone () With husband/wife
() With children/relatives
() With a house keeper
- 8- Monthly income: () No income
() 500, 000 –799, 000 IQD
() 800, 000 – 999, 000 IQD
() 1, 000, 000 +
- 9- Salary receiving period: () No salary () Once in one month
() Once in two months () Once in three months
() More
- 10- Long term health: () Heart disease () Blood pressure
() Dementia () Diabetics
() Physical disability () Depression
() Don't have any () Other

B- Residential issues

- 1- Housing status: () Owner () Tenant () Other...
- 2- A- housing type: () Apartment () Detached house
() Semi-detached house () Other

B- If it is apartment on which floor are you living?

C- If it is detached/ semi-detached house, how many floors do you have?

- 3- Living period: () 0 – 5 years () 6 – 10 years
() 11- 16 years () 17+
- 4- House circulation: () There is the need to climb stairs (one or two steps)
() There is an elevator
() I'm living in the ground floor () Other....
- 5- Number of rooms: () 1 + 1 room () 2 + 1 room
() 3 + 1 room () More

C- Special needs and equipment modifications:

- 1- Mobility aids equipments () Don't use () Wheel chair
() Walking stick () Front wheel walker
() Other.....
- 2- Special additions/ changes for the house because of the equipments :
() Not added () Ramps

- () Hand rails () Other
- 3- Special beds: () Don't use () Bed rail
 () Bed raisers () Bed wedge
 () Other.....
- 4- Shower : () Don't use () Shower bench
 () Bath tub chair () Bath rail
 () Other
- 5- WC: () Don't use () Toilet safety rails
 () Elevated toilet seats () Other

D- Frequency going out:

- 1- Daily going out: () Don't go out () Once in a day
 () Other.....
- 2- Weekly going out: () Don't go out () Once in a week
 () Other.....
- 3- Factors prevent going out: () Housing location
 () Not enough energy for going out
 () Physical disabilities
 () Not efficient vertical circulation
 () having diseases
 () Other

E- Housing finishing materials:

1- Living spaces :

- a- Floor : () Marble tiles () Ceramic tiles
 () Concrete () Other
- b- Wall : () Tiles () Concrete
 () Cement () Stone
 () Other

- 2- Outdoor spaces: () Tiles () Concrete
 () Cladding () Other

3- Wet spaces:

- A- Floor: () Tiles () Concrete
 () Cement
 () Stone () Other.....
- B- Wall: () Tiles () Concrete
 () Other...

F - Housing status:

- 1- A- Do you like to do certain activities in your house?
 () Yes () No
 B- If yes, what is it?
- 2- A- Do you have a specific space/ room where you spend most of your time in?
 () Yes () No
 B- If yes, which room is it?
- C- What do you like to do there?
- 3- A- Did accidents happen to you within your house?
 () Yes () No
 B- If yes, why did it happen?

4- A- Are you not going outside of house because of fear from accidents?

() Yes () No

B- If yes, what type of accidents?

G- Satisfaction

There are 20 questions here related to your satisfaction level. Please read each question carefully and decide which level of satisfaction defines your situation better.

Please indicate your answer by putting a tick (✓) in the appropriate box:

(0) Very Dissatisfied (1) Dissatisfied

(2) Rather Satisfied (3) Satisfied

(4) Very Satisfied

		VD	D	RS	S	VS
Economy	A- Are you satisfied with price of the house?	0	1	2	3	4
	B- Are you satisfied with your financial status?	0	1	2	3	4
Health	A- Are you satisfied with your daily life activities?	0	1	2	3	4
	B- Are you satisfied with your health situation regarding these past few years?	0	1	2	3	4
Location	A- Are you satisfied with your neighbourhood?	0	1	2	3	4
	B- Are you satisfied with the availability of activity centers/ public parks/ gathering spaces near you?	0	1	2	3	4
	C- Are you satisfied with availability of shopping /daily needs places near you?	0	1	2	3	4
	D- Are you satisfied with availability of health centers/ hospitals near you?	0	1	2	3	4
	E- Are you satisfied with availability of public transportation stations near you?	0	1	2	3	4
	F- Are you satisfied from the location of your house?	0	1	2	3	4

Housing Quality	A- Are you satisfied with the size of the spaces?	0	1	2	3	4
	B- Are you satisfied with functional relation of the spaces?	0	1	2	3	4
	C- Are you satisfied with horizontal circulation (corridors,ramps,..)?	0	1	2	3	4
	D- Are you satisfied from vertical circulation (elevator, stairs,...)?	0	1	2	3	4
	E- Are you satisfied from heating and cooling conditions?	0	1	2	3	4
	F- Are you satisfied from the amount of water/electricity supply?	0	1	2	3	4
	G- Are you satisfied with the amount of light from windows?	0	1	2	3	4
	H- Are you satisfied with the visual communication with outside?	0	1	2	3	4
	I- Are you satisfied with your housing quality?	0	1	2	3	4
	J- Are you satisfied from the architectural form/ aesthetic characteristics of your house?	0	1	2	3	4

Thank you for your cooperation!

Consent Form for Interview

Dear respected participant,

I am an MS student in department of Architecture and conducting my thesis on the topic *A Study on Residential Conditions and Life Quality of the Elderly in Northern Iraq*. This interview aims to assess, investigate and provide information about the elderly's residential conditions and life quality regarding their level of satisfaction among their residential environments. In order to provide the latest evidence and initial analysis on the housing condition and satisfaction and life quality of the elderly in Sulaymaniyah city in Northern Iraq.

Your participation is completely voluntary. No risks and no direct benefits are anticipated as a result of your participation in this study. You are free to withdraw at any time without giving any reason and without existing any negative consequences. In addition, if you do not wish to answer any particular question or questions, you are free to decline.

It is very important that you answer all the questions sincerely. The interview informations will be written by the researcher. The informations of this interview will be used only for analysis. Your identity and individual responses will be kept confidential and be used only for research purpose. Extracts from the interview, which you would not be personally identified may be used in any conference presentation, report or journal article developed as a result of the research. No other use will be made of the informations without your written permission. And that no one except the researcher and her supervisor will be allowed to access to the original written information.

Further information can be obtained directly from me or my thesis supervisor.

Thank you for your participation and cooperation.

A study on Residential Conditions and Life Quality of the Elderly in Northern Iraq

Semi-Structured Interview questions

- 1- Why did you choose to live in this house/apartment? According to what standards did you decide to choose this house/apartment?
- 2- What is the first thing that comes to your mind when you think about your house/apartment?
- 3- What is your idea of being comfortable within your house?
- 4- What is your idea about the residential needs of the elderly?
- 5- Do you have any other points you want to add?

Thank you for your co- operation.

Consent form for observation

Dear respected participant,

I am an MS student and conducting my thesis on the topic *A Study on Residential Conditions and Life Quality of the Elderly in Northern Iraq*. The aim of this observation process is to assess, investigate and provide information about the elderly's residential conditions and life quality regarding their level of satisfaction among their residential environments. In order to provide the latest evidence and initial analysis on the housing condition and satisfaction and life quality of the elderly in Sulaymaniyah city in Northern Iraq.

In this process you will be asked to perform your typical daily activities and the researcher will sit in the same room, quietly observing and taking notes. You can feel free to ask the researcher if you have any notes or questions.

Your participation is completely voluntary. No risks and no direct benefits are anticipated as a result of your participation in this study. You are free to withdraw at any time without giving any reason and without existing any negative consequences. In addition, if you do not want any particular activity or activities of yours to be observed by the researcher or be taken notes about, you are free to decline.

The observation notes will be written by the researcher. The notes will be used only for analysis. Your identity will be kept confidential and be used only for research purpose. Extracts from the observation, which you would not be personally identified may be used in any conference presentation, report or journal article developed as a result of the research. No other use will be made of the notes without your written permission. And that no one except the researcher and her supervisor will be allowed to access to the original written information.

Further information can be obtained directly from me or my thesis supervisor.

Thank you for your participation and cooperation.


Avy Nazar Darband Faqra
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Assist. Prof. Dr. Nazife Ozay
MS Thesis Supervisor
Faculty of Architecture
Eastern Mediterranean University
Email: Nazife.ozay@emu.deu.tr

Consent form

I consider that I have read and understand the main purpose of this observation, and how the data will be used. Thus, I agree to take part in this observation process.

Name- Surname:

Date:

Signature: