

**SOCIAL ENGAGEMENT AMONG ELDERLY  
POPULATION: EMPIRICAL EVIDENCE BASED ON  
MICRO DATA FROM ISLAMABAD**



By

**Sadia Abdullah**

PIDE School of Public Policy  
Pakistan Institute of Development Economics

Supervised By

**Dr. Mahmood Khalid**

Senior Research Economist  
Pakistan Institute of Development Economics  
Islamabad

&

**Dr. Muhammad Jamil**

Associate Professor  
School of Economics  
Quaid-i-Azam University  
Islamabad

**2020**



Pakistan Institute of Development Economics, Islamabad

*PIDE School of Public Policy*

**CERTIFICATE**

This is to certify that this thesis entitled: “SOCIAL ENGAGEMENT AMONG ELDERLY POPULATION: EMPIRICAL EVIDENCE BASED ON MICRO DATA FROM ISLAMABAD” submitted by Ms. Sadia Abdullah accepted in its present form by the School of Public Policy, Pakistan Institute of Development Economics (PIDE), Islamabad as satisfying the requirements for partial fulfillment of the degree in Master of Philosophy in Environmental Economics.

Supervisor:

**Dr. Mahmood Khalid,**  
Senior Research Economist,  
Pakistan Institute of Development Economics,  
(PIDE) Islamabad.

Co-Supervisor:

**Dr. Muhammad Jamil**  
Professor of Economics, SBP Memorial Chair  
Kashmir Institute of Economics  
The University of Azad Jammu & Kashmir,  
Muzaffarabad.

External Examiner:

**Dr. Anwar Shah**  
Associate Professor,  
School of Economics, Quaid-i-Azam University,  
Islamabad.

Head,  
PIDE School of Public Policy:

**Dr. Abedullah**  
Chief of Research/HOD  
Pakistan Institute of Development Economics,  
(PIDE) Islamabad.

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

*Dedicated to the senior citizens of Pakistan*

## Declaration Form

I *Sadia Abdullah* hereby state that my MPhil thesis titled **“Social Engagement Among Elderly Population: Evidence Based on Micro Data from Islamabad”** is my own work and has not been submitted previously by me for taking any degree from this university Pakistan Institute of Development Economics Islamabad, Pakistan or anywhere else in the country/world.

At any time if my statement is found to be incorrect even after my Graduation the university has the right to withdraw my MPhil degree.

Date: 01- 09- 2020

Name of student:

Sadia Abdullah.

## **Acknowledgement**

First and foremost, I am extremely thankful to Allah Almighty for blessing me with the strength and ability to achieve my aim and enlighten me with knowledge.

I would like to extend my gratitude to Dr. Muhammad Jamil and Dr. Mahmood Khalid for their guidance and cooperation throughout my MPhil degree. I would not have been able to accomplish my target without their encouragement and support even during pandemic.

My special thanks goes to my parents who always motivated and supported me through every thick and thin on the journey towards completion of thesis. Besides financial support, they always stood by my side and boosted my morale. I would also like to thank my siblings especially my sister, Hadia Abdullah, who always helped me in every possible manner.

I would like to acknowledge all my fellow researchers who contributed in bringing this study into existence. Special thanks goes to my respected seniors; Nazia Malik, who guided me from the beginning to the end and Saira Habib for her valuable assistance in the data collection process.

Thanks is a small word to express my gratitude to my friends who played the role of a family when I was away from home and listened to my catharsis every time. This pandemic was enough to ruin my research but after Allah, being around these amazing people brought me here. Last but not the least, I am grateful to PIDE for providing a healthy and conducive to learning environment.

**Sadia Abdullah.**

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## **Abstract**

*Ageing is a worldwide emerging problem especially for developing countries. Neglected is the speed and significance of the increasing proportion of elderly population. WHO defines the concept of 'active ageing' which consists of 3 components; health, social participation and security. This study emphasizes the phenomenon of social engagement among elderly population of Islamabad prior to, and elderhood as it is vital to their health and overall well-being. Descriptive statistics and parametric test is used to explore the level of social engagement prior to, and during elderhood. Different sources are also discussed with respect to their relationship with social engagement. Results show that there is no structural shift in social engagement prior to, and elderhood for the elderly population but the composition varies.*

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of the study

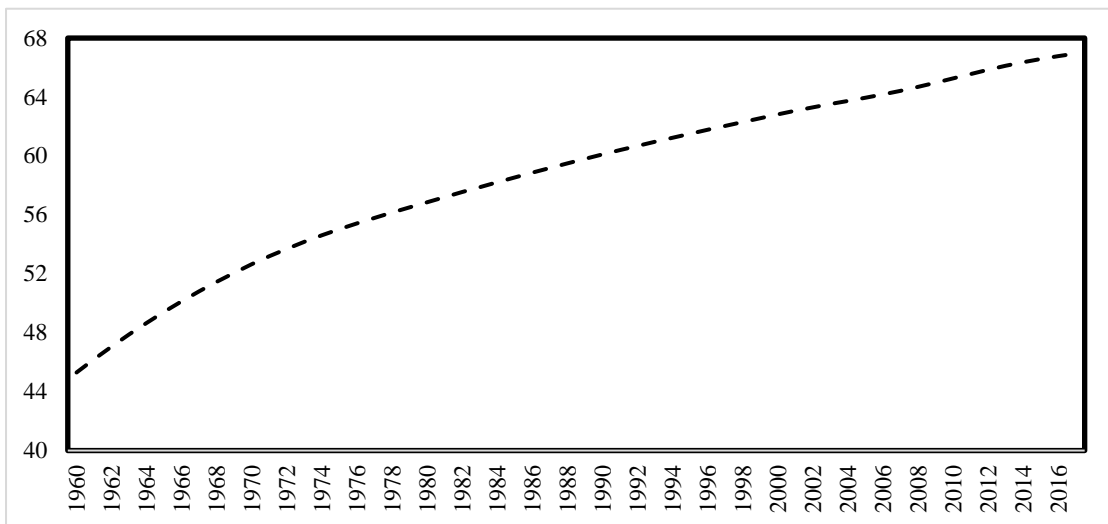
Population throughout the world is ageing: nearly every country in the world is undergoing growth in proportion of older persons in their population. It is a consequence of gap between variations in fertility and mortality rates known as demographic transition. The notion of old (age) denotes to a phase of the life of human beings, generally covering late years of adulthood and concluding stage of life. Whereas in majority of developed countries 65 years is declared as old and retirement age and for Pakistan this age is around 60 years.

Increase in elderly population is an emerging worldwide problem. However, neglected fact is the speed and significance of aged population. Majority of older people almost 70 percent are residing in developing countries. Alarming, this number of elderly people will continue to increase rapidly. As in 2019, around 7 percent (about 14 million) of total population is above 60 years of age in Pakistan (British Council, 2019). Projected share of elderly people in total population is 8.4 and 12.9 percent for the years 2030 and 2050 respectively. Undoubtedly, it is a human success of added years to lives but it brings profound consequences in the form of economic, social and health

problems. Unfortunately, Pakistan ranks 92<sup>nd</sup> out of 96 on Global Age Watch Index 2015 and 81 in the domain of enabling societies and environment which is quite low.<sup>1</sup>

Fertility rate is not observed to be rapidly declining so increasing longevity will confirm the continuous “greying” of the nationwide population. Increasing longevity can be witnessed through life expectancy of Pakistan in figure 1.

**Figure 1: Life Expectancy in Pakistan**



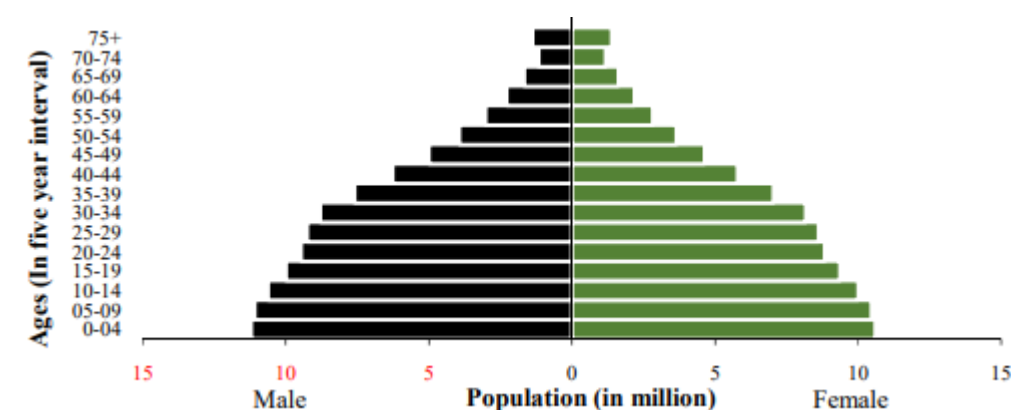
Source: Compiled by the author based upon the data taken from World Development Indicators

Figure 1 shows an upward trend in life expectancy of Pakistan. It is evidence that ageing is not coming slow in Pakistan.

Moreover, population pyramid also provides useful information regarding people living longer in Pakistan with age-sex ratio as shown in Figure 2.

<sup>1</sup> For details, see Global Age Watch Index. Available at : <https://www.helpage.org/global-agemwatch/population-ageing-data/country-ageing-data/?country=Pakistan#collapseFour>

**Figure 2: Pyramid: Age, sex composition of Pakistan, 2017**



Source: Economic Survey of Pakistan, 2017.

Figure 2 shows that both male and female population is greater at the age of 75 and above. It indicates that people are now living for longer years. Neither male nor female elderly population is decreasing.

Moreover, the active ageing plan supports the elimination of ageism as a whole and elevation of human rights of older population (Zaidi, 2020).

If ageing is to be made a positive incidence then added years to lives must be complemented with growing opportunities for health, participation and security (WHO, 2002). The WHO has assumed the term “active ageing” to definite the procedure for reaching this vision. WHO defines “active ageing” as:

*“Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age.”*

The word “active” denotes to remain a participant in social, economic, cultural, spiritual and civic affairs, not focusing only on being physically active or to be in labor force. It is a “rights-based” approach which encourages their responsibility to continue their participation in political practices and other sides of societal life (WHO, 2002).

Carrying forward one of the three components of active ageing; participation, it is a broad term consisting of various dimensions. It is considered as a multifaceted phenomenon consisting of wide-ranging cultural, spiritual, social, economic and civic activities (Zaidi, 2020). Several different terminologies are used in literature to capture participation and one of those is “Social Engagement (SE)” which will be used in this study.

SE is an umbrella concept for a number of components of a person’s social behavior and structure which needs to be narrowed down for better assessment. A thought commonly prevails based upon the studies done internationally that a decline in SE causes poor prognosis leading to the collapse of active ageing and life as a whole. There are several existing studies that have established positive relationship between SE and better health status with a suggestion that it is even stronger among elderly population (Kim et al. 2008; Morrow-Howell and Gehlert, 2012). However, it is yet to be explored by the study that whether this phenomenon exists in case of Pakistan or not.

Unfortunately, aged people become solely the responsibility of their children/ families with no cure from the state. However, there is a set of existing national and provincial policies regarding older people; Senior Citizens Welfare Council established under Senior Citizens Act 2014, Balochistan Senior Citizen Act 2017 for legal protection, Sindh Senior Citizens Welfare Act 2017, Khyber Pakhtunkhwa Senior Citizens Welfare Act 2014 and National Program for the Health Care for the Elderly (NPHCE).

## 1.2 Significance of the Study

Population ageing has been declared as one out of four global demographic “megatrends” – growing population, population ageing, out migration and urbanization has persistent and long-term effects on sustainable development.<sup>2</sup> Diminishing fertility and growing longevity result in growing proportion of older population. Undoubtedly, it is a human success story but it comes with various problems which mainly are experienced by developing countries lacking resources.

Resultantly, arranging for the economic and social changes related with an ageing population is necessary. This is to confirm advancement towards the achievement of the Sustainable Development Goals (SDGs) comprised in the 2030 Agenda for Sustainable Development (United Nations, 2015). Patterns in population ageing are predominantly related with the Goals on exterminating poverty (SDG 1), guaranteeing healthy living and well-being for all ages (SDG 3), supporting gender equality (SDG 5) and completely productive as well as decent work for all (SDG 8) and creating cities and human livings inclusive, secure, robust and sustainable (SDG 11).

Importantly, the genuine obstacle with ageing is not the added years to life, but the health and well-being of life which is a multifaceted phenomenon. WHO has established a concept of “active ageing” It has been deeply researched in several countries that SE is a key to elderly well-being. Moreover, the concept of “successful ageing” also includes a component of “engagement with life.” SE can include plenty of activities and is defined differently in different studies conducted in differentiated

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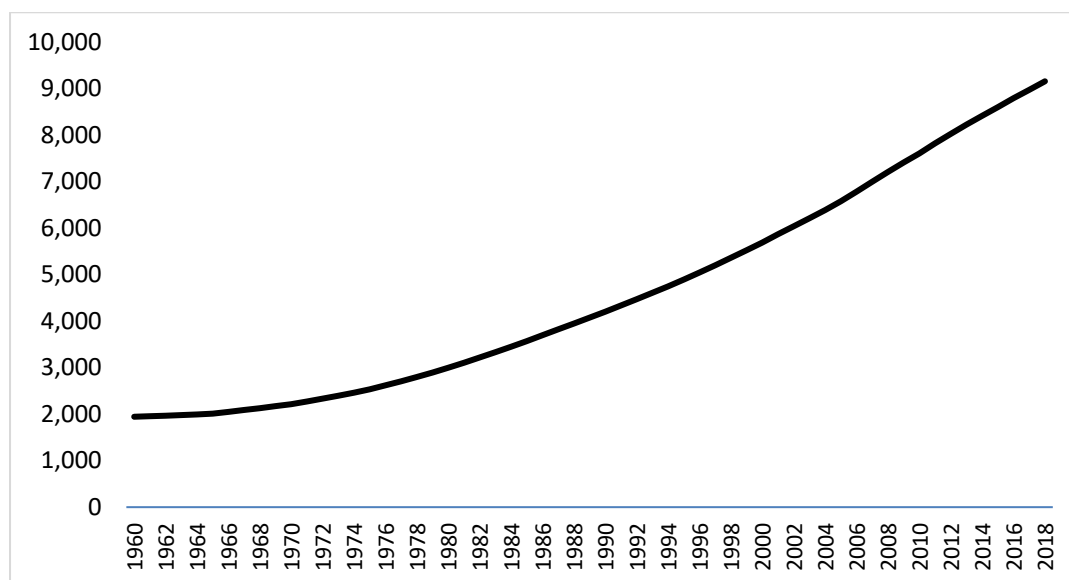
<sup>2</sup> For details, see Review of the 2030 Agenda for Sustainable Development (E/CN.9/2019/2).

locations. If these added years are ruled by declining physical condition and SE, the consequences for elderly people as well as for society can be adverse.

### **1.3 Problem statement**

Proportion of elderly population (people aged 60 and more) is at increasing pace due to demographic transition throughout the world. Globally, older persons (aged 60 or above) consist of nearly 13 per cent of the total population for the year 2017 and projected to reach 21% in 2050 (United Nations, 2017). Alarmingly, two-third of aged population is expected to be residing in developing countries. Pakistan is also experiencing a growing trend in proportion of elderly population since 1970s. Figure 2 show the number of people aged 65 above in Pakistan.

**Figure 3: Total population aged 65 and above (in thousands) in Pakistan**



Source: World Development Indicators (WDI).

Figure 3 shows an increasing trend in total population aged 65 above within Pakistan. It is important to observe the pace of increasing trend which is rapid since 1990s and is expected to grow even faster as per projections.

It is clear that increasing trend in elderly population results in social, economic and health issues for any developing country like Pakistan. Moreover, Pakistan is ranked 152<sup>nd</sup> out of 189 countries on the most recent United Nations Human Development Index ranking in 2018 (UNDP, 2019). There is a considerable number of studies being conducted highlighting the health problems caused by ageing in Pakistan.

However, going through the international literature on ageing and its related issues, we came across a concept of SE among elderly population which has been defined differently in different studies. It is derived from one out of three components of active ageing defined by WHO; participation. Ample amount of researches are available



proving the positive impact of SE on health status and overall wellbeing of elderly population globally. SE is regarded as a driver of successful ageing. Unfortunately, limited number of policies formulated for the well-being and rights of elderly people focus on working for the cures of ageing problems rather than preventing them through SE.

To the best of my knowledge, there is no previously done research available considering SE of elderly in Pakistan. Therefore, this thesis researches the concept of SE and takes into account its sources, measures, over the time and region comparison. Ultimately this study will propose possible public policies and programs to promote well-being of elderly and active ageing. Following are the research questions to be addressed in this study:

- What is the level of SE among elderly people?
- What are the sources of SE among elderly population?
- Is there any gender based differences in SE among older population?
- Is there any structural shift between prior to, and elderhood?

#### **1.4 Objectives of the Study**

Keeping in view the importance of SE among elderly population, the present study tends to measure SE in terms of productive activities, social activities and time spent on electronic media and gadgets usage. As SE is a dynamic phenomenon, its level and sources may vary according to gender and before and after entering old age phase i.e. 60 years of age. Therefore, the objectives of the study are:

- to measure and examine the level of SE prior and elderhood among older individuals (aged 60 and above) of Islamabad.

- to investigate the sources of SE.
- to confirm the sex-based differences in SE among elderly.
- to suggest targeted policies and intervention programs for the older people residing in Islamabad.

## **1.5 Hypotheses of the Study**

There are a number of studies done on measures and determinants of SE globally. SE is a subjective phenomenon for which different definitions are generated in different studies. SE is considered to play a vital role in successful ageing and having positive influence on health and overall well-being of elderly population. In order to bring strong evidence regarding elderly SE on policy horizon, it is important to make a prior and posterior elderhood SE comparison among elderly. Therefore, in this thesis we will try to measure the level of SE, investigate its sources and compare prior and post elderhood SE among elderly individuals. This thesis aims to test the following hypotheses:

$H_0^1$  : There is no structural shift in SE between prior and elderhood.

$H_1^1$  : There is structural shift in SE between prior and elderhood.

## **1.6 Plan of the Study**

Proceeding the chapter of introduction, in chapter 2 we will discuss and review the existing literature produced worldwide on SE among elderly population and present the gap in research. Chapter 3 provides the details of methodology for the present study. Chapter 4 consists of the description of data including the collection process, sampling technique, construction of variable and descriptive statistics. Chapter 5 shall discuss the results in detail consisting of over the time comparison and it captures the effects of

corona virus on the pattern of their social activities as well. Lastly, chapter 6 concludes the study, provides policy recommendations and the limitations.

# **REVIEW OF LITERATURE**

## **2.1 Introduction**

Population ageing is a worldwide emerging multi-dimensional problem and SE is regarded as major factor in making this demographic transition a healthy one. The concept of ageing has been studied and polished by several theoretical and empirical studies; SE has been in focus of most of them. Therefore, it is important to highlight the studies produced by honored scholars on similar topic before proceeding towards estimation and further discussion.

## **2.2 Theoretical Literature Review**

Successful ageing came into existence prior to active ageing. It includes three components; low probability of disease and disability, high cognitive and physical functional capacity and engagement with life (Rowe and Kahn, 1987). Afterwards, WHO adopted the term “active ageing” which comprised of; opportunities for health, participation and security to improve the quality of old life (WHO, 2002).

Moreover, there are three psychosocial theories of aging; activity theory, continuity theory and disengagement theory. Disengagement theory (founded by Elaine Cumming and William Earle Henry 1961) was the first psychosocial theory explaining that people disengage from social life as they approach old age. This framework considers disengagement as essential and beneficial to society for stability. However, as a critique

to disengagement theory, activity and continuity theories came into existence. Activity theory (founded by Lev Vygotsky 1979, 1986) is when people engage in a whole day of activities while maintaining some productivity level. It assumes a positive association between activity and life satisfaction. The continuity theory (founded by Robert Atchley) explains that people who reach in their old age continue habits, preferences, relationships and routine over midlife and late. It means that people who enjoy a happy and healthy life and are doing well in midlife should continue in their old age as well.

Going through the theories and different concepts presented about ageing from beginning until now, common perspective of remaining socially engaged in late years is seen to be of immense importance. Remaining socially engaged has significant impact upon the quality of life and overall well-being in old life. There is an increasing recognition that SE plays a significant role in successful ageing. Countries which are taking the issue of ageing into consideration seriously, academicians and policymakers repeatedly emphasize the importance of SE in old age and provide different policy recommendations and intervention programs.

However, it is a subjective phenomenon for which different researchers adopt different definitions in order to measure and investigate about it in old age. We found various definitions being considered in already conducted studies. Older people staying active and socially engaged across the elderhood transition and during late life are on right way to provide a significant social and economic involvement; a feature expected to be critical in positively navigating number of challenges caused by population ageing (Windsor, 2016).

Discussing some of the definitions read in literature, Utomo *et al.* (2018) studied three aspects of SE for its measurement; contribution in income-generating activities, in communal gatherings, and in caregiving. Since the study was focused to capture 10 villages of the country, all taken aspects may not be generalized for defining SE. Huang and Yang (2013) performed a research focusing on the gender differences in SE among elderly adults of Taiwan. They classified SE between formal and informal categories and defined it as interactions at a variety of societal levels gained through sources of receiving, giving and exchanging contacts. Kobayashi *et al.* (2015) takes an assorted range of social activities consisting of physical activity, intellectual game playing, religious and cultural participations and various measures of old age cognitive weakness. In Lennartsson and Silverstein (2001) study, engagement with life was taken as a participation in social, leisure, and productive deeds hence resulting in a survival gain among oldest old adults in Sweden.

In this era of modernization and rapid transformations, exposure to electronic media like internet, television and gadgets is commonly found. Boz (2015) produced a review of existing studies about usage of internet and quality of life of old adults. The study concluded that internet and computer usage greatly improves the quality of life during old age. In another study, Thomas (2011) conceptualized SE as number of times of participation in actions that include communications between and among people.

However, studies carried in the West have attempted to measure SE in old age with emphasis on productive activities like gardening, food preparation, cooking; social activities like church visits and recreational as well as fitness activities (Glass *et al.*, 1999).

Existing studies take different aspects for describing and measuring the subjective phenomenon of SE. However, there is a repetition of factors taken into consideration for SE in different studies. After analyzing the already produced literature, this study takes into account the productive activities as highlighted in the studies conducted in West, social activities which are being discussed in almost all the studies on SE and the electronic media and gadgets usage among elderly population in this era of modernization.

### **2.2.1 Ageing in Developed and Developing Countries**

In all countries including developing and developed, proportion of elderly population in total population is increasing. What is being ignored is the speed and importance of population getting old in developing regions. By this time, most of the older population, around 70 percent is residing in developing countries which are projected to rise. Developed countries are moving towards even the ageing of their already older population.

In both developed and developing states, population ageing increases the concerns about the risk of labor force being unable to support the elderly population usually taken as dependent population. However, most of elderly men in developing countries continue to work to maintain their living. On the other hand, Developed states are equipped enough to support their dependent population or the elderly in decent manner.

At the same time, countries especially developing ones require active ageing policies in order to provide elderly population with healthy and better living. This shall enable older population to continue remaining in work as per their capacity, socially engaged and to prevent disabilities and chronic diseases burdening families.

### **2.3 Empirical Literature Review**

People who remain communally engaged and active are perceived as having robust economic and social influence. Increase in SE is recognized as a driving force towards improved physical and cognitive health. Similar to Fithry and Butterfill- Schroder (2014), Utomo *et al.* (2018) observed village level differences in SE quantitatively among elderly population in Indonesia in the year 2015-2016. It hypothesized village level and sex and activity based variation in SE as well the consequences of poor health/ disability on SE. Study considered SE in three domains; participation in income generating activities, in communal activities and in care work. Primary data was collected on different socio-economic and demographic variables. Using primary data and multi-level logistic regression, the study claims important between-village inequalities in SE. Negative relationship is found between disability/ health status and all three domains of SE in this research. Findings assert that older males' participation in income generating activities is greater and women mainly play the caretaker role at home. Holding land is a major aspect of ensuring old-age safety in the village. Higher poverty at village level is linked with lesser elderly people doing paid work, attending community events and in having care duty.

Moreover, several authors have highlighted the inverse relationship between SE and risk of death among elderly people since SE has major health consequences. Glass *et al.* (1999) conducted a study in United States (US) that aimed to observe any relationship between social, productive and somatic activity and thirteen-year endurance in older people. Longitudinal data was collected annually for thirteen years beginning from 1982. Data on variables including; socio-demographics, societal, productive and fitness activities and health status measures was collected through



questionnaires, interviews and regular follow up with the participants. Outcome measure, mortality, was measured using national death index, newspapers and information from hospitals. Series of proportional hazard models was included in the analysis to estimate the influence of action on death. Results show association of all the three activities independently with survival when controlled for socio-demographic characteristics. Social and productive engagements were witnessed to confer similar survival benefits paralleled with fitness activities. It concluded that a broad range of physiological and psychosocial activities may add to the relationship between activity and mortality.

Another study produced by Lennartsson and Silverstein (2001) focused on the contribution of social, productive and leisure activities in the years of survival of oldest old people in Sweden. Activities concerning social amalgamation, physical movement and neither social nor physical features were investigated in relation to survival. Data of persons aged 77 years and above was extracted from Swedish Panel Study of Living Conditions in 1992. Results were drawn by employing Cox proportional hazard regression. While controlling for health factors, involvement in solitary and active activities was found to be considerably associated with reduced risk of death among men. For women, no activity domain was found to be significant when health factors were controlled. Considering the positive association between solitary activities and lives of very old individuals, especially men, suggests that nonsocial features of activities may improve health and survival in old age.

Health status of elderly is greatly discussed by various researchers because it is one of the major challenges brought by ageing. Frequent contact with healthcare system is

commonly observed. Kobayashi *et al.* (2015) highlighted the issue of health literacy decline together with internet use and social engagement as old age approaches. It hypothesizes that internet usage and engagement in knowledgeably-stimulating societal activities may have constructive effects on the preservation of health literacy abilities during ageing. As per this study, SE comprises of a variety of civic, leisure and folk activities that would utilize a range of mental abilities. English Longitudinal Study of Ageing (ELSA) was employed to collect data in four waves from 2004 to 2011 in England. Health literacy and SE were estimated through an interpreting comprehension assessment of a fictional medicine label and questionnaires respectively. Relationship between internet usage and SE in each of the three domains and health literacy decline was assessed using multivariable logistic regression. It was drawn that internet usage and SE especially in folk activities may prevent declining health literacy when ageing approaches. When all of the four fields; internet usage, civic, leisure and folk activities were constantly engaged in, the protective linkage was the solidest independent of mental function and decline.

In addition, 'health' is a broad term which includes thorough physical, mental and social well-being. Considering cognitive health, dementia is a frequently observed mental disease among majority of the older people. Kim *et al.* (2016) attempted to investigate the relationship between variations in social interaction and indications of dementia. 3-year long longitudinal study for the years 2008-2011 was conducted in Taiwan. Social interaction and dementia data were collected from previously carried project and Health and Welfare Center respectively. Results were obtained using logistical regression analysis. In conclusion, this study established that a positive variation in social interaction may aid in preventing dementia during older life. Moreover, age was found

to be a significant demographic variable in prevailing of dementia and reading newspapers as the most productive and intellectual social activity. Overall, elderly persons' active SE would successfully avoid dementia.

Moreover, it is now well understood that having assorted and supportive social linkages can enhance physical and mental health. An exploratory study was conducted by Windsor *et al.* (2016) drawing on concept and empirical research from gerontology and evolution psychology. Aims of the study were to outline various important factors that impact older people SE and discussing in depth, the public policy relevance and effective intervention program. Where required, Australian Longitudinal Study of Ageing (ALSA) was discussed specifically for Australian perspective on important factors influencing SE in older life. Variety of factors is extracted from relevant literature that facilitates elder population's SE. Emphasis upon physical and cognitive health provides a path to policy and public health programs. Such measures also include mental health and are expected to offer helpful flow-on impacts for SE. SE, economic contribution of elderly and measures to reduce social isolation adopted in Australia are also discussed. A significant conclusion drawn mentions that SE concerns the collaboration of different generations in order to contribute and take advantage from social inclusion measures.

Another study was conducted by Vogelsang (2016) exploring whether there are rural-urban disparities in older people social participation and its association with health. It employed Wisconsin Longitudinal Study, a long-term survey of men and women randomly selected who passed out from Wisconsin high school US in 1957. Collection of data was done for 5 different years between the years 1957 and 2011. It considered

a set of different activities from WLS's "social and civic participation" module. Two most common activities; visiting restaurant and talking on the phone were associated with poor self-rated health status. Religious participation, cultural activities and exercise groups were found to have better impacts on self-rated health status. It was concluded that older people residing in rural counties are not as much socially active as the older adults living in more-urban regions. Also, the association between social participation and health status differ by the kind of activity and rural-urban settings.

In contrast to the above, Thomas (2011) combined person-centered and variable-centered methods in the study conducted in America. It hypothesizes that trends of immutably high or rising SE overtime will be linked with weaker initial levels and discourages progress in physical and mental constraints overtime. With the help of social integration theory, trend of changes in SE and how those trends relate to paths of physical and mental constraints among elderly population are examined. In this study, SE is considered as frequency of involvement in interactive activities within people. People aged 60 years and above were sampled out of nationally representative panel data from the Americans Changing Lives Survey for 4 different years from 1986 to 2002. Estimation of paths of SE overtime was done by growth mixture modeling. Results clearly favor the hypothesis aided by social integration theory. Keeping the level of social attachments high through SE has significant positive effects on mental and physical restrictions.

With state, family also plays a vital role in maintaining the status of elderly whether it's a developing or a developed country. Lack of efficient pension schemes results in elderly of developing countries to depend on their own labor market income, limited

assets and financial support or living with children. Cameron and Clark (2006) inspected that elderly parents consider being financially supported by children and living with them as an escape from laboring. This study held in Indonesia empirically determined labor supply taking into consideration co-residency and financial record of transfers. Data was extracted from Indonesian Family Life Survey for the year 1993. Labor supply equation was generated through maximum likelihood estimation taking into account the variables of interest. It concluded that financial allocations from Indonesian children do not prove to be a standby for the financial earning by the elderly parent's own labor market work. Due to dearth of pension schemes, many developing countries are encouraging traditional mechanisms to take the charge.

In another study, Boz (2018) attempted to determine the way elderly people in Turkey utilize the social relationship linkages and communication with their surroundings to ensure socialization. Detailed interviews were conducted as part of qualitative study consisting of open-ended questions regarding their demographic, economic and social status. Among routine activities such as watching television, worshipping and listening to radio, no gender differences were observed. However, their offspring, grandchildren and relatives were the major social acquaintances. Their preference was to interact with people having alike personality traits. Major conflicts were with their spouse, daughters, daughter-in-laws and siblings about not obeying them and obstructed about their unfulfilled wants due to financial issues. Widowed participants were seen to be victims of loneliness and sadness. Falling health of participants was considered to be a negative aspect of being old for them. Liberty of worshipping as per their wish and respect were the two positive aspects.

On the other hand, increasing trend of exploring subjective well-being (SWB) of elderly population is observed. SWB is when the person being studied reports about his/her well-being usually through questionnaire. Zhang and Zhang (2014) studied the phenomenon in 2011 that general involvement in communal activities can increase the SWB of retirees in China. Social participation is defined as frequent involvement in social activities, more active roles in social doings and greater attendance in activities of previous employers suggested advancement in SWB. Moreover, this study focused on empirical evidence for the contribution of social participation in living standard of elderly people. Philadelphia Geriatric Center Morale Scale (PGCMS) was used to assess SWB and further data was compiled using questionnaires. After descriptive and multivariate regression analysis, it is revealed that energetic and vibrant participation in social activities including those hosted by previous employers positively influence SWB.

While discussing the problems, gender discrimination is commonly observed in majority of the fields at every stage of life. Huang and Yang (2013) attempted to examine gender differences regarding social participation in three different phases of life before and after retirement in Taiwan. Social participation is taken as meetings with different levels of society attained through means of receiving, providing and swapping contacts. It hypothesized that increase in social participation lead to the livelihood of elderly and different kinds of social participation can be described by different theories. Longitudinal data was extracted from the Survey of Health and Living Status of Elderly in Taiwan from 1989 to 2007. Different types of social participation are explained with the help of theories; retirement theories, role theory, feminism and gender equity. Estimation was done through descriptive statistics method and trajectory graph. The

study reveals that men show a greater level of social participation than women before retirement. But as age advances, social participation decreases for men while women experience an increase. Reason behind this difference as identified by the study is that men in their working life devote every effort in job while working women perform household duties simultaneously. After retirement, grown up children take the hold and women get more time for being socially active.

In addition to the above, Cheng and Chan (2006) conducted a study in Hong Kong for the year 2000 investigating the gender disparity regarding social relationship as a determinant of life satisfaction (LS) among older people. Moreover, it studies whether this is more dominant among widowed than in married older people through multi-group analysis. Moderating effect of widowhood and gender were tested while controlling for formal participation, health, financial strain and housing quality being key predictors of LS using structural equation modelling. Theoretical model was established for describing the main determinants of LS in old life in a better manner. The findings suggest that association or relatedness was the major most determinant of LS in women, irrespective of marital status. However, it was just a moderate predictor in married men, and in fact an unrelated factor in widowers.

Moreover, the problems experienced during elderhood can be classified in different categories. After entering into 60s, most of the time is usually labeled as 'leisure time.' So, time management is crucial to the quality of elderly life. Tsai (2001) highlighted this aspect and carried an exploratory study in Taiwan. Study aimed at exploring the forms of activities performed by the elderly. It analyzed the previously collected data in 3 large scale surveys conducted in 1996. The study initially highlighted the

demography of ageing and then the dynamics of life after retirement presenting the data already collected. Lastly, it suggests whether the activity and disengagement theory in the management of elderly life is addressed in Taiwan or not. At present, people consider government and other social welfare agencies instead of families to be responsible for supporting elderly. Data and the prevailing discussion demonstrate that Taiwanese elderly are active in pursuing non-economic activities while somehow maintaining contact with off springs also. Therefore, disengagement and activity theory of the older life are not competitive with each other. In fact, these two must be regarded as complementary to each other.

A possible solution to various problems prevailing at older age is the suitable provision of 'care'. Little attention is being paid to care provision and dependence of elderly in non-Western societies. Fithry and Butterfill-Schroder (2014) carried out a qualitative research combining gerontology and sociology within three Indonesian communities. The study attempted to examine the norms and practices adjoining different social and cultural backgrounds. It has a perspective that it makes possible to reach at a thorough understanding of relationships and sociality. Semi-structured interviews were conducted for comparative analysis between the years 1999-2000 and 2004-05. At the end of the research it confirmed that gendered nature of care facilitation prevails in non-Western nations also. Preference for care by daughter is more powerful while physical care by opposite gender is a taboo especially in strong Islamic settings. However, the options available for old age care provision are narrow and the sufferers observed are mainly childless and migrated. It is now essential to bring care provision and social security on policy horizon.



It is essential to understand how developed nations made this transition a positive one. Improvements in nutrition, health and other living conditions led to enhancement in life expectancy of people in developed nations. Innovations were made to care for elderly and cope with the problems like isolation and improve their living standards. Kurian and Uchiyama (2012) discussed six models of care in Japan and The Netherlands containing cooperation between private and government institutions, systems and voluntary groups. Models were studied with reference to Social Quality theory which consisted of a group of social scientists who were critical about the supremacy of social policies only focusing the markets in Europe. Japanese models were found to be more concerned with socialization of the elderly. Models adopted by The Netherlands were mainly focusing the social and economic security of the elderly. It offers the foundation of defensible welfare policies improving the social quality of the elder population.

Rapidly aging world is increasing the policy concerns globally regarding quality of life (QOL) and active aging of the elderly. In this era, information and communication technologies (ICT) are dominant in every field of life. ICT may aid in lowering marginalization, isolation and intergenerational differences. Broz (2015) produced a review study exploring the effect of internet usage on QOL of elder people by inspecting previous researches in this domain. Review of 25 research articles from different disciplines was done to draw useful conclusions and design sound public policies. According to this analysis of existing literature, computer and internet usage can enhance QOL of the elderly. It can reduce their seclusion and loneliness giving social backing and entertainment. Hence, developing suitable policies boosting elderly to use internet and computer is significant to avoid their social exclusion as well as enhancing QOL.

## **2.4 Summary of Reviewed Articles**

The reviewed literature is summarized in table 1. It can be seen from the literature that most of the studies are conducted with in developed countries as they are more concerned with this global issue. However, growing trend of studying SE in old-age is witnessed in developing countries. Since Indonesia is the fourth most populous country and is seriously experiencing the problem of population ageing, numbers of studies are found highlighting the importance of SE for successful ageing. Abundant amount of literature is globally found concluding a positive relationship of health-status and overall well-being with SE.

### **2.4.1 Research gap**

There have been increasing efforts to capture SE in old age worldwide. Pakistan is the sixth most populous country in the world and is moving towards a rise in proportion of older population. Literature can be found regarding health/medical issues and SWB in old age. Jalal and Younis, 2012; Vertejee and Karamali, 2014; Cheema, 2013 discussed the rise in older population and emerging challenges for Pakistan to pursue active ageing. Their studies primarily focused on the need for active healthcare policies and stated the significance of remaining active in late life. This study is unique as it empirically considers the SE among elderly population and provides a prior and elderhood comparison. Moreover, this study shall aid the government and the policy makers to facilitate the elderly population in order to maintain their SE level.

**Table 1: Summary of Reviewed Literature**

<b>Reference</b>	<b>Region of Analysis</b>	<b>Time Period</b>	<b>Variables</b>	<b>Methodology</b>	<b>Conclusion</b>
Glass <i>et al.</i> (1999)	City of New Haven, Connecticut, United States.	1982-1995	Socio-demographic, Social, productive & fitness activities, Health status measures.	Continuous time model and proportional hazards model	Social and productive actions that include slight or no improvement of fitness decrease the chance of all-cause mortality as far as fitness activities do.
Lennartsson and Silverstein (2001)	Sweden	1992-1996	Social activities, Leisure activities, Mortality risk	Cox proportional hazard regression	Increased involvement in solitary-active actions clearly reduced risk of death when all other activity areas and health were controlled.
Tsai (2001)	Taiwan	1996	Types of leisure activities, Types of persons the elderly regularly contact	Analysis of 3 large-scale survey research reports.	Elderly in Taiwan may lack engagement in economic working atmosphere but are surely active in non-economic leisure doings.
Cameron and Clark (2006)	Indonesia	1993	Co-residency transfers, Labor supply (parental characteristics), Other income, Assets, Age married, Disabled, Education categories, rural, previous work status.	MLE	Financial allocations from Indonesian children do not prove to be a standby for the financial provision by the elderly parent's own labor market work.

Cheng and Chan (2006)	China	2000	Life satisfaction, family, intergenerational relations, friendship, companionship, mobility and vitality, sleep, oral health, general health, formal activities, fulfilling activities, financial strain, housing quality.	Structural Equation Modelling	Interpersonal relations was the major most determinant of LS in women, irrespective of marital status. However, it was just a moderate predictor in married men, and in fact an unrelated factor in widowers.
Thomas (2011)	America	1986-2002	Social engagement, Cognitive limitations, Physical limitations, Socio-demographic variables (control variables).	Growth mixture modeling & standard latent growth modeling	People who had trajectories of greater SE encountered lesser physical and mental limitations with the passage of time.
Haq (2012)	Pakistan	2001	Physiological needs, Safety needs, Love/belongingness needs, Esteem Needs, Self-actualization needs, Socio-demographic status, Life satisfaction.	Chi-square test & multinomial logistic regression.	Elderly position in physiological needs was contrary whereas position of security needs was also not so appreciable.
Kurian and Uchiyama (2012)	Japan & Netherlands			Qualitative Analysis	It offers the foundation of defensible welfare policies improving the social quality of the elder population.

Huang and Yang (2013)	Taiwan	1989-2007	Involvement in leisure activities, Contacts with family & friends, Participation in volunteer work, Socio-demographics	Descriptive Statistics Method & trajectory graph.	The study reveals that men show a greater level of social participation than women afore retirement. But as age advanced, social participation decreases for men while women experience an increase.
Fithry and Butterfill-Schroder (2014)	Indonesia	1999-2000 & 2004-05.		Semi-structured interviews.	It assured the powerfully gendered-nature of care facility frequently recognized for Europe and North America.
Zhang and Zhang (2014)	China	2011	Physical health status, Socio-economic status, Family Relationship, Social Participation.	Multi-variate Regression Analysis	People who participate more often in social actions, more dynamic roles in social activities of past employing units stated higher SWB, even when adjusting for the roles of bodily health, income and other socio-demographic variables.
Kobayashi <i>et al.</i> (2015)	England	2004-2011	Health literacy, Internet use, Social engagement, Socio-demographics.	Multivariable Logistic Regression	Internet use and social engagement mainly in cultural doings may support elderly population to sustain health literacy in ageing.
Boz (2015)		1990-2015		Literature review	Computer and internet use enhance the QOL for elderly people.
Windsor <i>et al.</i> (2016)	Australia				Physical and mental health are significant means for SE in late adulthood. Public health involvements to have flow-on advantages for the SE of older people.

Vogelsang (2016)	United States	1957-2011	Meeting friends, talking on the phone w/friends, attending art or cultural activities, going to restaurants or bars, light physical activity with others, vigorous physical activity with others, civic groups, community centers, neighborhood improvement organizations, charity or welfare organizations, hobby groups, church or other place of worship.	Logistic Regression	The relationship between social participation and health status differ by the kind of activity and rural-urban settings.
Kim <i>et al.</i> (2016)	Taiwan	2008-11	Dementia, change in social interaction.	Multiple logistical Regression Analysis	Study found that participation in social and intellectual activities would avoid dementia.
Utomo <i>et al.</i> (2018)	Indonesia	2015-16	Engagement in income generating activity, social participation, participation in domestic roles. socio-demographic variables	Multi-level Logistic Regressions	It has observed that there are significant between-village disparities in social engagement by the elder population.
Boz (2018)	Turkey		Socioeconomic, demographic characteristics, daily life	Interviews	Their offspring, grandchildren and relatives were the major social acquaintances.

			activities and obstacles, social acquaintances.		Widowed older people were observed to have more lonely and sad lives.
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## CHAPTER 3

# METHODOLOGY

### 3.1 Introduction

SE is a successful driver of successful ageing and is being widely studied globally. The concept is subjective in nature; hence it lacks uniform definition or worldwide agreed measures. Ultimately, before proceeding it is important to pinpoint the possible measures of SE among elderly population taken in this study. This section provides a detailed mathematical and econometric models discussion used to study SE.

### 3.2 Theoretical framework

The concept that elderly's SE, however defined, has positive impact on their health and well-being has solid intuitive feel as well as own experiences with older adults (Mendes-de-leon, 2005). There are numerous defining elements commonly used to measure SE. Basically SE is an umbrella term used to cover wide range of activities prevailing in an individual's social behavior. Therefore, it is important to narrow down its definition.

Despite the variety of definitions found in literature, there are some key repeated activities taken to measure SE. Studies have identified a number of related activities under a broader term in order to capture the subjective concept of SE deeply. In this era of modernization, time spent using gadgets shall also be captured under the umbrella term SE. However, broadness of measures in nature gives it a wide coverage of elderly



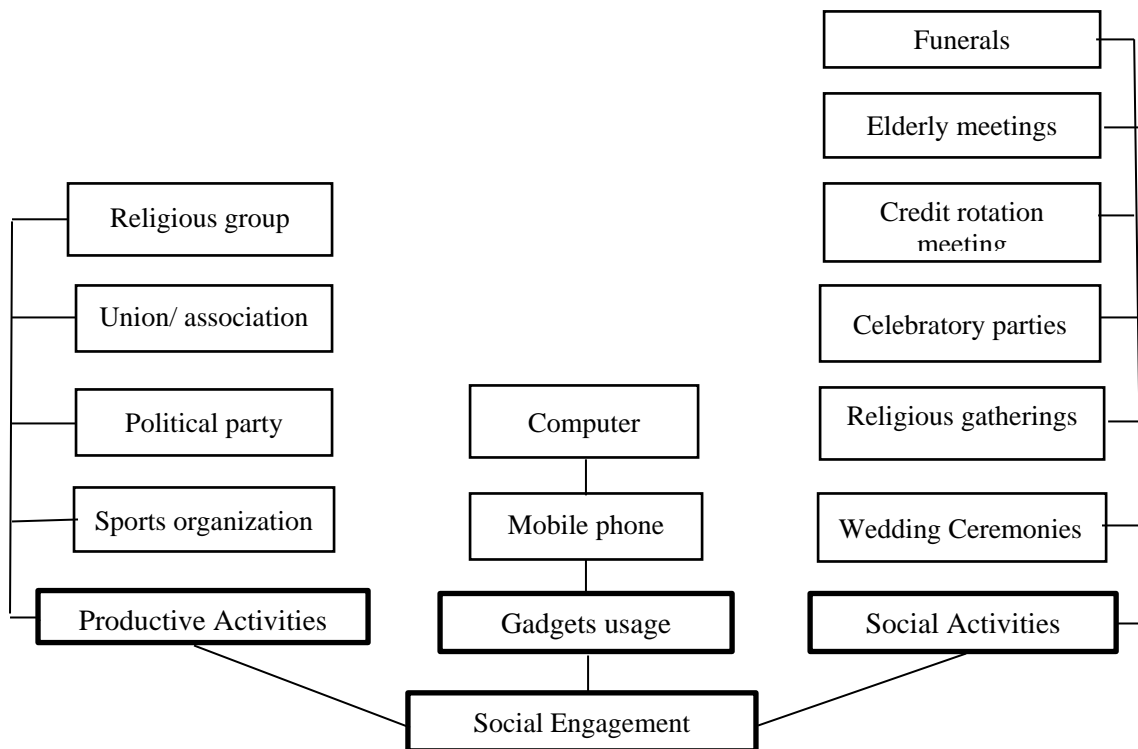
population without any exclusion based upon their gender, marital status, disability or any other characteristics.

After going through relevant literature the framework generated for this study measures SE through three main activities. These activities include:

- Social activities
- Productive activities
- Gadgets usage

The conceptual framework designed to measure SE in this study is given in Figure 3.

**Figure 4: Measures of Social Engagement**



Source: Author compiled from various studies.

The study will capture SE in three distinct aspects. Productive activities comprise of societal activities regarding the participation of respondents in different formal groups or unions. In order to capture social activities, participation in six different social gatherings are being studied. Commonly prevailing productive and social activities are selected and checked for participation in each gathering or activity. In case of gadgets usage, most commonly used devices for societal connectivity are selected. It is measured by the time spent using each device.

From the review of literature, most commonly used determinants of SE for elderly people are extracted to be used in this study. Utomo et al. (2019) studied the concept of SE in Indonesia and employed demographic, economic, socioeconomic and self-rated health status as the sources of SE. Following are the determinants of SE gathered into four categories; economic variables which indicate the person's economic status within the community which include employment status, personal income, expenditures, assets ownership and number of earners. Demographic variables indicate the basic demographic details including age, gender, marital status, education, family's education, number of children and number of family members. Socio-economic variables include the social characteristics which somehow have economic aspect in them as well but are not included in the economic variables. It includes family type and residential details. Lastly, self-rated health status includes physical attributes, physical activities, and chronic diseases. This information is summarized in table 3 below:

**Table 2: Determinants of Social Engagement**

<b>Economic determinants</b>	<b>Demographic determinants</b>	<b>Socio-economic determinants</b>	<b>Self-rated health status</b>
<ul style="list-style-type: none"><li>• Employment status</li><li>• Personal income</li><li>• Personal expenditures</li><li>• Assets ownership</li><li>• Number of earners</li></ul>	<ul style="list-style-type: none"><li>• Age</li><li>• Gender</li><li>• Marital status</li><li>• Education</li><li>• Family education</li><li>• Number of children</li><li>• Number of family members</li></ul>	<ul style="list-style-type: none"><li>• Family type</li><li>• Residential details</li></ul>	<ul style="list-style-type: none"><li>• Physical attributes</li><li>• Activity level</li><li>• Chronic diseases</li><li>• Overall health status</li></ul>

Religion is found to have positive impacts on the lives of elderly people in various studies claiming that church becomes a central place for social integration. Cox & Hammonds (1989) reviewed already produced literature on this theme of religion and elderly life to bring forward more significant findings and further directions. Their study concluded that belief in God and private devotions are greatly found among older people as compared to other age groups. The study also agreed with Durkheim's consideration of church as a moral community and is correlated with older persons' well-being. Resultantly, this study also includes a variable of religiosity covering different dimensions including mosque and other religious gathering attendance, private prayers and everyday deeds.

The increasing proportion of elderly population has caused a rise in demand for social welfare programs and other measures to ensure the well-being of elderly (Nelson, 1982). It is important to assess the role of government and institutions in providing healthy ageing to elderly people. This study also includes the questions regarding The

Islamabad Capital Territory Senior Citizens Board Bill, 2017 in order to check its implementation.

### **3.3 Methodology**

Current study will be using questionnaires to collect data and it shall be analyzed using descriptive statistics. Hypothesis shall be tested through parametric test to check for any structural shift in social engagement.

#### **3.1 Parametric test- paired samples t-test**

**Parametric tests** form assumptions regarding the parameters of the population distribution from which the sample is taken. This study will use **paired samples t-test** that is also known as dependent sample t-test. This statistical procedure is employed to check either the mean difference between two sets of observations is zero or not. The test statistic for the Paired Samples  $t$  Test, denoted  $t$ , has the same formula like sample  $t$  test. Following is the formula for  $t$ -test:

$$t = \frac{\bar{x}_{\text{diff}} - 0}{s_{\bar{x}}}$$

.In order to apply this test, the separately constructed variables of social engagement for prior to elderhood i.e. between 55-60 years of age and during elderhood i.e. after 60 years of age shall be used which are continuous in nature.

# CHAPTER 4

## DATA

### 4.1 Introduction

Acceptability and reliability of the data source and variable construction are important for consistency of this empirical study. This chapter highlights the profile study area and data: the structure of the questionnaire, survey details, sample criterion and the variables.

#### 4.1.1 Profile of the area of study

**Islamabad:** To conduct this study, primary data from the capital of Pakistan, Islamabad would be collected. This region is selected as it contains individuals from different regions, income groups and sects. It is one of the two federal territories and the capital city of Pakistan. The population of Islamabad is highly diverse and is regarded as a cosmopolitan city.

It is acknowledged for adopting modern ideas and known as one of the most urbanized cities of the country. However, it has a significant proportion of population living in rural areas of Islamabad as well. The study tends to measure the level of SE and explore its sources among elderly adults living in rural and urban areas of Islamabad.

#### 4.1.2 Survey Description and sample criterion

Pilot survey was run to pre-test the questionnaire and know about the understandability of the instruments of questionnaire by the partakers. In the first round the questionnaire was shared with colleagues and friends for their suggestions. After making changes, in

the second round it was shared and discussed with field specialists, experts and academicians so that the problems could be raised and eradicated before getting responses from target audience. In the third round some responses were collected from the people aged 60 and above and their children etc. to confirm whether the questions are comprehensible.

In beginning, the responses were collected face to face by reaching the target audience but soon due to the spread of COVID-19, online survey was designed to cope with the situation. Again, the online designed survey was checked for its clarity and understandability by sharing it with colleagues and academicians. After making necessary amendments, a group of students living in different areas of Islamabad was hired as enumerators and given an online training explaining the whole questionnaire in detail.

A total of 253 active responses was collected through mixed sampling. The sample consists of two types; one sample is of residents of Islamabad aged 60 or above filling the questionnaire for themselves, while, other sample is of people who filled the survey on behalf of someone they know are fulfilling the requirements to be a part of research. All the responses collected held the information about two time periods; prior to elderhood and during elderhood for the same individual.

The sampling technique employed is multistage sampling. At first stage, Islamabad is taken as a cluster to conduct the research. At second stage, this cluster was divided into strata consisting of different areas of Islamabad. Initially, some responses were collected face to face but later on due to the spread of corona virus, online survey was designed to reach the individuals. At third stage, a group of enumerators living in different areas of Islamabad was hired. From each strata, a considerable number of responses on the basis of accessibility was collected based upon convenience sampling. With their help, we reached directly to the respondents and those who can fill on behalf of potential individuals.

Sample includes all the married, unmarried, working, retired, disabled, educated and uneducated older adults aged 60 or above. However, for the participants who were not capable to understand English language, enumerators filled the questionnaires by extracting information from them in their local language generally Urdu or Punjabi.

## **4.2 Questionnaire**

This study inquires primary data using online questionnaire. Several questions regarding target variables are raised. The questionnaires were filled by the residents of Islamabad themselves aged 60 years or above and on behalf of someone from Islamabad aged 60 or above. It is structured into four sections; section 1 consists of 1 question about the relationship between the respondent and the person it is being filled on behalf of.

Moving ahead, section 2 consists of basic demographic and socio-economic multiple choice questions. It covers a wide range of questions including; gender, age, marital

status, family type and structure, level of education of self and children, number of earning members, type and location of house.

Section 3 poses questions regarding economic factors and self-rated health status. This section consists of questions asking to respond separately for two time periods: between 55 to 60 years of age and after 60 years of age. There are various components covered under this section; employment status, household and personal income/ expenditure composition, assets ownership, physical functioning, activity level, weight, chronic diseases, all with multiple choices & responses. Respondents were also asked to rate their health status for both time periods separately on a likert scale of 5. 1 for very poor and 5 for excellent.

Section 4 covers the questions about three aspects assigned to measure SE for both time periods separately i.e. between 55 to 60 and after 60 years of age like in previous section. Separate lists of productive and social activities were further classified into sub-groups. Different activities were given as multiple response questions to be selected as per their most and least performed or attended ones. Questions about electronic media and gadgets usage included: frequently used sources of communication, activities most performed on mobile phone and computer and time spent in a day for both time periods using mobile phone, landline phone, and computer and watching television.

Lastly, section 5 consists of the questions about the implementation of provisions being made in The Islamabad Capital Territory Senior Citizens Board Bill, 2017, religiosity and impacts and behavior towards corona virus. It contains: possession of senior



citizens card, free of charge entry to public museums, libraries, parks and recreation facilities, financial support from government, separate counters for older people in banks, supermarkets, etc., concession in medical facilities and public transport, and setting up of old age homes, all binary options.

Moreover, level of religiosity was checked for both the time periods separately with regard to performance of obligatory practices like daily mandatory prayers, recitation of holy book, fasting and others, religious consultations with alike people and charity, all on a likert scale of 5. 1 is for very rarely and 5 is for very frequently. Impacts and behavior towards corona virus consisted of questions about virus related stress factor, impact on day to day activities, behavior towards the virus, possible effects on social and financial status, and perception about government's actions taken to cope with the pandemic. These were also assessed on a likert scale of 5. 1 is for strongly disagree and 5 for strongly agree.

### **4.3 Variable Description**

Since SE is a subjective phenomenon and takes a variety of aspects for its measurement, literature suggests different definitions for SE. It is important to describe and discuss the variables selected for conducting this study.

The variables used in this study can be broadly divided into two main categories: first are the variables selected as measures of SE and second ones involve determinants of SE. Measures of SE shall be discussed prior to the discussion on determinants.

### 4.3.1 Measures of SE

This study extracts three factors out of existing literature to measure the level of SE among elderly population: productive activities, social activities and gadgets usage.

Following is the description of these variables separately.

- i. **Productive activities:** Productive activities comprise of formal activities involving Productive activities include: participation in political party, sports association, religious group or union or professional association.
- ii. **Social activities:** Social activities are also classified in two categories which cover a number of activities. First one is recreational activities which consist of visits to parks, cinemas, gym, shopping malls/markets, restaurant, library and playing games. Second category is of social interaction/ gatherings which include caretaking of grandchildren, credit rotation, community meetings, weddings and religious gatherings.
- iii. **Gadgets usage:** We have taken internet and television under electronic media category. Gadgets been taken in this study are computer (including tablets, laptops and desktop) and cell-phone. This variable shall be measured according to the time spent on specified electronic media and gadgets.

### 4.3.2 Determinants of SE

SE is a subjective concept which is determined through various factors. The present study classifies the determinants of SE into four broad categories.

- Economic variables
- Socio-economic variables
- Demographic variables
- Self-rated health status

Economic indicators include employment status of households, personal income and expenditure composition, number of earners in the house, sources of income and assets ownership. Socio- economic indicators take in family type and residential details. The demographic indicator employed comprises of age, gender, marital status, education, family's education, number of children and family members. Self-rated health status as a determinant includes basic physical attributes, physical activities, chronic diseases etc. Other variables are of the following type:

- Religiosity
- Travelling
- The Islamabad Capital Territory Senior Citizens Board Bill, 2017

Religiosity includes praying, fasting, charity, everyday practices and reading Islamic literature. Travelling includes interest and their patterns of travelling and possible constraints faced. Lastly, community service includes the implementation of Senior Citizens Board Bill, 2017. It was for the welfare of Senior Citizens of Islamabad.

#### **5.4 Construction of the variables**

Questions regarding SE were asked for its three pre-determined indicators namely, productive activities, social activities and gadgets usage. Different sets of activities were given as multiple response questions to be responded as most and least participated/ attended for two time periods; prior to elderhood and elderhood. Gadgets usage was measured by the time spent using mobile phone and landline phone in a day.

Construction of indices was done using all questions of the related category for both time periods separately. For example, the average of total score of the questions relevant to SE was taken which was then scaled from 0 to 3. 0 to 0.75 was taken as 0 (not active),

0.75 to 1.5 as 1 (partially active), 1.5 to 2.25 as 2 (active) and 2.25 to 3 as 3 (highly active).

## 5.5 Data description

Data was collected directly from the respondents and from the individuals who responded on behalf of someone they know. A total of 253 active responses was collected. Different age groups were given, beginning with the least age of 60 years which is considered to be the old age. Table 4.1 shows this information.

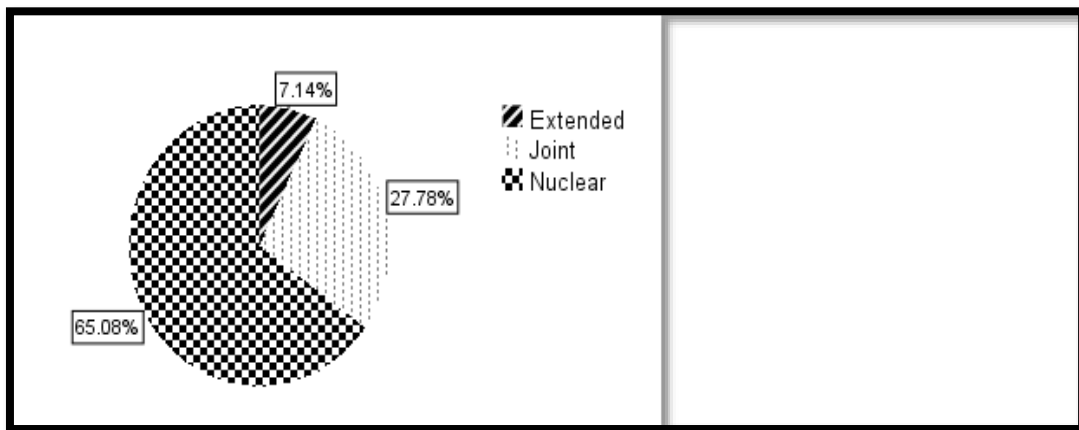
**Table 5.1. Segregation of the data**

<b>Age-wise segregation</b>	
<b>Age groups</b>	<b>Proportion of respondents (in percent)</b>
60-65	166 (65.6)
66-71	42 (16.6)
71+	41 (16.2)
No response	4 (1.6)
<b>Marital status-wise segregation</b>	
Married	191 (75.8)
Widowed	49 (19.4)
Single	12 (4.8)

*Source: Author's own calculations.*

From a total of 253 collected responses, 75.80 percent reported to be married, 19.4% i.e. 49 respondents were widowed while 4.8% were single. This information is given in table 4.1 above.

**Figure 5.2: Family type of elderly population**



The data collected from elderly population of Islamabad shows an increasing trend of nuclear family systems as out of 253 active responses, 65.08 percent selected their family type as ‘nuclear.’

# RESULTS AND DISCUSSION

### 5.1 Introduction

The study is based upon 253 active responses. The data was collected about residents of Islamabad aged 60 or above years directly from the individuals and indirectly from people filling on behalf of someone qualifying the requirements. The difference in SE is assessed at individual level and ageing is an intervention. While observing SE during old age, it is important to explore its sources as well in order to encourage it for overall wellbeing. Moreover, SE is a multifaceted phenomenon studied by taking different indicators in different studies. Hence, we find a range of activities indicating the prevalence SE among elderly population. Current study employs three widely used indicators of SE; productive activities, social activities and gadgets usage.

This chapter includes the results and discussion of index, variables and models. The chapter begins with descriptive analysis of the variables and discussion of results from non-parametric methods and assessment of sources of SE. Afterwards, there is a discussion about drawing conclusion.

### 5.2 Discussion of index of Engagement

In order to study and explore the multifaceted phenomenon of social engagement, it is essential to form an index. Three indicators were taken to form the dependent variable,

social engagement. This section would begin from the discussion of forming index of engagement.

i. Productive Activities

Productive activities consisted of participation in four different types of organizations or groups prior to, and during elderhood which involve the society in them. All questions about productive activities were of same nature and were summed up to make one variable i.e. productive activities. It was calculated separately for both time spans. The variable was then brought on the scale of 0 to 3 whereas, 0 means not active, 1 means partially active, 2 for active and 3 was labelled as highly active.

ii. Social Activities

It comprised of six different social gatherings and respondents were asked to select three most participated activities for both time spans separately. These were then added to form a variable of social activities, prior to and during elderhood. This was then labelled on the scale of 0 to 3 whereas, 0 was denoted as not active, 1 as partially active, 2 as active and 3 as highly active.

iii. Gadgets usage

Usage of two devices was studied which are most commonly used for societal connectivity prior to, and during elderhood. Usage was measured by the time spent in a day using each of them. Different time slots were provided and responses were then added and labelled from 0 to 3. A limit of time was set to classify each level of engagement. 0 was considered as not active, 1 for partially active, 2 as active and finally 3 was regarded as highly active.

Finally, all three variables calculated separately for prior to, and during elderhood were then summed up and average was taken to form a variable of social engagement for individual time periods.

### **5.3 Exploratory Analysis:**

The study is based upon exploring the multifaceted phenomenon of social engagement during late life. While studying the concept of social engagement among elderly population, it is essential to explore the factors that influence the level of social engagement during old life as highlighted by Windsor *et al.* (2019). A comparison in the level of SE is made for the same individual, prior to and during elderhood. Furthermore, differences in SE for both the genders during 2 defined time periods are also explored. In order to perform this analysis, different variables are cross tabulated with the level of social engagement. Burn *et al.* (2016) studied the trend of social engagement during the journey towards later life. Similarly, this study aims to explore the differences in social engagement prior to, and during elderhood so the relationship is analyzed and summarized separately for both time spans.

In this section, there shall be discussion of different variables including employment status, self-rated health status and physical disability with respect to the level of social engagement and comparison is made between the results of prior to, and during elderhood.

#### **5.3.1 Prior to and elderhood comparison of employment status with social engagement**

Formerly, Aquino *et al.* (1996) studied life satisfaction in relation to the employment status and social support so this study also attempts to explore the relationship between employment status and level of social engagement. Respondents were asked to select an appropriate option regarding their employment status for both the time periods.



Table 5.1 depicts the information about employment status and social engagement for different spans.

**Table 5.1: Relationship between Employment status and Social engagement (values are in percentage)**

*[0: Not active, 1: Partially active, 2: Active, 3: Highly active]*

Employment status:	Social Engagement				
	0	1	2	3	Total
Employed	2.1 (12.0)	7.2 (8.0)	8.2 (12.0)	82.5 (68.0)	100 (100)
Self-employed	1.8 (4.3)	1.9 (8.5)	14.8 (19.1)	81.5 (68.1)	100 (100)
Retired	0.0 (0.0)	16.7 (11.3)	27.8 (5.6)	55.6 (83.1)	100 (100)
Housework	2.0 (2.0)	19.6 (10.2)	5.9 (12.2)	72.5 (75.5)	100 (100)
Unemployed	0.0 (0.0)	0.0 (0.0)	0.0 (66.7)	100.0 (33.3)	100 (100)
None	0.0 (12.2)	15.0 (9.0)	25.0 (6.1)	60.0 (72.7)	100 (100)

*Source: Author's own calculations.*

*Note: Percentages without parentheses are prior elderhood and within parentheses show elderhood.*

Table 5.1 shows different employment statuses and the level of SE recorded as responses from 1 to 4. 2.1% of respondents were employed prior to elderhood but were not active, scoring 1. However, it rose to 12% during elderhood. 7.2% were employed but partially active, scoring 2 prior elderhood which reached 8% in elderhood. 8.2% employed people were active prior to elderhood and it arose to 12% in elderhood. There was a drop from 82.5% to 68% in employed respondents who scored 4, being regarded as highly active.

Self-employed respondents who were not active were 1.8% and reached 4.3% during elderhood. Partially active self-employed respondents increased from 1.9 to 8.5%. Active self-employed persons increased from 14.8 to 19.1% and highly active dropped from 81.5 to 68.1%. Overall, either a respondent is employed or self-employed the engagement level 4 drops by almost the same proportion during elderhood.

There were no retired persons who were not active for both time periods hence showing 0%. Partially active retired persons dropped from 16.7 to 11.3%. There is a prominent decline in active retired persons from 27.8 to 5.6%. Lastly, percentage of retired persons who scored 4, highly active, increased from 55.6% prior elderhood to 83.1% during elderhood.

Respondents who selected housework and scored 1 remained the same at 2% for both spans. Partially active dropped from 19.6 to 10.2%. On the other hand, active respondents indulged in house working increased from 5.9 to 12.2% and highly active boosted from 72.5 to 75.5%. Moreover, either retired or housework, the proportion of highly active older people increases during elderhood.

Unemployed persons who remained not active or even partially active accounted for 0% for both periods. Prior to elderhood, all the respondents i.e. 100% scored 4 means highly active. However, 66.7% and 33.3% unemployed persons in their elderhood are active and highly active respectively. There is a drastic drop in highly active proportion of older unemployed people. This finding can be related to the claim made by Zhang & Zhang (2014) that individuals who actively participate in activities of former employers report more social engagement.

Lastly, no respondents who selected none as their employment status got a score of 1 i.e. not active prior to elderhood and 12.2% accounted for not being active in elderhood. Partially active respondents dropped from 15% to 9% when compared prior to, and elderhood. The proportion of people who selected none and were active dropped from 25% prior to elderhood to 6.1% during elderhood. Finally, 60% of respondents who did nothing prior to elderhood were highly active and it increased to 72.7%.

### 5.3.2 Prior to and elderhood comparison of health status with social engagement

Health status of elderly population is widely studied and social engagement is found to have positive relationship with health status (Liu et al., 2019; Tiziana & Philipp, 2016). Moreover, health is also one of the components of “active ageing” as defined by WHO. So, respondents were asked different questions about their health status including physical disability and self-rated health status and these were checked for any association with social engagement prior to, and during elderhood.

#### 5.3.2.1 Prior to and elderhood comparison of physical disability with social engagement

Physical disability is a factor which can have major effects on overall health status of elderly and may affect their social life as well. Several studies raised this issue and conducted surveys to extract useful information (Mendes-de-Leon, 2003; Rosso et al., 2013) Responses were collected regarding the physical disability (if any) faced by the elderly people prior to and during elderhood. Table 5.2 shows the percentage of people with and without physical disability and their level of SE.

**Table 5.2: Relationship between physical disability and social engagement (values are in percentage)**

*[0: Not active, 1: Partially active, 2: Active, 3: Highly active]*

Physical disability	Social Engagement				
	0	1	2	3	Total
Yes	3.7 (5.9)	3.7 (14.7)	11.1 (20.6)	81.5 (58.8)	100 (100)
No	1.4 (4.0)	10.4 (8.5)	12.6 (9.5)	75.6 (78.0)	100 (100)

*Source: Author's own calculations.*

*Note: Percentages without parentheses are prior elderhood and within parentheses show elderhood.*

The table above shows that prior to elderhood, 3.7% of respondents with physical disability scored 1 i.e. not active and it increased to 5.9% during elderhood. Partially

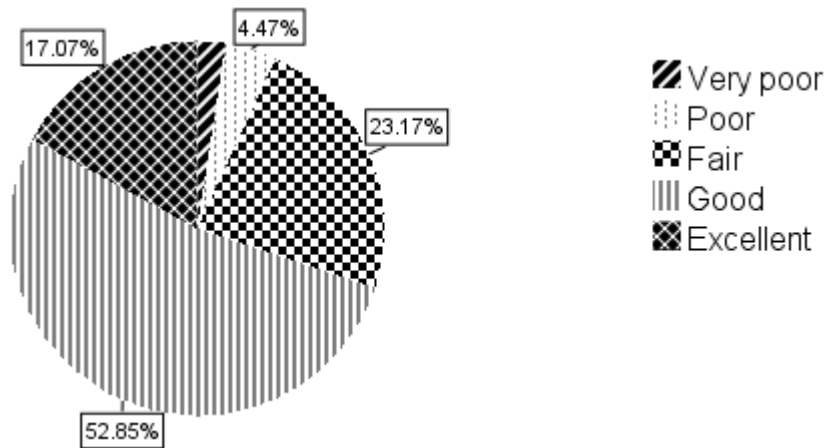
active people yet having disability arose from 3.7 prior to elderhood to 14.7 during elderhood. Active disable people accounted for 11.1% prior to elderhood and arose to 20.6% during elderhood. However, people who claimed to have disability and scored for highly active were 81.5% prior to elderhood and dropped to 58.8% during elderhood. Overall, during elderhood, proportion of highly active disable people majorly declined which is consistent with the results declared by Mendes-de-Leon, (2003).

People without any physical disability yet not active prior to elderhood were 1.4% which arose to 4% during elderhood. 10.4% people scored 2 which means being partially active and not disable which fell to 8.5% during elderhood. Same change can be witnessed in the table for partially active not disable people as it fell from 12.9% prior to elderhood to 9.5% during elderhood. Lastly, highly active people without any physical disability arose from 75.6% prior to elderhood to 78% during elderhood. Overall, it shows that physical disability causes SE to fall during elderhood as compared to those who do not have any disability same as previous studies show (Mendes-de-Leon, 2003; Jang et al., 2004).

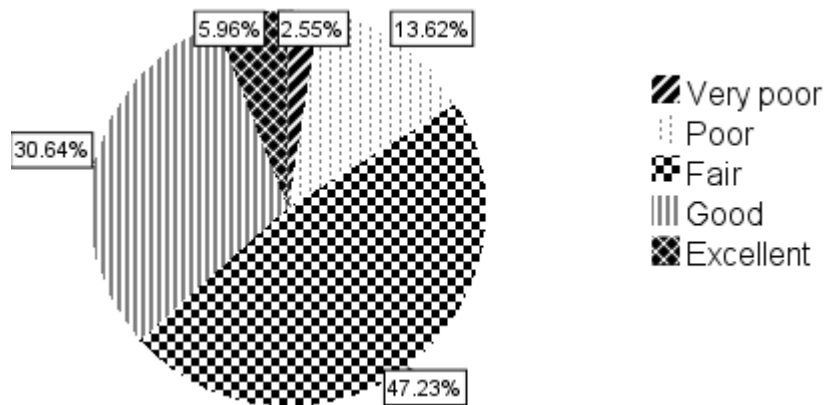
### 5.3.2.2 Prior to and elderhood comparison of Self-rated health status

Before exploring the relationship between self-rated health status and social engagement, we shall see if there is any change in health status of elderly people prior to or during elderhood. Pie charts below summarize the information.

**Figure 6: Pie chart for prior to elderhood self-rated health status**



**Figure 7: Pie chart for elderhood self-rated health status**



*Source: Author's own calculations.*

The pie charts above show that majority of respondents i.e. 52.85% selected ‘good’ as their health status prior to elderhood. However, during elderhood, self-rated health status of majority of elderly people was shifted to ‘fair’ which means people consider their health status to decline as they enter elderhood. This result can be related to those produced by Borim *et al.* (2014) as older adults who scored five or greater in physical health indicator rated their health status as bad. It means that during old age, it becomes a common perception that health condition declines.

### 5.3.2.2 Prior to and elderhood comparison of Self-rated health status with social engagement

This study uses self-rated health (SRH) as a measure of overall health status; since it is extensively regarded both a valid proxy for health and a predictor of future health consequences; comprising morbidity, mortality and perceived health (Jylhä, 2009). Respondents were asked to rate their health status prior to, and during elderhood on a likert scale of 1 to 5. Afterwards, SRH was checked for the level of SE for both time spans. Table 5.3 depicts this information.

**Table 5.3: Relationship between self-rated health status and social engagement (values are in percentage)**

[0: Not active, 1: Partially active, 2: Active, 3: Highly active]

Self-rated health status:	Social Engagement				
	0	1	2	3	Total
Very poor	0.0 (0.0)	0.0 (0.0)	0.0 (16.7)	100 (83.3)	100 (100)
Poor	9.1 (11.2)	18.2 (8.1)	18.2 (28.1)	54.5 (52.6)	100 (100)
Fair	0.0 (3.6)	14.0 (12.6)	8.8 (6.3)	77.2 (77.5)	100 (100)
Good	1.5 (2.8)	9.2 (9.7)	14.7 (9.7)	74.6 (77.8)	100 (100)
Excellent	2.4 (14.3)	4.8 (0.0)	11.9 (14.3)	80.9 (71.4)	100 (100)

Source: Author’s own calculations.

Note: Percentages without parentheses are prior elderhood and within parentheses show elderhood.

The table shows that for both time spans respondents with very poor health status were neither not active nor partially active scoring 0%. However, during elderhood, responses with very poor health status yet active raised to 16.7% from 0% prior to elderhood. All 100% of people of this health status were highly active prior to elderhood but it dropped to 83.3% during elderhood.

9.1% of the respondents with poor health status scored 1 prior to elderhood and increased to 11.2% during elderhood. Responses with poor health status and partially active dropped from 18.2% to 8.1% as compared prior and elderhood. However, active respondents with poor status increased from 18.2 to 28.1% but people with excellent health status and highly active level of social engagement fell from 54.5 to 52.6%, respectively.

1.5% responses with good health status prior to elderhood scored 1 for level of SE and it raised to 2.8% during elderhood. 9.2% people scored 2 with good health status prior to elderhood which raised to 9.7% during elderhood. However, 14.7% were active prior to elderhood with good status and it dropped to 9.7% during elderhood which means that during elderhood, the proportion of respondents with good health status and SE level of being partially active and active was same. Proportion of highly active people with good health was raised from 74.6 to 77.8%. It shows that level of social engagement was greater for those with fair and good health status during elderhood than those with very poor or poor health condition.

2.4% respondents with excellent health status scored 1 which increased to 14.3% during elderhood. 4.8% scored 2 which dropped to zero during elderhood. 11.9% with excellent health status scored 3 which means active which increased to 14.3%. Lastly,

80.9% of respondents were highly active with excellent health status which dropped to 71.4%.

The results are similar to those produced by Galenkamp & Deeg (2016) that health status and social participation are related for older adults. The challenge is then to facilitate aged people to be active despite of their health constraints.

### 5.3.3 Prior to and elderhood Gender wise differences in level of social engagement

Social participation is influential in subjective well-being of elderly people and is beneficial for both gender groups (Zhang et al., 2017). Various studies including Zhang et al., (2017); Thomas (2011); Tomioka et al. (2017) examined gender differences in social engagement among older population. Similarly, this study attempts to explore the gender differences in level of social engagement among elderly population for both the time periods. Table 5.5 depicts this information.

**Table 5.4: Gender-wise level of social engagement (values are in percentage)**

*[0: Not active, 1: Partially active, 2: Active, 3: Highly active]*

Gender	SE				
	0	1	2	3	Total
Male	1.9 (3.1)	3.7 (6.9)	14.4 (11.9)	80.0 (78.1)	100 (100)
Female	1.1 (5.4)	19.3 (11.8)	8.6 (7.5)	71.0 (75.3)	100 (100)

*Source: Author's own calculations.*

*Note: Percentages without parentheses are prior elderhood and within parentheses show elderhood.*

It shows that the proportion of not active males increased from 1.9 to 3.1% as compared prior to, with during elderhood. Partially active males scoring 2 increased from 3.7 to 6.9%. However, males scoring 3 and 4 means active and highly active dropped from 14.4 to 11.9% and 80 to 78.1% respectively. Not active females increased from 1.1 to



5.4% from prior to during elderhood while, active females dropped from 19.3 to 11.8%. Active females also dropped from 8.6 to 7.5% but highly active females raised from 71.0 to 75.3%. Overall, percentage of active and highly active males dropped as compared prior to, with during elderhood. While proportion of highly active females increased during elderhood. This result is similar to the one extracted by Huang & Yang (2019) that men are more socially active than females prior to elderhood but during elderhood females are more socially engaged than males.

#### **5.4 Implementation of The Islamabad Capital Territory Senior Citizens Board Bill, 2017<sup>3</sup>**

The act came into existence with an aim to enhance the well-being, ease and dignity of the people aged 60 years or above in the Islamabad Capital Territory. Respondents were asked whether they are familiar or availing the provisions granted in this bill or not. All the provisions granted in the bill were turned into questions to collection the responses. Table 5.5 summarizes the information collected.

**Table 5.5: Implementation of The Islamabad Capital Territory Senior Citizens Board Bill, 2017**

*[0: No, 1: Yes, 2: Don't know, 3: No response]*

<b>Questions</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>Total</b>
Do you own a Senior Citizens card?	188 (74.3)	63 (24.9)	-----	2 (0.8)	253 (100)
Do you get free of charge entry to public museums, libraries, parks and recreation facilities?	137 (54.2)	33 (13.0)	81 (32.0)	2 (0.8)	253 (100)
Do you receive any financial support from government?	195 (77.1)	55 (21.7)	-----	3 (1.2)	253 (100)
Are you being prioritized while receiving basic services at services areas (like banks, supermarket, etc.)?	96 (38)	122(48.2)	32 (12.6)	3 (1.2)	253 (100)

<sup>3</sup> For details, the act is available at: [http://www.senate.gov.pk/uploads/documents/1486985940\\_429.pdf](http://www.senate.gov.pk/uploads/documents/1486985940_429.pdf)

Do you get concession in medical facilities and medicine charges?	156 (61.7)	70 (27.7)	24 (9.4)	3 (1.2)	253 (100)
In hospitals, is the provision of care proper to the deserving senior citizens?	122 (48.2)	75 (29.6)	53 (21.0)	3 (1.2)	253 (100)
Do you get fares concession in public transport?	182 (72.0)	22 (8.6)	46 (18.2)	3 (1.2)	253 (100)
Is there any old age home within the territory of Islamabad?	17 (6.7)	94 (37.4)	139 (54.7)	3 (1.2)	253 (100)

*Source: Author's own calculations.*

*Note: Values in parentheses are percentages of total observations.*

As per the act, senior citizens card was to be issued to the older people of Islamabad so that they can avail different opportunities. As shown in the table above, only 24.9% of older people out of a total of 253 respondents hold this card and 74.3% don't. Free of charge entry to public places for older people was mentioned but only 13% older people avail it. 32% of people selected don't know which means their frequency of visits to such places is zero or very low. 21.7% i.e. 33 out of a total of 253 are receiving financial assistance from the state. 122 persons or 48.2% persons claimed that they are being prioritized at crowded places like bank, supermarket etc. 61.7% claimed that they don't get discount in medical facilities and 48.2% selected 0 for the proper care for deserving senior citizens at hospitals. 72% don't get discount in public transport and 18.2% claimed that they don't know which means either they don't pay for themselves for public transport or they don't use it. Lastly, according to the act, old age homes were to be established and maintained at accessible places but 54.7% senior citizens are not aware of existence of any old age home in the capital.

### **5.5 Effects of corona virus on pattern of activities of elderly people**

As the world is going through the pandemic, this study also captures the effects of the pandemic on the activities of elderly people and their perception about maintaining their social life even when the world turns into normal. As this age group is at the verge of catching the virus, so it is essential to explore its effects on their activities. Respondents

were given certain statements and were asked to choose the appropriate option on a likert scale of 1 to 5 whereas; 1 represents strongly disagree and 5 is for strongly agree. Information extracted is tabulated below.

**Table 5.6: Effects of the pandemic on pattern of activities**

[1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly Agree]

Statements	1	2	3	4	5	No response
I am no more a part of social gatherings	5 (2.0)	33 (13.2)	42 (16.7)	94 (37.2)	73 (28.9)	5(2.0)
I spend more time praying or meditating	6(2.4)	29(11.5)	40(15.7)	102(40.3)	70(27.7)	6(2.4)
I watch more television than usual.	13(5.1)	43(17.0)	53(21.0)	95(37.5)	43(17.0)	6(2.4)
I use more mobile phone than usual	26(10.3)	53(21.0)	50(19.7)	86(34.0)	32(12.6)	6(2.4)
I have acquired a new hobby/skill.	39(15.5)	65(25.8)	70(27.7)	55(21.8)	17(6.8)	6(2.4)
I spend more time with family than usual.	1(0.4)	25(9.9)	41(16.2)	112(44.3)	67(26.5)	7(2.8)
I would not be able to maintain my social life like before even after the pandemic.	36(14.2)	64(25.3)	85(33.6)	44(17.4)	18(7.1)	6(2.4)

Source: Author's own calculations.

Note: Values in parentheses are percentages of total observations.

Table 5.6 shows that only 2% strongly disagreed with the statement that their participation in social gatherings is no more during the pandemic. For the same statement, 37.2 and 28.9% people selected agree and strongly agree respectively. 40.3% is the highest proportion falling in the response i.e. 4 for the statement that the time spent in praying has been increased. Increase in television time and use of mobile phone is agreed by 37.5 and 34% respectively. Adoption of a new hobby or skill is not really observed as only 6.8% strongly agreed to it. 44.3% selected 4 that their time with family

has been increased during ongoing pandemic. Lastly, 14.2% selected 1 for the perception that their social life would not be maintained like before even after the pandemic ends. 33.6% stayed neutral and selected 3 while 17.4 agreed with this perception and 7.1 strongly agreed.

### 5.6 Results based on Paired Sample T-test

In this section, we will discuss the results attained through paired sample t-test. It is used to check either the mean difference between two sets of observations is zero or not. In this case, we will check our hypotheses, the null and alternative hypotheses regarding any shift in social engagement prior to, and during elderhood. Table 5.7 depicts the results of the test for this study.

**Table 5.7: Results for paired sample T-test**

Results	Prior to elderhood	Elderhood
N	115	115
Mean	2.86	2.75
Standard deviation	1.240	1.033
T statistics	0.818 (0.415)	

*Source: Author's own calculations.*

*Note: Value in parenthesis is p-value.*

The table above shows that p-value for t statistics is greater than 0.05 i.e. 0.415 hence showing the acceptance of  $H_0$  that there is no structural shift in social engagement among elderly population prior to, and during elderhood. Alternatively, it accepts the alternative hypotheses,  $H_1$ . However, there is a change in composition of social engagement with respect to employment status, physical disability and with respect to gender.

The results show that there is no structural shift in social engagement prior to, and during elderhood. This result is consistent with Pinto & Neri (2017) where they analyzed a number of longitudinal studies and found five studies claiming that there is

no change in social involvement before or during elderhood. Moreover, Carstensen & Laura (1992) stated that during old age there is more inclination towards social support from the family than other leisure activities. So, the composition of social engagement during old age is closely linked to the emotional requirements of the older people.

## Chapter 6

# CONCLUSION

### 6.1 Conclusion of the study

Population ageing has been recognized as one of the four demographic megatrends. Undoubtedly, it is a human success story of increasing longevity and decreasing fertility. Neglected is the fact that it is coming with major challenges especially for developing countries and two-third of total elderly population will be residing in those countries (United Nations, 2019). Moreover, Pakistan ranks 92<sup>nd</sup> out of 96 on Global Age Watch Index 2015 and 81 in the domain of enabling societies and environment which is quite low.<sup>4</sup>

Keeping in view the definition of ‘active ageing’ presented by WHO, this research was conducted to study the concept of social engagement among elderly population. Following is the definition of active ageing:

*“The process of optimizing opportunities for health, participation, and security in order to enhance quality of life as people age.” (WHO)*

From the above quoted definition of Active Ageing by WHO, component of participation was taken as “Social Engagement” in this study. In order to measure this multifaceted phenomenon, three indicators were extracted from the existing literature including, productive activities, social activities and time spent using gadgets.

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<sup>4</sup> For details, see Global Age Watch Index. Available at : <https://www.helpage.org/global-agewatch/population-ageing-data/country-ageing-data/?country=Pakistan#collapseFour>

A detailed questionnaire was designed online to collect the data from the population aged 60 years or above and on behalf of them from their offspring etc. Due to the spread of novel virus, COVID-19 it was not possible to get the questionnaires filled face to face. For every individual, data was collected for two different time periods i.e. between 55-60 years of age as prior to elderhood and after 60 years of age which is during old age.

A representative sample of 253 respondents from Islamabad was taken and the index of social engagement was formed. Two indexes were formed; prior to, and during elderhood in order to make a comparison. Results were produced using descriptive statistics and parametric test of paired sample t-test was applied to test for the difference in the level of SE for two separate time periods for the same individual.

The relationship of different variables including health status, physical disability, employment and others was checked with the level of social engagement for both time periods separately and were compared. Employment status was found to have relationship with social engagement. The retirees were more active in old age rather than employed ones. Moreover, disability was also found to effect the level of social engagement. The results were similar to those produced by different related studies conducted in the past.

Furthermore, difference in SE between both time periods was also assessed separately for both the genders. Females were found to be more socially engaged than the males during old age. However, level of SE fell for both males and females as they enter elderhood. Overall, there was no transition in the level of Social Engagement prior to and during elderhood but there was a change in the composition of their activities.

There is an Act for the Welfare of Senior Citizens of Islamabad 2017 available according to which senior citizens are to be issued a Senior Citizens card and entitled with a number of benefits. However, the results showed that there is a lack of awareness among elderly population regarding this Act. Therefore, it shows that the tools are available but there is a lack of awareness and implementation.

## **6.2 Policy recommendations**

The findings of this study suggest that there is no transition in SE among elderly population prior to and during elderhood. However, there is a change in composition of activities. It was founded that the self-rated health status of the elderly population dropped to 'fair' from 'good' as they entered elderhood. Health care is a basic need during old age. Moreover, retirees were found to be more socially engaged during old age than those who were unemployed. They may be indulged in the social engagement activities of their previous employers. On the other hand, SE level among unemployed persons greatly declines as they step into old age. Prevailing retirement age in Pakistan is 60 years which might need a reconsideration.

As Pakistan is also reaching the problem of ageing so it needs to adopt proactive policies. Following policies are recommended to cope with the prevailing issue:

- Provision of health care facilities specifically to elderly population and prioritizing them in hospitals.
- Social involvement of elderly unemployed population in societal activities like establishing age-friendly community centers.

However, the country has some designed policies just like The Islamabad Capital Territory Senior Citizens Board Bill, 2017 consists of a set of policies for the welfare of senior citizens of Islamabad. Unfortunately, as supported by the data, majority of the



older people are deprived of those incentives which clearly indicates a lack of implementation. It has been recommended to focus on implementation step as well after designing the policies.

### **6.3 Limitations of the study**

Current study was limited only to the capital, Islamabad which includes majority of retired respondents from urbanized areas. Qualitative analysis is lacking in this study as due to the pandemic, we were unable to collect data face to face and data was collected through online questionnaire. Moreover, this concept of Social Engagement can be studied by taking other indicators and might show a transition from prior to during old age. For future studies on this theme, suggestion is to include more cities, make rural urban comparison and include the mental health of elderly as well in order to produce more comprehensive study.

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