Chapter – I

Introduction

1.1 Background of the study

Since a decade or two, most people can expect to live into their 60s and beyond (UNDESA, 2007). In low and middle-income countries, this is largely the result of large reductions in mortality at younger ages, particularly during childhood and childbirth, and from infectious diseases (Bloom, 2011). In high-income countries, regular increase in life expectancy is now mainly due to declining mortality among older people (Christensen *et al.,* 2009).

Ageing is a persistent decline in the age-specific fitness components of an organism due to internal physiological deterioration (Rose *et al.,* 2012). It is the natural stage of human life cycle and the last phase of human life. It is the universal phenomenon in the lives of human being from beginning, and according to most biologists the aging begins from the fourth decade of life and ends with death, the end of biological life (Dziechciaz & Filip, 2014). It brings with it immeasurable problems for the old-age people who have grown old and which affect the physical as well as mental state and functioning. The old age problems can be distinguished under the aspects related to health, economic, physiological, housing and elder abuse. The old-age has three aspects, viz. biological, sociological and psychological. Biological aspect of life related to the deterioration of a mature organism (Handler, 1960). Sociological aspect is the changes in social behaviour and roles of humans (Vatuk, 1980) and finally, the psychological process of aging is dynamic and irreversible, which occurs in the

individual development of living organisms over time and the aspects related to the psychological process of aging seems to the state of mind (Vischer, 1967). The World Report on Aging and Health (WHO, 2015) stated that Healthy Ageing as the process of developing and maintaining the functional ability that enables well-being in older age. Hence, well-being is considered in the broadest sense and includes the aspects such as happiness, satisfaction and fulfilment.

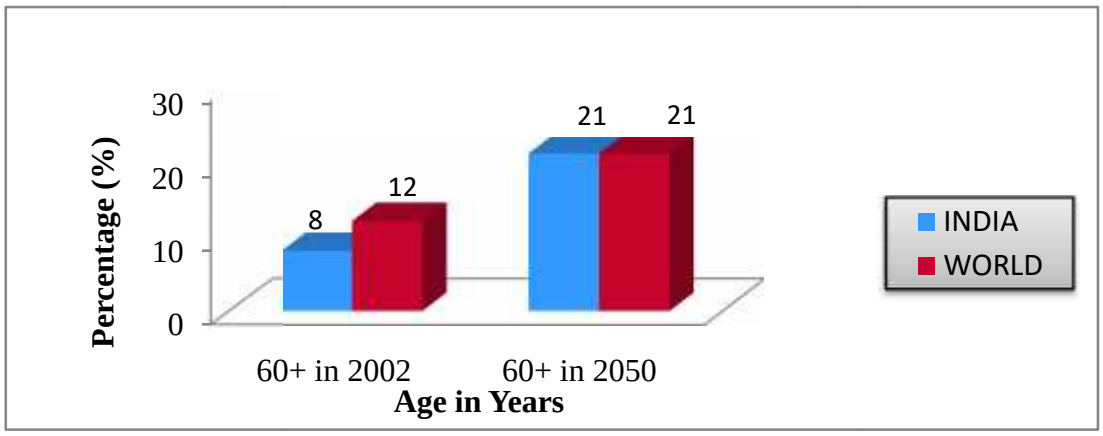
The proportion of older people will continue to rise worldwide with advances in medicine and prolonged life expectancy (WHO, 2011) and also for the improved healthcare facilities (Devi and Bagga, 1999). Population ageing is one of the most important global trends of the 21st century and the issue has started receiving much attention from the public, media and policy makers. While the 21stcentury is widely being considered as "the century of elderly persons", the 22nd century is expected to witness the phenomenon of the 'ageing of the aged'. The increase in life expectancy has resulted in a major shift in the age group of 80 years and above, known as the 'oldest-old'. This emerging trends calls for tremendous efforts to cope with new demands and challenges of economic, emotional and health related issues.

In 1999, Government of India adopted 'National Policy on Older Persons', and defined elderly as a person who is of age 60 years and above and the United Nations has also considered the same age for reference of older population. The number of elderly in the developing countries has been growing at an incredible rate; where 67% of older persons are living in developing countries (World Population Ageing, 2015), while in India, it is also not an exception. According to census, 2011, elderly population aged 60 years and above constitutes about 8% of total population (Census of India, 2011). According to the United Nations Population Division report, elderly

population of India will increase dramatically over the next four decades and will constitute 19% of total population by 2050 (World Population Prospects: 2014). This dramatic increase in life expectancy of elderly over the years has resulted not only in a substantial rise in the number of older persons but also a major shift towards the age of 80 years and above. According to the demographic profile, the overall population of India will grow by 40% between 2006 and 2050, whereas the elderly population aged 60 years and above will increase by 270% and those in the age of 80 years and above by 500%. Presently, about 10 million elderly people in the age group of 80 years and above in India who are called oldest old, and this number is expected to rise to approximately 53 million by the year 2050 (State of Elderly in India, 2014).

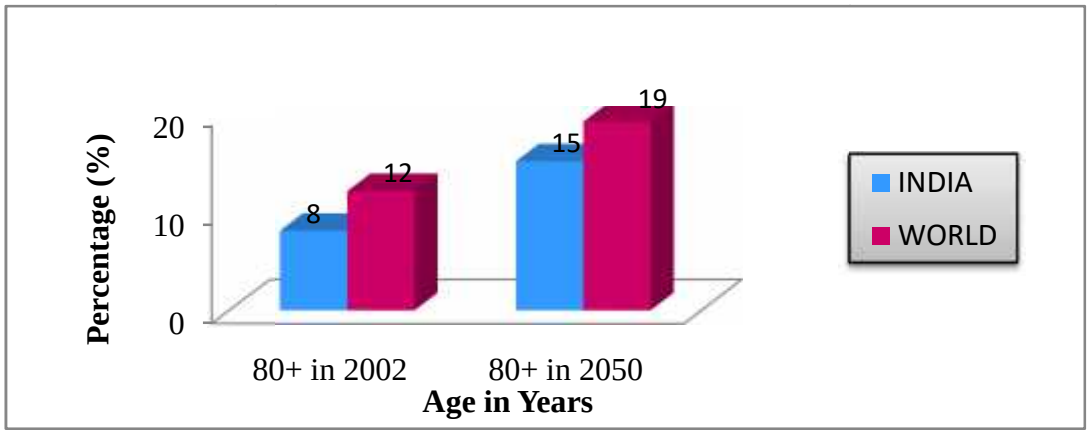
In the present world, one can expect to live much longer than earlier people, but the world around them has changed (Beard, 2012). For example, the past 50 years have seen a massive demographic shift from rural to urban living, and as a consequence, majority of the world's population are now live in cities and towns (WHO, 2010). As life expectancy increases, the members of consecutive generations within a family are living together, and although the number of surviving generations in a family may have increased, today these generations are more likely, than in the past, to live separately. Indeed, in many countries the proportion of older people living alone is rising substantially. For example, in some European countries, more than 40% of women aged 65 and above now live alone (Ageing in Ireland, 2007). In societies with strong traditions of older parents living with children, such as in Japan, traditional, multigenerational living arrangements are also becoming less common (NIPSSR, 2013). Even in India, a country where strong family ties have often been assumed to continue, only 20% of households include people living in joint or extended families (IIPS and Macro International, 2007).

The oldest old people (80 years and above) need urgent attention due to numerous morbidity and health related issues. Because the elderly people of this particular age group suffers more on account of disability, chronic disease, terminal illness, dementia and depression, accidents, nutritional deficiencies, loneliness, and many more. Furthermore, they become isolated because of their age, which makes them emotionally and financially dependent on their nearest family members and other relatives.



Source: HelpAge India, 2015

Figure 1.1. Prevalence and prediction of elderly (Age > 60 years) population in India and World



Source: HelpAge India, 2015

Figure 1.2. Prevalence and prediction of elderly (Age > 80 years) population in India and World

1.2 Psychosocial or mental health

World Health Organization (WHO) defined mental health as *"a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community"* (WHO, 2004). Mental or psychosocial health was dealt in several researches include two key factors of the WHO definition, i.e. positive emotions and positive functioning. While doing in-depth research on individuals, three components of psychosocial health have been identified, viz. emotional well-being, psychological well-being and social well-being (Keyes, 2006). Emotional wellbeing has been characterised by happiness, interest in life, and satisfaction, while psychological well-being comprises liking most of one's own personality, managing the tasks of daily life, maintaining a fair relationships with others. On the other hand, positive functioning towards social contribution and integration, social actualization, i.e. thinking in a way that the society is good for living for all human being, and also social coherence, that the way society works makes sense to them, are the main characteristic features of social well-being (Keyes, 2014). All components represent imperative but not compulsory aspects of mental health. Moreover, they may contribute to a varying degree to the state of evenness, so that fully developed functions may weaken another aspect of mental functioning.

1.2.1 Psychosocial or mental health traits

1.2.1.1 Depression

Depression is not a normal but unavoidable part of aging; it is a mood disorder that persistently characterized by sadness, feeling down, changes in appetite, having a loss

of interest or pleasure in daily activities, insomnia or difficulties in sleeping, feelings of hopelessness and sometimes suicidal tendencies. The word ‘depression’, which the writer William Styron has called “darkness visible,” is defined by Stedman’s Electronic Medical Dictionary as “a temporary mental state or chronic mental disorder characterized by feelings of sadness, loneliness, despair, low self-esteem and self-reproach”. Depression can affect older adults living in any habitat, may be in the rural or urban setting. It can occur at any age; in case of this very old age group, it is the most common mental health disorder.

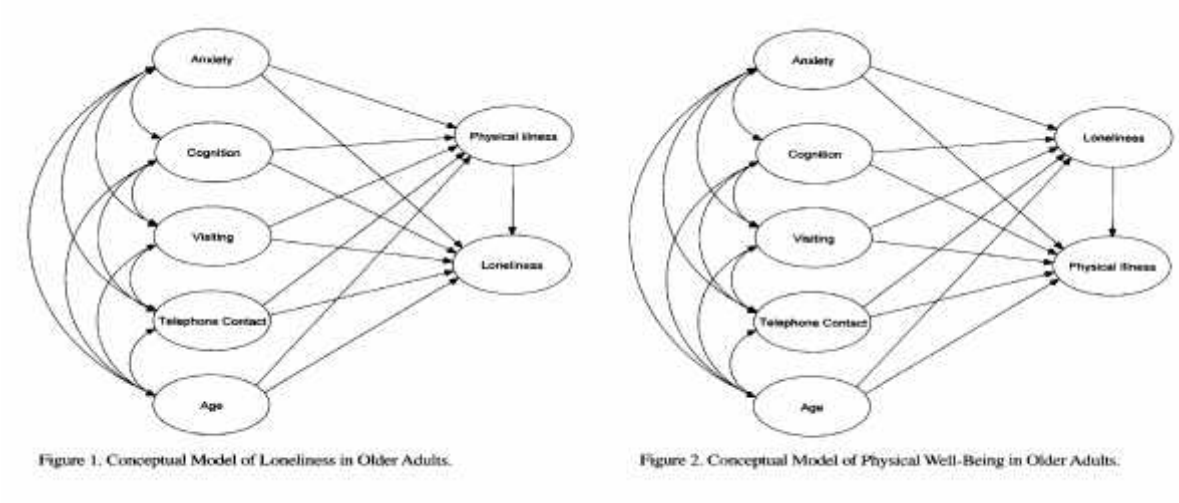
As there is a tendency for people to see their symptoms as part of the normal aging process, it is evident that many of the cases, the elderly people still goes untreated in some issues. So that the depression of old age people is very commonly associated with the functional decline which need more care, a higher likelihood of comorbid physical illnesses, reduced recovery from illness, and premature death due to suicide and other causes (Blazer, 2001; Wiese, 2011).

Because of overwhelming consequences of depression among the elderly people, it is now an important public health problem, which is associated with increased risk of morbidity, increased risk of suicide, decreased physical, cognitive and social functioning, and greater self-neglect, all of which are in turn associated with increased mortality (Fiske *et al.*, 2009; Blazer, 2003). At the same time, on the contrary to common perception, major depression appears to be less frequent among older adults than at earlier ages (Goodwin *et al.*, 2005).

1.2.1.2 Loneliness

Loneliness is also a common mental health trait that is complex, distressing feeling and usually very common unpleasant emotional response to being alone or isolated despite being surrounded by people and they feel that he or she lacks support. It is most common in adolescence, but is also prevalent in older, as well as in oldest ages (Fees *et al.,* 1999). The effort to conceptualize loneliness started in the 1950s with the publication of "Loneliness" by Reichman (1959). The definition of loneliness is as follows- "*Loneliness is a situation experienced by the individual as one where there is an unpleasant or inadmissible lack of (quantity of) certain relationships. This includes situation, in which the number of existing relationships is smaller than in considered desirable or admissible, as well as situation where the intimacy one wishes for has not been realized*" (De Jong Gierveld, 1987).

Loneliness symbolizes the experiences of elderly persons in everyday life. Demographic changes, the urbanization of rural areas, increasing use of newer technologies and the consequent establishment of virtual relationships, as well as other factors are the outcome of an individual's suffering from loneliness, especially in adolescents and the elderly (Azeredo and Afonoso, 2016). It is a concept that relies on comparisons and that is experienced when an individual's lifestyle or state of mind is deprived of the relationships desired and current relationships are seen as insufficient in comparison to those of the past, to those predicted in the future, or to those possessed by other people (Fees *et al.,* 1999; Lopata, 1995; Weiss, 1973). Lopata (1995) also stated that the elderly persons have been considered as vulnerable because they are at high risk for "experience of change and loss".



Source: Fees et al., 1999

Figure 1.3. Diagrams of conceptual model of loneliness and physical well-being in older adults.

Being a subjective concept, it is difficult to define exactly what loneliness is and to create tools that permit quantifiable research into this particular issue. However, many researchers have tried to establish a definition of loneliness. Hossen (2012) stated that while isolation is objective, measuring as it does the number of social contacts, loneliness is subjective in that it expresses a person's dissatisfaction with these social contacts. According to Kamiya *et al.* (2014) health problems, low self-esteem and social rejection may be a basis for the appearance of loneliness. Moreover, loneliness can be influenced by the past of an individual and his/her spirituality and/or religiosity (Costa, 2013). Loneliness has also been found to be a precursor of psychological disorders, mental health problems, depression, anxiety and even suicide (Vander *et al.*, 2012; Park *et al.*, 2013; Alpass *et al.*, 2003; Teh *et al.*, 2014; Vakili *et al.*, 2017).

1.2.1.3 Cognitive function

Cognitive function of an individual is related to conscious intellectual activities like thinking, reasoning, remembering and the like, based on or capable of being reduced to empirical factual knowledge. All elderly people gradually develop some degree of decline in cognitive capacity like forgetfulness, decreased ability to maintain focus, decreased problem solving capacity, memory problem etc.

Cognitive function is known to be influenced by many factors such as home environment in childhood, genes, and socio-demographic factors (Richards, 2004). Cognitive decline is commonly detected at middle age, and from that point onwards age-related decline is the rule (Schaie, 1994). Very few researches have been done on cognitive functioning in the general population. Among older adults of Indonesia (Wreksoatmodjo, 2017; Maharani *et al.*, 2016; Ramachandran and Aryani, 2018) such studies have been carried out.

The decline of cognitive function is the essential characteristic of Alzheimer's disease (AD) and other dementias that significantly lead to the risk of functional dependence and poor quality of life among the elderly (Lara *et al.*, 2017). As per World Alzheimer report, over 46 million people were living with dementia worldwide in 2015, and this number is estimated to reach 131.5 million by 2050 (Prince *et al.*, 2015). Cognitive decline started after midlife, but most often found at higher ages (Aartsen *et al.*, 2002). The elderly people who put up with cognitive decline would like to demand continuous care from their families and society and more likely to experience few activities of daily living.

Many studies have shown that cognitive decline is associated with socio-demographic factors (Tervo *et al.,* 2004), life habits (Tuon *et al.,* 2010), chronic diseases (Tervo *et al.,* 2004), and social networks (Zunzunegui *et al.,* 2003). Again, it has also been shown that extensive social network seems to protect against dementia (Wang *et al.,* 2015; Fratiglioni *et al.,* 2000). Thus, to impede cognitive decline of the old age people, an effective population-based strategy needs to be established.

1.2.2 Phobia

1.2.2.1 Claustrophobia: It is a type of common mental disorder which means fear of being a small space/room and feelings like unable to escape. It is mainly a form of anxiety disorder, in which an unreasonable fear of having no chance to escape or being closed-in may lead to a panic attack.

1.2.2.2 Altophobia/Acrophobia: It is the abnormal fear of heights. The meaning of the word alto in Greek is "*high*" and phobia in Greek meaning "*fear*". People having fear may avoid climbing, being on roofs of buildings, driving over mountains or bridges, and sometimes stairwells and railings.

1.2.2.3 Thanatophobia: It is also a form of anxiety disorder. It means fear of death. The death anxiety is distinguished from necrophobia, which is a specific fear of dead or dying people and/or things which means fear of others situation that is already dead or dying but not in owns death or dying.

1.2.2.4 Autophobia/Monophobia: It is phobia of isolation. This type of mental disorder is very common in elderly people. In this phobia an individual thought that he/she become isolated or being alone. They have the fear of being egotistical. In this

mental disorder, sufferers just to believe that they are being ignored or unloved. They need not to be physically alone.

1.3 Nutritional Status

On an account of better education, better health facilities and increase in life expectancy and a combination of high fertility and declining mortality during last few decades there is dramatically increase in human longevity that resulted the rapid increase in elderly population (Arlappa *et al.,* 2016). Such a rapid rise in the elderly population may face several challenges. The lack of sufficient income to support themselves, the absence of social security, loss of social status and recognition, unavailability of opportunities for creative use of time and ill health are some of the overwhelming problems the elderly people are regularly facing in the country (Panigrahi, 2009). Adverse nutritional profile is another principal factor that affects the daily life of the oldest-old people of the world.

In the elderly population, underweight and overweight are two very important issues that need to be effectively considered (Otero *et al.,* 2002; Inelmen *et al.,* 2003; Barreto *et al.,* 2003). Elderly people are susceptible to malnutrition for many reasons including physiological and functional changes that occur with age, lack of financial support and inadequate access to food, susceptibility and outcome of chronic diseases by affecting the immune system (Gariballa and Sinclair, 1998; Lesourd, 2004). Their functional status often stated as their disability to carry out day to day activities in which preparation of food and intake also a part of their activity, thereby these are affecting nutritional status. In India, the health problem of the elderly is compounded by poor nutrition, together with medical issues, including both communicable and

non-communicable diseases. As a result, malnutrition and morbidity create a vicious cycle (Agarwalla *et al.,* 2015).

The nutritional status of elderly people may be affected by the factors related to physical, mental, social and environmental changes which take place with ageing. Physical or physiological problems related to chewing, digestion and absorption of food, lack of appetite and difficulty in accessing or in preparing foods, etc., which may contribute to underweight (Population Reference Bureau, 2007). On the other hand, sedentary lifestyle, physical inactivity, poor diet, hormonal changes and diseases can contribute to become overweight (Inelmen *et al.,* 2003; Coqueiro *et al.,* 2010). In addition, smoking, alcohol consumption and excessive use of medication also play important roles in resulting malnutrition among them (Coqueiro *et al.,* 2010; Pickering, 2004; Jyrkka *et al.,* 2011).

Due to the lack of a standard diagnostic criterion (gold standard) to define malnutrition, various screening and assessment tools have been developed to evaluate nutritional status of elderly people (van Bokhorst-de and van der Schueren, 2013). Most of the tools include the questions on body mass index (BMI), weight and decreased food intake (Kondrup *et al.,* 2002). The Mini Nutritional Assessment (MNA) instrument is suggested for people aged 65 years and older independent of their setting (Kondrup *et al.,* 2002). The original full MNA is an 18-item questionnaire developed in the 1990s by the geriatricians in the USA and Europe to provide a simple, reliable way to assess nutritional status among the elderly population (Vellas *et al.,* 1999).

1.4 Quality of Life

The improvement in living standards of world's population is leading to longer life expectancy of the elderly. To give emphasize upon the medical and psychological difficulties, faced by the aged people, it is essential to know their quality of life (QoL). The QoL reflects the health status and well-being of this vulnerable population. Quality of life is an individual's understanding of their situation in life with respect to their values and cultural context as well as in relation to their ambitions, expectations and concerns. Quality of life of an individual has many dimensions like material well-being, close relationships, health, emotional well-being, and productivity and it differs from individual to individual.

The World Health Organization (WHO) definition of health emphasizes on wellbeing. As the elderly group of population is a vulnerable group; ergo, the concept of quality of life becomes a vital component to be considered in geriatric research. Hence, the definition of QoL is given by WHO as "*an individual's perception of life in the context of culture and value system, in which he or she lives and in relation to his or her goals, expectations, standards, and concerns*" (WHOQoL, 1994). It is, thus, a broad phenomenon covering the individual's physical health, mental state, level of independence, social support, personal beliefs and thinking, and their relationship to salient features in the environment. The World Health Day theme in 2012 was "*Good health adds life to years*" (Karmakar *et al.,* 2018). The major attention of WHO, in this regard, was mainly on the productive lives among the elderly people and not a dependency for their families and communities (WHO, 1996).

Remarkable improvement in biomedical knowledge and techniques has resulted in new life expectations not only by adding years to life, but also one of the greatest

challenges of public health is to improve the QoL to the later years of life (Kritika *et al.,* 2017; Doron and Apter, 2010; UN, 2014). As the aging population growing so fast, the QoL of the elderly population needs to be considered and should be maintained to a good level.

1.5 Activities of daily living (ADL) and Instrumental activities of daily living (IADL)

Since last four decades, ageing population (aged 60 years and above) are growing rapidly in the developing world and as a result greater prevalence of morbidity and functional disability are noticed in this particular age group. Therefore, the older adults are becoming a burden on others, especially loved ones. So, it is necessary to pay attention on the functional status of the people of this age group. Functional status is an individual's ability to live independently and to relate to their environment or to accomplish daily activities required to meet basic needs, fulfil usual roles and maintain good health and well-being.

Functional status of individuals predominantly depends on their ability to perform ADL and IADL, as reported by National Academy on Ageing Society, Washington. Functional status can be influenced or declined by some socioeconomic, physical and physiological impairment. Studies have revealed the association between ageing and higher risk of functional dependence and higher prevalence of functional disability among the older population (Knight, 2000; Chan *et al.,* 1999; Jagger *et al.,* 1993). A combination of self-report and performance-based measures of ADL may be the best way to find out the disability of an elderly individual (Mlinac and Feng, 2016; Bravell *et al.,* 2011; Angel and Frisco, 2001).

Daily dependency of old age people was studied in relation to ADL and IADL for many populations. For assessing the independent living skill, the Lawton Instrumental Activities of Daily Living Scale is the appropriate tool developed by Lawton and Brody (1969). The Lawton IADL scale is most useful for categorizing how an individual is functioning at the present time and for finding improvement or deterioration over time. On the other hand, Sidney Katz has developed the first evaluation tool called 'Katz ADL Scale', which has been established as one of the most commonly used tools to asses basic ADLs such as bathing, dressing, toileting, transferring, continence and feeding (Katz *et al.*, 1963). In the present study, both the ADL and IADL scales have been used for better assessment of functional ability of the old age people.

1.6 Factors affecting psychosocial health

One of the most important factors that affect one's psychosocial health is the role of family and its members. Children of a happy family will have better chances to become a successful adult. On the contrary, people are more likely to have problems in dealing future life, if their childhood experiences pessimistic parents and other family members, hunger, drug and emotional abuses and other negative environments. However, exceptions are also observed in different societies.

Environmental factors also play imperative roles in the psychosocial health of an individual. Continuous strenuous situations and pressure may cause substantial problems in one's mental health. The internal factors of psychosocial health are also important. Some of them are genetically inherited traits, like singe gene disorders. The others include hormonal functioning, physical health status and fitness level and also the emotional health. The presence of chronic disease or injuries may lead to

many unhealthy psychosocial conditions. To get rid of ill-psychosocial health, high self-esteem and self-regard in addition to attitude in facing different problems can help one to remain healthy. Social relationships are also important to have a healthy psychosocial spirit. Ability to cope with odd situations, amicability, friendly appearance, open mindedness, mental flexibility, emotional stability are the key factors that help one to stay mentally healthy.

1.7 The oldest-old people

The term “Oldest-old”, generally refers to the population aged 85 years and above, was coined in the annual meeting of the American Association for the Advancement of Science (AAAS) in 1984. The session was organized by Matilda White Riley and Richard Suzman of the Behavioural and Social Research Programme at the National Institute on Aging (NIA) in USA. It had come to the attention of NIA staff that three individual researchers, Eileen Crimmins, Kenneth Manton, and Ira Rosenwaike, reported that this age group was growing far faster than the official projection made by either the Bureau of the Census or the Social Security Administration. Indeed, the growth rate for this age group appeared to be higher than that for any other 5-year age group in the population. The oldest old appeared to have a high need for all forms of long term care. Their per capita and total usage of Medicare and Medicaid were also extremely high, implying ever-higher costs should affect the rate of growth persist or increase. Despite these facts, less was known about the oldest old than any other age group.

However, even in US, limitations of survey data, resulting from small sample sizes at the oldest ages, forced several studies of the oldest old, to define them as those ages 80 and older. Later, WHO categorized the people above 80 years of age as oldest-old

(WHO, 1999). The oldest old have the highest prevalence of morbidity, disability and institutionalization than any other age group. The term does perhaps imply the progression of frailty associated with Neugarten's (1974) conceptualization of the "young old" and "old old". But, unlike Neugarten's (1974) concept, which joined age, health, and social characteristics, the term oldest-old, in its basic usage, simply defined the chronological age group of those age 85 and older, without implying that all, or most, of the oldest old were necessarily frail.

The oldest old are much more likely to need help in daily living than the younger elderly. The oldest old consume medical care and other services and benefits of Government and private transfers far out of proportion to their numbers. It is evident that the proportion of individuals leading active daily lives declines and the disability rates increases dramatically with age among the oldest old (Yi *et al.,* 2002). Because the oldest old subpopulation is growing much faster than any other age group and because they are the most likely group to need medical and social services, it is necessary to investigate the demographic, socioeconomic and health status of the oldest-old (Yi *et al.,* 2002).

Since last decade the Election Commission of India has started to publish separate voter list for the Indian citizens belonging to 80 years and above age. In the year 2011 these elderly people has been categorized as Super Senior Citizen by the Department of Finance, Government of India for the purpose of income tax assessment. Thus, one may be tempted to assume that the identification of the population of 80 years and above age as separate category in India may have its genesis in the United States of America.

1.8 The oldest-old people vis-à-vis psychosocial/mental health

In the global scenario, individuals of the oldest old age group are facing psychosocial health related issues as one of the most important aspects of their life. However, in many countries, public health research considering mental health and its related associates were considerably infrequent. Mental and behavioural disorders account for 12% of the global burden of disease. It is estimated that nearly 450 million people suffer from a mental or behavioural disorder in the world. The psychiatric disorders account for 5 of 10 leading causes of disability as measured by years lived with a disability. The overall Disability Adjusted Life Years (DALYs) burden for neuropsychiatric disorders is projected to 15% by the year 2020 (Maity and Mukhopadhyay, 2015).

Many studies on social and economic aspect of aging were made during the 1920s, 1930s, and early 1940s, but these were almost entirely in the nature of inventories, surveys and observational researches designed to aid in the immediate solution of practical problems (Tibbitts, 1960). Systematic approaches to the study of aging began with research on biological and psychological aspects, followed by studies on behavioural and social phenomena. The advancement of the study on aging has been most rapid since the late 1930s, when those biological scientists, interested in time related changes in living cells, tissues and physiological mechanisms gave impetus to the development of a gerontological science through the formation of mutually interested groups (Tibbitts, 1960).

During the 1930's Leo W. Simmons did his doctoral dissertation on the aged in primitive societies. His monumental book entitled "The *Role of the Aged in Primitive Society"* appeared in 1945 and set the stage for evaluating the effects on the aged

people who were on the transition from agrarian to industrial cultures. In 1940 Landis completed his pioneering study, "*Attitudes and Adjustments of Aged Rural People in Iowa*" and others began to report studies of personal adjustment of older persons, primarily in institutions.

The Stanford Later Maturity Research Project, conducted by Miles and his associates in the early thirties, was the first systematic attempt to investigate the psychological aspects of aging (Kaplan, 1946). Miles (1939) summarized the results of his research and of other studies, in Cowdry's (1939) first edition in 1946, the American Psychological Association set up a Division of Later Maturity and Old Age.

1.9 The oldest-old people and psychosocial health: A brief global literature review

1.9.1 Depression vis-à-vis associated variables: oldest-old people

Depression is the most common mental health problem among the elderly (Canadian Coalition for Seniors' Mental Health, 2006) and is associated with a significant burden of illness that affects patients, their families and communities and takes an economic toll as well. Because of the faster growing trend of aging population, it is expected the number of elderly suffering from depression will increase (Wiese, 2011). Different researches on the prevalence of depression stated that 14% to 20% of the elderly living in the community has the depressive symptoms in higher rates among the elderly in hospital and even also higher rates in long-term care facilities (Wiese, 2011; Thakur and Blazer, 2008; Jones *et al.*, 2003; Teresi *et al.*, 2001; Ames, 1990; Koenig, 1988; Blazer, 1980).

Studies reveal association between depression and different socioeconomic and demographic status like age, illness, higher level of activities of daily living, sex, marital status, low family income, lack of social support and self-rated health (Murata *et al.,* 2008; Chen *et al.,* 2005). Another study shows that Childlessness appears to be more important in influencing the depression for women than men (Koropeckyj, 2010).

The prevalence of depression was very common among the urban elderly (Blazer *et al.,* 1985; Crowell *et al.,* 1986) and in some studies it has also been found that rural elderly had the higher prevalence of depression (Hoyt *et al.,* 1997; Walters *et al.,* 2004). Increased percentage of US population will be 65+ over next decade with an increasing prevalence of African, Latino and Asian Americans who have more difficulty in accessing healthcare services (Gellis and McCracken, 2008). A study among the elderly shows that lack of social support, divorce, alcoholism, smoking or use of tobacco, lack of physical activities etc. are associated with depression (Mina, 2017). Another study, on the contrary, shows that sex and smoking status were negatively associated with depressive symptomatology in individuals (Babatsikon *et al.*, 2017). Another study importantly reveals that the elderly of China, parented in the authoritarian style, were found to have higher levels of depression and anxiety, with lower mental flexibility (Zhong *et al.,* 2016). Barua *et al.* (2011) shows that there was a significant decrease in the trend of world prevalence of geriatric depression; it was significantly higher among Indians, in recent years, than rest of the world. Kuriyama *et al.* (2006) published their study on obesity and depressive symptoms among elderly Japanese. The result of this study has evidently shown that in men, no apparent association was observed between BMI and depressive symptoms. In the same study,

an inverse trend was observed only among the women with chronic medical conditions.

1.9.2 Loneliness vis-à-vis associated variables: oldest-old people

Loneliness is another imperative parameter that has been well reported as affecting factor of depression and ill-health among the elderly people throughout the world. On the other hand, many variables were also found to be associated with loneliness among different population groups. Loneliness is a very common mental state among the elderly people (Holmen *et al.,* 1994). Although loneliness may occur in all age groups, this phenomenon is more peculiar in older people and loneliness is more prevalent among them (Hazer and Boylu, 2010). Socio-demographic factors such as age and marital status, numbers of offspring and place of residence influence loneliness (Teh *et al.,* 2014; Vakili *et al.,* 2017). A review of the available literature demonstrate that spouse loss, declining health, reduced social relations, and hospitalization are some of the factors, that have substantial association with loneliness among the elderly (Bandari *et al.,* 2019; Squires, 2015; Valtorta and Hanratty, 2012). Victor *et al.* (2005) identified many independent factors of vulnerability for loneliness, which are living without spouse, increase in duration of living alone, elevated mental morbidity, poorer current health and poorer health in old age than expected.

Older persons with low educational attainment and income and the unemployed are likely to feel lonely as compared to those with higher education and income and who are currently working (Hawkley *et al.,* 2008; Victor *et al.,* 2006; Karnick, 2005; VanderWeele *et al.,* 2012; Park *et al.,* 2013; Alpass *et al.,* 2003; Teh *et al.,* 2014; Lawder *et al.,* 2004). Vakili *et al.* (2017) stated that previous and current job status,

coupled with insufficient income, were also significantly associated with loneliness status.

Several other studies also suggested that death of spouse, living arrangement, less involvement in family matters, lack of friend were the important reasons of loneliness in older and oldest age (Bruce *et al.,* 2019; Savikko *et al.,* 2005). Lecovich *et al.* (2004) revealed that being unmarried and eventually being childless were the two very important variables for being lonely. It is expected that during older age, adult children may provide the key support and social contact in addition to his/her spouse. Many population based studies suggested that adult children's more frequent contact, care and friendliness may reduce the feeling of loneliness among elderly people (Deindl and Brandt, 2011; Lecovich *et al.,* 2004; Holmen and Furukawa, 2002; De Jong Gierveld and Tilburg, 1999). Another study reveals that Childlessness appears to be more important in influencing the loneliness of women than men (Koropeckyj, 2010).

Loneliness is also found to be strongly associated with poor health. Studies have also shown that loneliness increases with reduced cognitive function (Perissinotto *et al.,* 2012), higher physical limitations (Aartsen and Jylha, 2011), chronic stress (Hawkley *et al.,* 2008), chronic diseases (Hacihasanoglu *et al.,* 2012), and visual impairments (Alma *et al.,* 2011) compared to those who do not have these adverse medical and physiological conditions.

A study on Social isolation, loneliness and health in old age shows that depression and cardiovascular health are the most often researched outcomes, followed by well-being (Courtin and Knapp, 2017). Further, the study also found a detrimental effect of isolation or loneliness on health. Bowling *et al.* (1989) depicted that greater loneliness

was related to increased psychiatric morbidity, increased physical impairment, low life satisfaction, small social networks and lack of confidence. Increased psychiatric morbidity and decreased life satisfaction were two variables that are most likely to be significantly related and therefore, a significant difference is expected between lonely and non-lonely older people in respect of these two aspects.

A study on Existential Loneliness (EL) depicts that the older person's long-term relationships are gradually lost, and finally the process entails the older person's increasingly withdrawing him- or herself and turning off the outside world (Larsson *et al.*, 2017).

1.9.3 Cognitive function vis-à-vis associated variables: oldest-old people

Alike depression and loneliness, another important psychosocial health trait is cognitive impairment. It has been found from many studies that cognitive function in elderly people has been associated with socioeconomic factors, illness conditions and health status, social capital, and health behaviours (Peltzer and Phaswana-Mafuya, 2012). Demographic and socioeconomic factors like marital status, educational status, type of dwelling, living arrangements show a fair association with cognitive function of the elderly people (Beard *et al.,* 1992), while many studies have reported a substantial association of higher education on the cognitive function among the old age people (Maharani, 2016; Ramachandran, 2018; van Hooren *et al.*, 2007; Miu *et al.*, 2016; Yount, 2009). Socioeconomic and demographic factors were found to have significant association with cognitive function in another study (Susilowati and Yasukouchi, 2012).

Many studies have shown that several healthy behaviours such as not smoking (Collins, 2009; Razani, 2004) and physical activity or exercise and better self-rated health status (Pengpid *et al.*, 2019; Vance, 2005; Aichberger, 2010; Lam, 2015), being not undernourished (Ferdous, 2010), higher life satisfaction, and better quality of life (van Hooren *et al.*, 2005; Jones *et al.*, 2003), and not having functional disability i.e. ADL and IADL status (Stanek, 2009) have been positively associated with a better cognitive function. Again, few studies show that the elderly people who participated in social activities were significantly associated with enhanced cognitive function among community-based elderly (Fu *et al.*, 2018; Tomioka *et al.*, 2016; Choi *et al.*, 2016; James *et al.*, 2011). Moreover, social disengagement was one of the risk factors of declining in cognitive function among community-dwelling elderly (Saczynski *et al.*, 2006; Zunzunegui *et al.*, 2003). Some more studies also reported that lack of social activities is significantly related to an increased risk of cognitive impairment, psychological stress and depression (Min *et al.*, 2016; Mu, 2011).

Many other studies among the community-dwelling older adults show that cognitive function was positively correlated with walking speed and negatively correlated with age and frailty. However, further research revealed that after adjusting for age, gender, education level, living area and chronic diseases, poor cognitive function is being significantly affected by frailty, exhaustion, slowness, and inactivity (Ma *et al.*, 2019; Kang *et al.*, 2018; Beland *et al.*, 2018).

A randomised controlled clinical intervention study carried out across three European sites on the effects of an extensive exercise programme on the progression of Mild Cognitive Impairment (MCI). The results show that exercise may slow down the rate of decline in MCI (Devenney *et al.*, 2017).

1.10 The oldest-old people, general health and nutritional status: A brief global literature review

1.10.1 Quality of life vis-à-vis associated variables: oldest-old people

In spite of the fact that QoL is an important status of one's healthy and comfortable living, especially among the elderly, very few studies had been conducted to assess quality of life (QoL) among elderly population, especially in rural areas in India (Barua *et al.,* 2007; Jecob *et al.,* 2007), though many studies were conducted on QoL among elderly in other countries (Apidechkul, 2011; Bodur and Dayanir, 2009; Alexandre *et al.,* 2009; Vitorino, 2012). It has been shown that different socioeconomic and demographic factors such as age, education, marital status, and family structure had greatly influenced the QoL among elderly population (Apidechkul, 2011). In addition to that, study has shown that chronic morbid conditions are associated with low QoL (McDaid, 2013). Ran *et al.* (2017) also demonstrated that ADL, IADL, and education level were positively associated with health related QoL, whereas age, chronic diseases, and the frequency of medication use were negatively correlated with the same. QoL again is having positive association of educational status, physical activity and marital status (Gamage *et al.,* 2018; Machon *et al.,* 2017).

Strine *et al.* (2008) in her study among the U.S. community-dwelling adults stated that the prevalence of smoking, obesity, physical inactivity, and heavy drinking also increased with decreasing level of life satisfaction. Moreover, adults with chronic illnesses were significantly more likely to report life dissatisfaction than those without the same adverse profiles.

1.10.2 Activities of Daily Living (ADL) & Instrumental Activities of Daily Living (IADL) vis-à-vis associated variables: oldest-old people

The socioeconomic and demographic factors related to ADL have been studied by some researchers which revealed that subjective health, ADL and number of children was most important for life satisfaction (Jopp *et al.,* 2016). Again, it is also stated that social support from the caregivers to the elderly are associated with better ADL status, i.e. care giving often interferes with time that could be spent on self-care and social activities (Shen *et al.,* 2015; Vaingankar *et al.,* 2016; Savundranayagam *et al.,* 2010). In some studies it has also been found that a greater risk of depression and physical health problems may arise among the people in general and women in particular, who are with poorer ADLs (Black *et al.,* 2013; Covinsky *et al.,* 2003; Dunkle *et al.,* 2014). Another study revealed that poor self-rated health and depression were the strongest risk factors for needing assistance in one or more basic activities of daily living and excessive sitting time, short or prolonged sleeping time, and physical inactivity seemed to be the most important lifestyle risk factors for IADL related disability (Storeng *et al.,* 2018).

Many other studies found that ADL is correlated with poorer QoL (Broe *et al.,* 1998; Millán-Calenti *et al.,* 2010; Arling and Williams, 2003). An individual's ability to perform IADL is faint to early cognitive decline, whereas physical functioning is often a significant tool of basic ADL ability (Boyle *et al.,* 2002; Cahn-Weiner *et al.,* 2007). Further, it has been found that impairment in the ability of IADL can often present in mild cognitive impairment and early dementia (Mlinac and Feng, 2016; Farias *et al.,* 2013).

ADL was found to be associated with depression and apathy among the elderly people of different ethnic origin (Boyle *et al.*,2003; Mendes de Leon and Rajan, 2014). It has also been revealed from many studies that earlier in the process of cognitive decline, depression may be a harmful risk factor for ADL impairment, though the treatment can yield functional improvements (Lenze *et al.*, 2005; Nyunt *et al.*, 2012; Rist *et al.*, 2014). In case of elderly people, cognition, behavioural risk, mobility, transferring and dressing impairments are highly associated with depression (Rist *et al.*, 2014; Boström *et al.*, 2014; Meltzer *et al.*, 2012).

1.10.3 Nutritional status vis-à-vis associated variables: oldest-old people

Nutrition happens to be one of the most important aspects of all the human being. Many scholars, since decades, have done innumerable researches on the nutritional aspects of different age groups of different populations and examined the association of different lifestyle and genetic factors on nutritional aspects of man. The prevalence of malnutrition was found by many authors in their studies conducted among the elderly of Bangladesh (Ferdous *et al.*, 2009) and Turkey (Saka *et al.*, 2010). However, there are also more researches which indicate the relationship of different demographic and socioeconomic variables with nutritional status. Donini *et al*. (2013), Boulos *et al.* (2013) and Saeidlou *et al*. (2008) in their studies among the elderly of Rome, Lebanon and Iran, respectively, observed that role of women in the society and financial dependency were significantly associated with nutritional status. Moreover, the financial crisis, like, not having an income and not receiving regular financial support were associated with poor nutritional status among the elderly (Mokhber *et al.*, 2011; Han *et al.*, 2009). A study conducted by Saeidlou *et al*. (2008), observed that a considerably higher percentage (49.6%) of the elderly were found to

be malnourished in a nursing home of Iran and this high prevalence of malnutrition was strongly associated with the elderly who were living alone.

A study on nutritional status in a healthy elderly population of US, from the perspective of dietary and supplemental intake, shows that frequency and amount of vitamin and mineral supplementation was substantial and dietary intakes of the studied population appeared to be adequate with the possible exception of vitamin D and calcium intakes in women (Garry *et al.*, 1994). Another study on prevalence of malnutrition in free living elderly people in Iran shows that Mini Nutritional Assessment (MNA) correlated significantly with length of education, age, waist circumference and body mass index (Maliheh *et al.*, 2008). Again, a study on the MNA among the elderly people of Spain shows that the MNA test has good levels of reliability, according to its internal consistency and its test-retest reproducibility (Bleda *et al.*, 2002). Body composition and body fat distribution are immensely important aspects related to nutritional status of human being. The alarmingly high prevalence of overweight, obese and underweight was found in relatively healthy and wealthy Pakistani elderly (Alam *et al.*, 2011; Shah *et al.*, 2004; Nanan *et al.*, 2000).

1.11 The oldest-old people and psychosocial health: A brief Indian literature review

Like the global scenario, many studies have been carried out in Indian perspectives pertaining to the elderly people and their psychosocial health and nutritional status.

1.11.1 Depression vis-à-vis associated variables: oldest-old people

The prevalence of depression was found to be significantly positively associated with the demographic and socioeconomic factors like increasing age, gender, residence,

marital status, illiteracy, a low economic status, family type, those who were living alone and with economic dependency (Santosh, 2015; Saha and Saha, 2013; Maulik and Dasgupta, 2012; Dighe and Gawade, 2012). Further, widowhood has been found to be strongly associated with depression (Vishal *et al.*, 2010). Studies among the elderly population of Kolkata and many other populations of India revealed that sex difference was a significant factor of depression and also the elderly people differ significantly in terms of depression due to the variation in perceived social support (Malakar *et al.*, 2019; Suganathan, 2016; Pracheth, 2015). Prevalence of depression in females has shown an increasing trend with increase in age more than men in old age home (Goud and Nikhade, 2015). In another study, female sex, living without spouse, lacking in decision making capability, a victim of abuse or neglect, or suffering from chronic illness were found to have significant positive association with depression among elderly population (Goswami *et al.*, 2017). Thilak *et al.* (2016) opined that the prevalence of geriatric depression is alarmingly high and is associated with financial dependency and co-morbidities. Again, another study has found that the depressed elderly people are financially dependent who belongs to joint families (Nautiyal *et al.*, 2015).

Singh and Misra (2009) revealed a significant relationship between the depression and loneliness among the elderly of Delhi based multi-ethnic population, but there was no significant relationship found among the sociability and depression. The prevalence of depression is also associated with living arrangement of elderly people (Dighe and Gawade, 2012). The prevalence of depression was significantly associated with activities of daily living (ADL) among another elderly population (Santosh, 2015). The prevalence of depression was found to be significantly higher among females and further, a high prevalence of depression was reported among those who were

physically inactive and experiencing chronic diseases (Pracheth, 2015; Thakur *et al.*, 2013; Maulik and Dasgupta, 2012). Further, a study among the elderly in slum of Kolkata reveals that the depression had significant association with female sex, unmarried status, nuclear family and economic dependence (Dasgupta *et al.*, 2014).

1.11.2 Loneliness vis-à-vis associated variables: oldest-old people

The prevalence of loneliness is associated with different socioeconomic and demographic factors. In some studies it is found that loneliness is a particularly relevant issue in relation to elderly widows (Singh and Kiran, 2013). Adak and Ray (2015) revealed that the elderly people with regular social interaction demonstrate significantly lower level of loneliness and higher level of forgiveness when compared to those who are less socially adjusted and lonely. Studies also reported that increase in the prevalence of depression with an increase in loneliness among elderly men and women (Singh and Kiran, 2013; Singh and Misra, 2009)

1.11.3 Cognitive function vis-à-vis associated variables: oldest-old people

A study among the elderly adults residing in Ludhiana, Punjab reveals that increasing age, unmarried/widowed status, illiteracy, unemployment and poverty were independently associated with cognitive impairment (Sengupta *et al.,* 2014). The prevalence of cognitive impairment in this north Indian population of elderly individuals was found to be higher than that found in other parts of northern India. Some studies on North Indian elderly of Lucknow, Punjab and South Indian elderly were revealed that the prevalence rate of cognitive impairment was very low i.e. 7.6%; 8.8% and 11.5%, respectively (Tiwari *et al.,* 2014; Sengupta *et al.,* 2014; Konda *et al.,* 2018).

Maity and Mukhopadhyay (2014), from their study among the elderly of Kolkata revealed that the cognitive impairment is significantly higher among the rural elderly than their urban counterparts, irrespective of sex. The result also shows that more adversities in cognitive function occur in female, irrespective of area of residence.

1.12 The oldest-old people, general health and nutritional status: A brief Indian literature review

1.12.1 Quality of life vis-à-vis associated variables: oldest-old people

Although the QoL of the elderly is a very burning issue in the current domain of public health research, very few studies have been done pertaining to QoL in Indian perspective. A study found significantly lower QoL among the people living in a sector of Kolkata and Sonarpur area of 24-Parganas(S), where having more age, female sex, illiteracy, fully financial dependency and those having lower socioeconomic status were found to be important associates of QoL (Datta *et al.,* 2015). Another study on the differences in life satisfaction of elderly people in urban and semi-urban families of Lucknow (U.P.) found no significant differences in overall QoL of elderly people in urban and semi urban dwellings (Prianka & Mishra, 2013).

1.12.2 Activities of Daily Living (ADL) & Instrumental Activities of Daily Living (IADL) vis-à-vis associated variables: oldest-old people

Although the individuals from all age group may have the difficulties in performing the activities of daily living (ADL) in their daily life, but the prevalence of adverse ADL and IADL profile may increases due to the increased age of elderly population. In India the prevalence rate of functional disability among oldest old (80 years and above) were 73.6% in Shimla (Sharma *et al.*, 2014), 45.2% in Manipur (Konjengbam

et al., 2007). In other countries the prevalence rate of functional disability among oldest old were 11.1% in Eygpt (Mahfouz and Awadallah, 2007), 48.3% in Brazil (Mattos *et al.,* 2013). The prevalence of ADL and IADL were associated with many demographic and socioeconomic factors of the elderly people. A study among the elderly of Nagpur, Maharastra revealed that majority (79%) of the study population were independent in all six basic performances of ADL and rest (21%) were the dependent for one or more activities of daily living and the proportion of adverse ADL increases as their age increases (Jadhao *et al.,* 2017). Similar observations were reported by many researchers in their studies among the elderly of India (Venkatrao *et al.,* 2005; Srinivasan *et al.,* 2010; Goel *et al.,* 2006).

Further a study on the daily living dependency among the elderly of Dehradun observed that majority (93%) of the elderly wastotally independent pertaining to performance of ADL (Ohri *et al.,* 2014). The same scenario was also found among the elderly of Punjab (Sing *et al.,* 2014). Mohanty *et al.* (2012) demonstrated that a significant group differences in IADL across domicile, current working status, age groups; and significant differences in well-being across age groups found among the elderly population of Agra.

1.12.3 Nutritional status vis-à-vis associated variables: oldest-old people

Study on MNA and its plausible relationship with adiposity related variables are rare in Indian perspectives. Prevalence of malnutrition among the elderly was observed by many researchers in their studies conducted in Assam, Tamil Nadu and Rajasthan (Agarwalla *et al.,* 2015; Vedantam *et al.,* 2010; Baweja *et al.,* 2008). However, a study on the nutritional status among elderly population in a rural area of West Bengal shows that females were significantly more malnourished than males (Lahiri, 2015).

Some authors also pointed out that nutritional status of an elderly population is expectedly associated significantly with their age group (Agarwalla *et al.,* 2015; Baweja *et al.,* 2008, Wadhwa *et al.,* 1997). These studies also demonstrated that older age, lower income of family, low literacy level, decreased food intake, and fewer consumption of meals were independently associated with lower MNA scores. On the contrary, association of gender and nutritional status of elderly was not found to be statistically significant among the elderly population of rural Belagav (Kansal *et al.,* 2016). Loneliness was also a strong risk factor for undernutrition among older people (Tomstad *et al.,* 2012, Thakur *et al.,* 2013).

The relationship between anthropometry and nutritional status of an individual and/or population is well established in different studies in India. Malnutrition is supposed to be caused by inadequate food intake, and research has shown that physical and cognitive limitations could prevent adequate food intake (Bo *et al.,* 2003). MNA demonstrates the risk of malnutrition and it has certain effect of weight among the elderly (Guigoz, 2006). A study by Cereda *et al.* (2008) reported that poorer functional status was associated with low BMI. Some researchers showed significant association of anthropometric measurements, such as arm circumference, body mass index, calf circumference, triceps skinfold thickness and mid-arm muscle circumference with nutritional status among the elderly, aged more than 70 years (Leandro-Merhi and Braga de Aquino, 2011; Venzin *et al.,* 2009). Moreover, a study by Tsai *et al.* (2008) demonstrated that improvement of MNA has been evident by the increase in the co-relationship between the MNA scores and the anthropometrics.

1.13 Rationale for conducting the present study

The above brief literature review is indicative of the fact that increasing number of oldest old population brings forth vulnerability in respect of mental health in both developed and developing nations. The oldest old population are especially vulnerable to suffer mental disorders. It has already been mentioned that the researches on psychosocial health is increasing day by day both at international and national level. In India, such studies are taking place due to the fact that different parameters of psychosocial health vary between sex, age, and other socioeconomic status. Literatures support a substantial relationship between different psychosocial health parameters, like loneliness, depression level, cognitive function and so on with different socioeconomic and demographic variables, like sex, living arrangements, personal and family income status and so on. It has also been observed that the prevalence of psychosocial illnesses is gradually increasing among the oldest people.

India has a vast variation in culture and socioeconomic status between populations. A few studies have already been carried out considering a set of mental or psychosocial traits and its socioeconomic correlates. However, such study has been extremely rare among the oldest old population living in any part of the eastern state of West Bengal. Hence, the present study has been undertaken among the oldest-old population residing in the town of Midnapore of Paschim Medinipur district of West Bengal.

1.14 Objectives of the study

In view of the above brief literature survey the present study is undertaken among the oldest-old population (aged 80 years and above) living in and around Midnapore town to explore the following aspects:

1. To assess the psychosocial health profile in terms of depression, cognition level and general health status of the oldest-old population.
2. To assess the nutritional status of the population and examine the association of anthropometrics with the nutritional status.
3. To examine the effects of socio-demographic factors on the psychosocial/ mental health of the population.
4. To evaluate the morbidity profile of the study population.

1.15 General hypothesis

The general hypotheses of the present study are:

1. The females would show a poorer psychosocial health pertaining to depression, loneliness and cognitive function than males
2. Irrespective of sex, age related changes in psychosocial health, activities of daily living and nutritional status would be evident.
3. The present study would find association of socioeconomic and demographic factors with different psychosocial traits.