

**University of Tampere**

**School of Health Sciences**

**SYMPTOMS OF DEPRESSION IN ELDERLY**

**A comparative study on people aged 65 years and above living in an old age home and in their own home in Nepal.**

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K.C. PRAKASH: SYMPTOMS OF DEPRESSION IN ELDERLY ; A comparative study on people aged 65 years and above living in an old age home and in their own home in Nepal.

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## ABSTRACT

**Objective:** To compare the severity of the symptoms of depression among the people aged 65 years and above living in an old age home and in their own home.

**Methods:** The present study comprised of total 260 people aged 65 years and above (130 from Social Welfare center old age home Pashupatinath Kathmandu Nepal and 130 people aged 65 years and above from different VDCs of Rasuwa district Nepal). The interview through structured questionnaire was used to collect data of background (socio-demographic) variables and independent variables. Geriatric depression scale (long form) was used to collect the data on severity of the symptoms of depression. The severity of symptoms of depression as an outcome variable consisting three categories normal (0-9), mild (10-19) and severe depression (20-30) were assessed with geriatric depression scale. Cross tabulation and chi-square test were applied to measure the association of variables. Multivariate logistic regression analysis was used to calculate the crude and adjusted odd ratios (OR) with their 95% confidence intervals (CI).

**Results:** The severity of the symptoms of depression was higher in the residents of old age home (59.2 percent severe symptoms of depression) than in residents of their own home (20.8 percent severe symptoms of depression). The people living in old age home had higher likelihood of having symptoms of depression [OR 10.93, 95%CI (5.05-23.65)]. Gender and marital status were significantly associated with severity of symptoms of depression in both groups. Female gender had higher likelihood of having severe symptoms of depression than male. Widows/widowers had more likelihood of having severe symptoms than the people with other marital status. Literacy and caste were not associated with symptoms of depression for both groups. Age, occupation before age of 65 years and religion were associated only for those living in their own home. Self reported health, total disease present, level of satisfaction of life, perception of life and perception about old age showed significant association with mild and severe symptoms of depression in the people living in

old age home even after adjusting for all socio-demographic variables. However among the people living in their own home only the perception of life, level of satisfaction of life and leisure time activities were significantly associated with mild and severe symptoms of depression.

**Conclusion:** Compared to old aged people residing in their own home, those residing in old age home had the higher likelihood of having symptoms of depression. The place of residence matters a lot to determine the symptoms of depression and there may be separate determinants of severity of symptoms of depression in case of old aged people living in an old age home and those living in their own home.

## ACRONYMS

BCC	Behavior Change Communication
BDI	Black Dog Institute
CDC	Center for Disease Control
CI	Confidence Interval
GCN	Geriatric Center Nepal
GDS	Geriatric Depression Scale
GoN	Government of Nepal
IEC	Information Education and Communication
MoWCSW	Ministry of Women, Children and Social Welfare
NIMH	National Institute of Mental Health
NA	Not Applicable
NPC	National Planning Commission
OAA	Old Age Allowance
OR	Odds Ratio
UK	United Kingdom
UNO	United Nations Organization
USA	United States of America
VDC	Village Development Committee
WHO	World Health Organization

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## **1. INTRODUCTION**

The core idea of this study is to compare the severity symptoms of depression level among the people living in old age homes and general setting. Here, old age home means the institution for the old aged people. Ageing that begins at conception and ends at death, is a process of growing older with the flow of time in one's life. The problem of aging population is increasing like rapid fire and coming to be seen as a global burden. Nepal is also facing the threat of this hitch. Old age is viewed as a problematic period of life and this is truthful to some degree. The growth of old people in absolute numbers and proportion of population in Nepal has become a challenge when family norms and values of supporting the elderly are weakening.

The elderly population is typically defined as population aged 60 years and above (WHO 2010). The population of elderly was 7.46 percent (1.6 million) of total population in 2001 in Nepal which is anticipated to be doubled by 2017 (Dahal 2007). As a person grows old, his or her reduced activities, low or no income and the consequential decline in his or her position in family and society makes the person more helpless and prone to gratuitous stresses (Audit Commission UK 2004).

The old age is a critical phase of life where elderly people may become victims of various mental problems (Macnair 2012). WHO states that among the health problems of the elderly the most common mental problem is depression and its severity (WHO 2001). The inferior conditions of elderly are results of factors like more severe depression, physical illness and some depressive symptoms before admission as shown by the study of some patients in a hospital of Nepal (Shakya et al. 1981).

In Nepal elderly citizens are loved and cared well till date due to the Vedic tradition which has captured and bonded the family values. The changing context of world, urbanization, poverty and nuclear family desire has affected to the health and life of elderly so that the senior citizen policies mainly target to encourage different national level organizations for establishing elderly homes (MoWCSW 2002). In a study among 182 old aged people of Nepal who passed through the semi-structured interview to measure the functional disability, 18 percent showed diagnosable psychiatric disorder (Subedi et al. 2004).

The concept of institutionalization of old aged people is not so old in Nepal, and there is still the lack of nursing homes providing care to old aged peoples. As of Geriatric Center Nepal, in Nepal

there is only one old age home run by government and very limited number of private and other old age homes. The governmental old age home is charged by Ministry of women, children and social welfare of government of Nepal and it has the capacity for 230 people aged 65 and above. The institution was established in 1976 near the premises of Pashupatinath temple Kathmandu. Nearly 1500 elderly people in total are residing in the old age homes in Nepal. (Geriatric center Nepal 2010)

A number of studies on prevalence of depression in older Nepalese population have been conducted. Yet there are no earlier studies done comparatively among the elderly people living in old age home and in their own home in Nepal in the area of severity of symptoms of depression. Given this, the study at hand opens up a new perspective on the topic concerned.

## **2. LITERATURE REVIEW**

A methodical search for literature review was done by using different databases and journals like Ovid Medline, Pub med, BMJ and Google scholar. University of Tampere online search facilities were used in order to gather the online electronic journals. The commemorative volume of social welfare center old age home Kathmandu Nepal was used to learn criteria and guidelines for admitting old aged persons in that old age home and the voters list of Rasuwa district of Nepal was used to find the respondents of different VDCs of that district. This review mostly consists of empirical studies with inclusion of few theoretical reviews. References of the reviewed studies were assessed for additionally required searches. The main key words used were “elderly”, “depression”, “Symptoms”, “old age home”, “Nepal”, “mental health” and “GDS”. Some reports, webpage views and newspaper article are also used in the review. Most of the articles cited were full text articles and only abstract was cited for those with much complex and broad matters and no free access. The search for the literature went on till 5 May 2013.

### **2.1 Definitions**

#### 2.1.1 Depression

Depression is a most customary mental health crisis in ageing population entailing impairment in physical, mental, and social functioning. Depression is basically an episodic recurring disorder, each episode lasting generally from a few months to few years with a normal period in between (WHO 2001). Depression is a mental state characterized by feeling of sadness, loneliness, despair, low self-esteem and low self-approach. (Bhatia 2004)

#### 2.1.2 Elderly

Elderly are the people who are old, aged, long lived or mature (Oxford Dictionary 2011). The elderly population is usually defined as population aged 60 years and above. The WHO divides this segment of life into the elderly (65-75), the old (76-90), and the very old (over 90). The classification of old age may vary according to the policies and criteria of countries (Charlotte 2001). The study of physiologic and pathologic changes of old aged people and the treatment of their health problems are dealt by medical specialties like geriatric (Murray & Zentner 2000).

### 2.1.3 Ageing

Ageing is natural process common to all living organism. The scientific study of individual in later maturity and the aging process from physiological, pathological, psychological, sociological, and economical points of view is regarded as gerontology (Murray & Zentner 2000).

### 2.1.4 Active ageing

According to WHO “Active ageing is the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age”(WHO 2013).

## **2.2 Old aged people scenario**

Elderly people are nation’s property and foundation of dignity. The elderly citizens are in need of urgent consideration. They don’t need our pity but they need the understanding, love and care of their fellow human beings (Singh 2007).

In 2000, there were 600 million people aged 60 years and over. By 2025 there will be 1.2 billion population of that age and 2 billion by 2050. Today about two thirds of older people are living in the developing world and by 2025 the proportion will be 75 percent. In the developed world very old (90+) is the fastest growing population group. Women outlive men in virtually all societies and consequently in very old age, the ratio of women/men is 2:1(Shrestha, 2008). A study by Geriatric center Nepal in communities of Nepal showed that among the people aged 65years and above, 47.12 percent were found to be economically independent with males doing better than females (Geriatric center Nepal 2010).

According to WHO 2010, in almost every country, the proportion of people aged over 60 years is growing faster than that of any other age group. As a result of both longer life expectancy and declining fertility rate the ageing of the population is being experienced by most of the countries of the world. This has been a serious issue and continues to be the one if the concept of healthy and active ageing won’t be developed everywhere. (WHO 2010)

According to the national census of Nepal 2011 the total population of elderly aged 65 years and above was 5.28 percent of the whole population of 26,494,504 in Nepal. Among elderly female population was higher than the male (CBS 2012). The life expectancy at birth of Nepalese people is 67 for male and 69 for female (WHO 2013).

The 21<sup>st</sup> century is a revolutionary era in the sense of prolonging life expectancy. The average life expectancy at birth in 1950s was 20 years which in 2002 increased to 66 years and by 2050 more 10 years will be added in this. The growing elderly population is becoming a vital problem in the developing countries (UNO/MoWCSW 2002).

Unlike most of the countries in world, that consider people of 60 and above as elderly population, the government of Nepal have declared 65 and above as the elderly population. The characteristics like weak health conditions, loosed teeth, grey hair, wrinkled face and physical disturbances and the secured old age are compared to the concept of safe motherhood (Bhandari 2004).

A study of elderly population issue in Nepal 2004 indicates that the elderly in Nepal live their life in the situation of contradiction. There are no institutions or organizations really working or taking care of the elderly with a right approach as they take care of many other groups of population. From the side of the government elderly population care is only restricted to the old age allowance (Shrestha 2004).

### **2.3 Depression in old aged people**

Depression in old age population is a challenge, which will impact on all aspects of 21<sup>st</sup> century society. It is a challenge that cannot be addressed by the public or private sector in isolation. It requires joint and collaborative approaches and strategies (Shrestha 2008).

One of the scrupulous outcomes of depressive disorders is suicide. Suicide is one of the very general and stoppable outcomes of depression. Thus, depression is common mental disorder, causing a very high level of disease burden, and is believed that it will incline during the coming 20 years (WHO 2001).

Ageing is an evitable developmental phenomenon bringing along a number of changes in the physical, psychological, hormonal and social conditions of individuals. Old age has been viewed as problematic period of one's life and this view is correct in the sense that the aged become increasingly dependent on other people. During this critical phase of life they may become victims of various mental problems. One of the commonest psychiatric disorders among the elderly people is depression which is one type of neurosis, less severe type of mental illness than psychosis. (Singh 2007)

Depression is a common mental health problem in the elderly. It may have several consequences in the life of elderly population including reduced life satisfaction and quality of life, social deprivation, loneliness, cognitive decline, impairment in activities of daily living, suicide and increase non suicide mortality (Khattari & Nepal 2006).

According to WHO 2001 depression was the leading cause of disability globally and ranked as fourth in the ten leading causes of the global burden of diseases. Projection was made that within the next 20 years, depression will have the dubious distinction of becoming the second cause of the global disease burden. Globally, 70 million people suffer from alcohol dependence. About 50 million have epilepsy and another 24 million have schizophrenia. A million people commit suicide every year and from ten to 20 million people attempt it. Nearly 10 percent of older population has problem with alcoholism, nearly one fourth of all suicides are committed by persons aged 65 years and older. From 4 percent to 5 percent of elderly are victims of Alzheimer's disease (WHO 2001).

According to CDC in US in 2004 16 percent of the suicide cases occurred among the people aged 65 years and above, though the population of this age group was 12 percent of whole population. Most of them were non-Hispanic white men of the age 85 years and above (CDC 2004).

#### **2.4 Determinants and symptoms of depression in old aged people**

Many myths prevail regarding mental health and elderly. For instance, many people still believe that loss of mental functions, mental incompetence, and feeling of childlike behavior is a natural part of old age. Frequently, these misconceptions are so widely accepted that when pathological signs are shown by older persons, it is considered as a normal state of affair and no attempts are made to intervene. The depression in elderly always increases in prevalence and intensity with the added number of years. Fine mental health practices throughout the life span encourages better mental health in old age (Charlotte 2001).

According to Bhanman 2006 there are different circumstances in life of the elderly with which they have to cope and prepare to be in the next phase of their life with various experiences and the agitation due to worse health condition, separation and departure from the near and dear ones and doubtful understanding of their age are the main determinants of mental problems in them (Bhanman 2006).

The diagnosis of depression is quite complex among the elderly due to its nature and complexity. Several factors play a vital role in its occurrence. The other fact is due to very low understanding that most of the elderly do not want to express about their feelings of sadness and low mood which are the probable reasons of depression. The most common characteristics shown are unexplained physical symptoms, memory loss and several changes in behavior (BDI 2012).

Depression in elderly could be linked to some physical disorders like thyroid disorders, Parkinson’s disease, heart disease, cancer, stroke and dementia and the risk may be escalated by the life conditions like chronic pain, detachment from family members, death of family members, no self-dependency and immigration adding more vulnerability (NIH 2012).

According to Fadem there are various symptoms and characteristics shown by elderly during the depression. Some of them are listed on the table below:

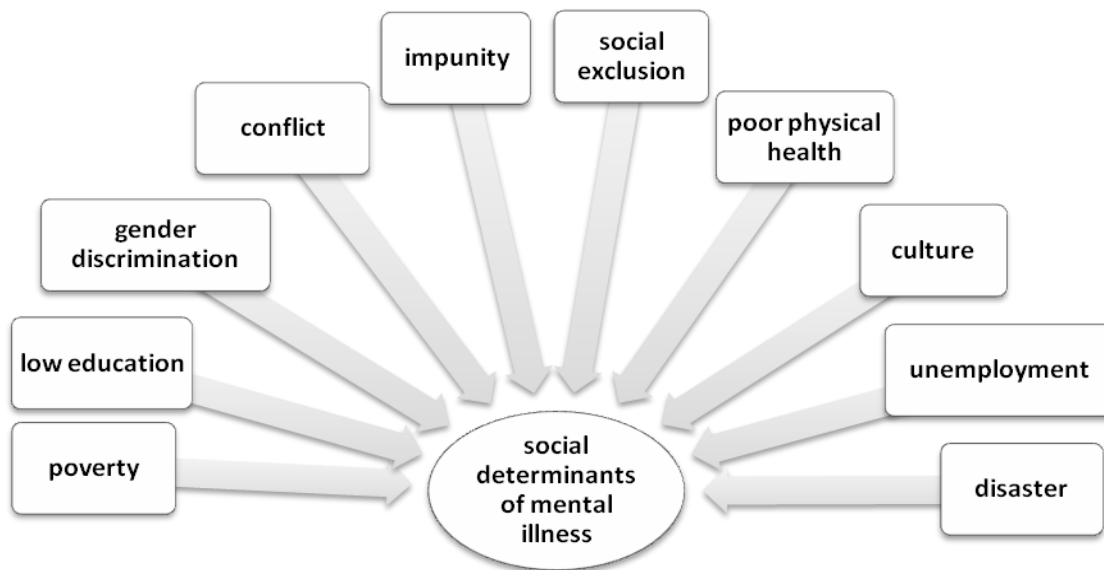
**Table 1:** General symptoms of depression

Depressed mood (feeling of sadness, hopelessness, helplessness, low esteem, excess guilt)	++++(hallmark)
Reduced interest or pleasure in most activities	++++
Reduced energy and motivation	++++
Anxiety	++++
Sleep problems	++++
Cognitive problems	+++
Psychomotor retardation	+++
Decreased appetite	+++
Diurnal variation in symptoms (feel worse in morning and better in evening)	++
Psychotic symptoms	+
Suicidal ideation	+

Source: (Fadem 2004)

According to Lamichhane there are many social determinants of mental illness and depression among the elderly population and other age groups, some of them are shown in the figure below.

**Figure 1:** Social determinants of mental illness



Source: (Lamichhane 2008)

According to Murray and Zentner the types and manifestation of elderly abuse that leads to depression to old age includes:

**Table 2:** Types of abuse to elderly

Physical abuse	Psychological abuse	Financial abuse	Social abuse
<ul style="list-style-type: none"> <li>• Neglect of physical care</li> <li>• Beating</li> <li>• Burns, broken bones</li> <li>• Cutting, stabbing</li> <li>• Sexual molestation , rape</li> </ul>	<ul style="list-style-type: none"> <li>• Verbal abuse</li> <li>• Verbal threats</li> <li>• Decision making deny</li> <li>• Exclusion from family activities and isolation</li> </ul>	<ul style="list-style-type: none"> <li>• Confiscation of social security or other income checks</li> <li>• Person forced to sign over property or assets</li> <li>• Financial exploitation</li> <li>• Theft of property and personal items</li> </ul>	<ul style="list-style-type: none"> <li>• Forced isolation from family, friends</li> <li>• Negligence in care</li> <li>• Geographic isolation</li> <li>• Exploitation from care giver</li> </ul>

Source: (Murray & Zentner 2000)

Old age may bring mental corrosion, but in fact only 5 percent of older adults demonstrate serious mental impairment, and only 10 percent demonstrate even mild to moderate memory loss. Most of



the older people may be unhappy and dissatisfied with life and they may be highly influenced by past and current experiences which have been changed phase wise. The age 65 is a widely accepted marker of old age but in reality with the increase in longevity, factors other than chronological age cause a person taken as old. The elderly are considered lonely, isolated, abandoned and ones who do not participate in activities but in reality they prefer company, want to talk and take care of their grandchildren. Though some of the elderly become mentally and physically ill, in fact most of them possess the greater tolerance power due to their life experiences. (Murray & Zentner 2000)

People with mental disorders are perceived as violent and dangerous, but the reality is that they are more likely to be victims of violence than to be violent themselves. Mental illness like physical illness can affect everyone and the mental illness is caused by personal weakness (Lamichhane 2008).

There may be the highly significant relationship of symptoms of depression in old aged people with their age, gender, activities of daily living and self-reported health (Shrestha 2004). The depression is as treatable at the phase of occurrence as other medical diseases. If not treated it can cause a serious delay in the cure of other diseases and health conditions and can result an inferior effect (NIMH 2004).

## **2.5 Old age allowance and policy in Nepal**

Modernization, urbanization as well as social conflicts are the main reasons for the prevailing problems with the ageing population. Elderly require social security which is a very fundamental in the context of Nepal with very high number of people below poverty line as high as 42 percent (Parajuli 2006).

In Nepal, the Senior Citizens Policy and working policy includes the proposed provision of allowance, economic and social security scheme, income generating programs, social honoring, free medical services, etc. The National plan of action on Ageing includes:

- Development of model elderly home in each development region
- Establishment of senior citizen welfare fund
- Provision of implementation of senior citizen policy and working policy
- Keeping the records of taking allowance for social security of elderly.

- Senior Citizen health care services programs on 30 districts help for various elderly home in terms of agencies improving working and funding.(MoWCSW 2002)

There is an increasing trend of considering social security as the right of senior citizens with the main motto of enhancing the social justice and equity. The government of Nepal started to distribute the universal flat pension of Rs 100 to elderly above 75 years since 1994. Later the age limit was revised to above 70 years and above 60 for the elderly of Dalit community and Karnali zone and the fund was also revised to Rs500 per month from fiscal year 2010/11. This report also showed that 2/3 elderly receiving the allowance were satisfied with the amount of allowance and 9 percent were highly satisfied and only 10 percent of them were unsatisfied with what they get (NPC 2012).

According to Ministry of women children and social welfare in 2002 there were three international organizations and 52 national level organizations in Nepal working for the senior citizens (MoWCSW 2002).

## **2.6 The Geriatric Depression Scale**

The study of Yesavage and colleagues gave a new tool known as Geriatric Depression Scale (GDS) in 1983 to find the severity of depression among the elderly population. The 30 mostly significant questions were used in a group of elderly with severity of the symptoms of depression divided as normal, mild and severe. The result of the new GDS designed was the same with other old scales like Zung self-rating depression scale and Hamilton rating scale for depression. Hence it was warranted that this new scale could be used as a reliable and valid tool for screening severity of symptoms of depression in the old aged people (Yesavage et al. 1982).

In an assessment of the application of GDS, in order to learn whether it could be fruitful to find symptoms of depression among elderly patients, the positive result was found with its sensitivity and specificity. The assessment warranted the use of GDS among the elderly people and geriatric patients focusing on the acute cases of depression (Shah et al. 1996).

Some of the previous studies also used the short questions like GDS. In 1975 the study by Pfeiffer showed that there was a correlation of the short portable mental status questionnaire scores with that of clinically diagnosed result in a study of 141 elderly clinic patients for the organic brain deficit.

There was quite similarity in the diagnosis of whether the impairment is moderate or severe (Pfeiffer 1975). These kinds of studies gave baseline for the development of GDS in the later phase.

## **2.7 Depression as a problem in old aged people residing in their own home**

There are several studies done before on depression of old aged people living in their own home or on community dwelling elderly. The studies are carried out around the different countries of the world. There were very few studies in Nepal on depression of old aged people living in their own home.

A study on living space for elderly in urban setting of Nepal showed that 43 percent elderly had depression in meta-analysis of 3 months period and later in 12 months or longer time period extra 29 percent of elderly people were found to be depressed (Cole & Bellavance 1997). In a study of 106 old age respondents in Chitwan district of Nepal using the centre for epidemiological studies depression scale, the depressive scale showed the range of 0 to 10 with the mean of 5.0 (5.1 in men and 4.8 in women) which was a higher severe symptoms (Shrestha & Pienta 2003).

A later done cross sectional quantitative study of elderly population of Nepal aged 60 and above it was found that lower depression is correlated to a number of factors like physical activity, watching television and listening to radio in men but only watching television and listening to radio in women ( $p$ -value  $<0.005$ ). The authors concluded that physical activity actively lowers the depression in elderly population (Gautam et al. 2007). The same study tells that there is variation in depression and social participation in each and every elderly and that more studies in the developing countries are required in order to know the relation of physical activity with depression. This study also showed that variables correlated with depression did not correlate with satisfaction level of life and vice versa. The respondent's health perception and economic pleasure had the visible effect on depression. In another study of Cross-sectional samples of 247 male and 242 female Nepalese older adults aged 60 and above using the GDS, the severity of depression inclined significantly with added ages to their life with  $p$  value less than 0.001. This study considered GDS as an useful and reliable instrument to find the symptoms of depression among elderly (Gautam & Houde 2011).

A study of 1554 community resident in India based on GDS showed that the severity of the symptoms of depression were associated with the older age and illiteracy and that the highest symptoms were prevalent among female under study (Ganguli et al. 1999). A later Indian study

based on GDS of 196 elderly of urban slums of Mumbai showed that 45.9 percent had the symptoms of depression. Female gender, marital status, poor socio-economic status and literacy were significantly associated with the severe symptoms of depression (Jain & Aras 2007). In another study of 1000 old aged persons over 65 years in rural part of south India, it was found that 12.7 percent had the prevalence of geriatric depression within the one month (Rajkumar et al. 2009). The same study showed that different risk factors like low income, experiencing hunger, history of cardiac illnesses, transient ischemic attack, past head injury and diabetes were the aggravators of depression.

In a study examining the prevalence of dementia in 11034 old aged Chinese aged 70 and above warranted that the dementia is a vital health problem with 64.6 percent having the Alzheimer's disease and lack of care and support by family and rapid modernization may be the probable reason for such large mental problem (Chiu et al. 1998). In a later survey of people aged 50-70 years conducted in urban and rural areas of China in 2005, after adjusting for the potential confounders it was found that depression along with sleep quality, employment status, physical status and cardiovascular disease was the most probable determinant of health perception of respondents. The respondents with no depressive symptoms had nearly twice or more likelihood of perceiving their health as good [OR 2.50 and 95%CI (1.67-3.73)] (Mashhadi et al. 2009).

A study of 1802 Japanese elderly found the significant relation of symptoms of depression with the health problems that is increase in health problems increase the symptoms in the middle aged elderly (Fukukawa et al. 2004). Another study conducted in Japan among 2763 elderly with logistic regression showed that the loneliness, stress and worse self-perceived health condition were strongly associated with the symptoms of depression. In the sample 10.4 percent respondents had the prevalent symptoms of depression (Kaneko et al. 2007). A later done community based prospective cohort study of 710 elderly population of a community of Japan aged from 67 to 91 years using the generalized equations methodology showed that the symptoms of depression has significant association with self-reported health. It concluded that the presence of symptoms of depression was the positive factor for bad self-reported health and overall health condition of elderly population (Ishizaki et al. 2009).

A study of 1147 elderly of 60 years and over in rural Thailand showed that the respondents financial status was directly associated with depression. In this study the outmigration of children reduced parent's risk of depression because of the children's economic remittances to their parents. The results indicated that the monetary advantage of migration of children to their parents

maintained their parents mental health (Abas et al. 2009). In a study of adult outpatients in a Diabetic centre in Singapore, it was found that 31.1 percent had the symptoms of depression and the depressive symptoms were significantly associated with Diabetes Mellitus with  $P\text{-value} < 0.001$ . Women had more depressive symptoms than in male. In both sex groups regular exercise was associated with keeping the patients out of Diabetes (Verma et al. 2010). The study of 106 geriatric outpatients in Indonesia on the risk factors of symptoms of depression using the GDS found that 22.6 percent of respondents showed substantial increase in severity of the symptoms of depression in the follow up of 6 months. Diabetes mellitus and chronic kidney diseases were found to be the determinants of high depressive symptoms in bivariate analysis. Only chronic kidney disease [OR 3.39, 95%CI (1.07-10.76)] was found to be associated with depressive symptoms after multivariate analysis was done and it was concluded as the most probable risk factor (Wahyudi et al. 2012). The study of 1200 old aged community residents of Taiwan showed that 27.5 percent had the symptoms of depression and it was associated with the number of factors like worse social support and care, physical illness like respiratory disease, worse cognitive function, dissatisfied living, poor self-reported health and income (Tsai et al. 2005).

A study of 9900 adults from a community data of USA, it was found that the risk of major depression is 4.4 times higher in the adults having symptoms of depression than in the symptoms free adults. There was the association of prior symptoms of depression with 50 percent of major depression cases (Horwath et al 1992). Another study consisting 880 randomly sampled 65 years and older community dwelling people of USA based on the regression analysis, it was found that self-rated health was aggravated by symptoms of depression. The more there were symptoms of depression poorer was the self-rated health. The multinomial regression analysis also found the association of symptoms of depression to the poor self-rated health along with low education and some other variables though the physical and functional disorders were controlled (Mulsant et al. 1997). A later study of community dwelling elderly of 65 years and above in USA concluded that symptoms of depression is cross-sectionally and independently associated with social engagement (Glass et al. 2006).

In a study of 768 elderly aged 65 and above in a big city environment in the city of Lodz in Poland applying the multinomial logistic regression found that perception on health status of elderly was associated with the education level, sex and coronary heart disease. The female respondents reported their self-reported health as low or vulnerable than the male respondents (Bryla et al. 2011). A study of 138 non-institutionalized elderly population of Northeast Italy based on the 100 quality of life questionnaire of WHO showed that elderly with symptoms of depression perceived

their health worse than the non-symptomatic elderly population. The symptoms of depression and the grade of their severity had strong correlation for degrading the quality of life of elderly (Scocco et al. 2006).

In a population based cross-sectional study carried among 185 Icelanders of 65-88 years, the multivariate analysis revealed that the probability of good health perception by participants declined with the additional symptoms of depression (OR 0.79, p value <0.001) and increased with no symptomatic condition (Arnadottir et al. 2011). A comparative study of the level of depression among the people with and without disabilities within 11 countries of Western Europe revealed that those with higher depression level were elderly who had disabilities. Most of them were females. In comparison very few of non-disabled respondents had depression. The authors of the study also concluded that the results brought out the vital impact of wellbeing, employment and income on depression (Rodríguez & Pérez 2012).

The analysis for living arrangement of elderly population in 43 different developing countries using the demographic and health surveys data showed that most of the elderly reside alone and that more women than men live alone. Elderly people were the head of the family in most of the African countries and there was the system of residing with son in almost all countries except for the countries of Latin America (Bongaarts & Zimmer 2002). A qualitative meta-analysis of studies on risk factors of depression among the elderly living in community found that disability, worse health condition, physical illness, poor self-reported health and prior depression were associated with the symptoms of depression. In the same meta-analysis of quantitative studies, prior depression, female gender and sleep disturbances emerged as the most vital risk factors of depression among the community respondents (Cole 2003). A community based study of 2850 elderly of 75 years and above found that 31.1 percent had symptoms of depression. The study concluded that depression increases with increased age and loneliness. Functional disability was associated with higher level of symptoms (Tazelaar et al. 2008).

## **2.8 Depression as a problem in old aged people living in old age home or other institutions**

Institutionalized old aged populations are those old aged population who are living in some kind of institutions. The institution may be hospital, nursing home, old age home or so on. There were very limited previous studies on the depression of old aged people living in an institution.

In a study using Geriatric Depression Scale among the 100 elderly patients of 65 years in a hospital in Kathmandu district of Nepal, 53.2 percent of the respondents were found to be depressive (34.2 percent mild and 19 percent severe) and rest normal (Khattari & Nepal 2006). In a retrospective study of 138 institutionalized elderly aged 60 years and above in comparison to 194 elderly aged 50-59 years in Nepal was found that depressive disorder was a vital illness in both age groups. The study concludes that physical illnesses are added with added number of years in preexisting mental disorders among the elderly population and that poor health care provision to the elderly have catalyzed the problem in a clearly seen manner in the developing countries though the problem is almost equal in developing and developed countries (Aich et al. 2012).

A study using the clinical interview among the 539 patients aged 65-102 years of a nursing care of USA found that past history of depression and physical illness were associated with depression. Socio-demographic factors had no association with depression. (Bruce et al. 2002).

The study of 75 years and older elderly in UK showed that symptoms of depression were significantly associated with the age (OR 1.5 for 85-90 yrs) and the marital status (OR 1.2). The level of symptoms assessed by GDS was also higher in those residents having two or more physical illnesses (OR 1.6). Female respondents and those living alone had more severe symptoms of depression than the male and those living with partner (Osborn et al. 2003).

In a study of 333 nursing home patients in Netherlands it was found that 14.1 percent had severe symptoms of depression (GDS) and 24 percent had mild symptoms of depression. Factors like loneliness, stroke, negative life events, no support and care were the most strongly associated risk factors. The authors of this study also concluded that the prevalence of symptoms of depression in nursing home residing old aged people is high (Jongenelis et al. 2004).

A study of 669 institutionalized Spanish elderly people showed that sex and age had no association with self-reported health. The majority of respondents (55%) respondents reported their health to be in good or very good condition. Most of them reporting so were educated above the primary level and were residing in private institutions (Damián et al. 2008). The same study showed that elderly with symptoms of depression [OR 10.45, 95%CI (5.84-18.68)] perceived their health worse than their non-symptomatic counterparts. Depressive symptoms had strongly significant association with self-reported health among elderly. A descriptive analytical study of 35 institutionalized 65-93 years old people in Sfax Tunisia showed that 51.4 percent had symptoms of depression and females were more prone to depression than male (Aribi et al. 2010).

There were limited numbers of studies on the symptoms of depression among elderly living in nursing or old age homes but no literature was found on studies comparing the symptoms of depression on the elderly people living in old age homes and those living in their own homes.



### **3. AIM OF THE STUDY**

The main aim of this study is to compare the severity of the symptoms of depression among the people aged 65 years and above living in an old age home and in their own home.

#### **3.1 Specific objectives**

- To compare the socio-demographic characteristics of old age people living in an old age home and in their own home.
- To find the severity of symptoms of depression among the old aged people living in an old age home and in their own home.
- To assess the symptoms of depression of old age people living in an old age home and in their own home according to socio-demographic characteristics.
- To compare the symptoms of depression of old age people living in an old age home and in their own home according to their health status, perceptions of old age and life and expectations.

#### **3.2 Study hypothesis**

- Ho: There is no difference in the symptoms of depression of old aged people living in old age home and in their own home.
- H1: The symptoms of depression of old aged people living in old age home are higher in severity compared to those living in their own home.

## **4. METHODOLOGY**

### **4.1 Data source**

The study is based on primary empirical data collected by trained researcher.

### **4.2 Study site**

The data of the study were collected from two sites, from old aged people residing in old age home and people residing in their own home. The data set from people living in old age home was collected in the Social Welfare Center old age home (a government run old age home) located in the premises of Pashupatinath temple in Kathmandu district Nepal. The data of old aged people living in their own home was collected from the Rasuwa district (Syafu VDC, Dhunche VDC, Haku VDC, Goljung VDC and Yarsa VDC) of Nepal.

### **4.3 Study design and study population**

A descriptive cross sectional study design was used to collect the quantitative data. People aged 65 years and above were included in the study population and the research unit was an individual. The old age home had the rule to admit only old aged people aged 65 years and above, so both the samples were taken within this age frame in order to match the samples for comparison.

### **4.4 Sampling design**

Purposive sampling was used for selection of district and the VDCs of that district and the old age home as well. Convenience sampling was used to select the respondents. From each household, each respondent of 65 years and above were included. The old age people with permanent hearing loss, speechless and diagnosed mental illness were excluded from the study. The total sample size of the study was 260, 130 from old age home and 130 living in their own home in Rasuwa district.

### **4.5 Data collection methods**

The data was collected by the researcher using the questionnaire survey method with the set of questionnaire designed by researcher with the help of supervisor. The questionnaire involved the items of the GDS which consists of 30 yes/no questions. The data was collected by interviews with

the use of questionnaire. There were altogether 57 questions with some open ended in structure. The pretesting of questionnaire was done among some old aged people of Rampur VDC of Palpa district Nepal in order to check its feasibility for the study. At first the consent was taken from the chairman of the entire VDCs of Rasuwa district under study and the permission letter was taken from the section officer of Social Welfare Center old age home. Then the ethical clearance was confirmed by Nepal Health Research Council Ramshah Path Kathmandu Nepal with the motto to conduct study smoothly meeting the general ethical guidelines. Information about the households and study population of the people living in their own home was drawn from the voter's list of the VDCs. Information about the old age home study population was collected from the section officer of old age home. The data collection process was assisted by a group of qualified data collectors. Most of the data collectors were qualified with Bachelor in Public of Health and Bachelor in Medicine.

#### **4.6 Data Processing**

Initially, coding and recoding of collected data was done as required and the necessary information was selected from the collected data. The database was designed according to the questions and entry was done in the SPSS 20.0 version.

#### **4.7 Measurement of Variables**

##### 4.7.1 Outcome variable

##### *Symptoms of depression*

The geriatric depression scale originally derived by Yesavage and colleagues in 1983 was used to measure the symptoms of depression. Altogether 30 yes/no questions related to respondent's daily life were used. The scoring was done as 1 and 0 for each question. Score 1 means that the answer to the question gives one point for depressive symptoms and 0 indicates no point. The symptoms of depression were categorized as normal, mild and severe. The severity of the symptoms was calculated according to the total score that the respondent obtained by answering the questions. The respondents with score 0-9 were put into normal category, respondents with scores 10-19 in the mild symptoms category and the respondents with 20-30 in the severe symptoms category (Yesavage et al. 1983).

#### 4.7.2 Socio-demographic variables

##### ***Gender***

The variable gender was measured in 3 categories: male, female and others. In data coding the category of others was excluded as there were no respondents in the category.

##### ***Age***

The variable age was left open ended at the time of data collection and coded afterwards in four categories: 65-69, 70-74, 75-79 and 80 or older.

##### ***Marital status***

The information of respondent's marital status was asked by using five categories: unmarried, married, living separate, divorced and widow/widower. Later on the variable was coded in three categories of married, living separate and widow/widower. The categories unmarried and divorced were incorporated in living separate category because there were low number of respondent's in both (unmarried and divorced) categories.

##### ***Literacy***

Literacy was measured by assuring whether the respondents were literate and illiterate. The category literate was used to indicate those who had gone to formal school for formal education in their life time and illiterate denotes to those who never went to formal school.

##### ***Occupation before the age of 65 years***

The respondent's occupation before the age of 65 years was asked because inhabitants of old age home could not be involved in any occupation after admission in old age home where the entry age was 65 years. At the time of data collection the variable was coded in 12 categories including agriculture/animal husbandry, agricultural labor, non-agricultural labor, job, foreign job, business, student, housewife, physically disabled/dependent, household works, politics, and social worker. Later on the coding was condensed in four categories named agriculture/animal husbandry, agricultural labor, housewife and others. The category "others" was formed by incorporating all the other categories with very few respondents in each.

##### ***Religion***

Religion was measured in 3 categories: Hindu, Buddhist and Christian.

### ***Ethnicity or caste***

This variable was left open ended while collecting the data and later on measured on 5 categories after coding Brahmin, Chhetri, Newar, Tamang, Lama and others. The category others includes races like Rai, Gurung, Magar, Sherpa, Damai, Kami, Thakuri and Sharki with very few respondents in each.

### **4.7.3 Intermediate-independent variables**

#### ***Self-reported health***

Self-reported health was assessed by asking “how do you perceive your health” with options excellent, very good, good, poor and very poor. For the present analysis the variable was re-coded as good (very good and good), average (good) and poor (poor and very poor).

#### ***Presence of health problems***

The variable was assessed by asking the respondent “do they have any health problems currently” with pre-coded answers yes, no and don’t know.

#### ***Total number of diseases present***

This variable was measured by asking of which types of diseases there are present, if the respondent had replied yes in the presence of health problems. There were altogether 15 diseases with yes/no options to be ticked out. Coding and grouping was done for the analysis, in three categories of 1-2 diseases, 3-4 diseases and 5-6 diseases (highest number of diseases present was six).

#### ***Level of satisfaction with own life***

The variable “level of satisfaction with own life” was measured by asking “How much are you satisfied with your life?” with scale too much satisfied, much satisfied, satisfied, dissatisfied and too much dissatisfied. In the analysis the answers were reduced to three classes: satisfied (too much satisfied and much satisfied), average (satisfied) and dissatisfied (dissatisfied and too much dissatisfied).

### ***Perception of life***

This variable was measured by an open ended question “What are your perceptions regarding life?”. The coding was done afterwards in four categories entitled as sorrow, struggle, living and both happiness and sorrow.

### ***Perception on old age***

This variable was measured by an open ended question “What are your perceptions regarding old age?” During the analysis the variable was coded in three categories: sorrow, loneliness and normal phenomenon.

### ***Leisure time activities***

This variable was measured by asking “What do you do in your leisure time?” and the answers were divided in four categories: “going religious places/visiting”, “doing household works activities, “gossiping and chatting” and “others”. Later on it was re-coded in four categories named household works, gossiping, staying alone and others (going temples/visiting, sewing clothes and thinking about life). The recoding was done mainly due to large number of respondents answered “staying alone”.

### ***Coping mechanisms with stress***

Coping mechanisms with stress were asked with an open ended question “What do you do to cope with the stress?” The answer was coded for the analysis in the four categories entitled weeping, staying alone, smoking and others (sleeping, sharing trouble with friends, excessive alcohol intake and shouting/beating younger ones) according to the main contents of answers.

### ***Receiving old age allowance provided by government***

This variable was measured by simple yes/no question and the respondents who were getting allowances were put in yes category and those who weren't receiving were put in 'no' category.

### ***Level of satisfaction on allowance received***

This variable was assessed by asking the respondents who were entitled to receive allowances “Are you satisfied with the old age allowance provided by government and the answers were categorized as satisfied, not satisfied and not stated. There was no answer in not stated category so it was removed while coding.

### **4.8 Statistical analysis**

The analysis of data was based on descriptive statistics in which the values of variables were calculated and presented as numbers and percentages comparatively among two groups of comparison.

The incidence of severity of symptoms of depression in each category of gender, age, marital status, literacy level, occupation before the age of 65 years, religion and ethnicity was compared on respondents residing in old age home and the respondents residing in their own home using cross tabulation and chi square test including the column percentage. The same analytical process was carried out for all the intermediate independent variables also. *P- Values* were calculated in order to find significant statistical relations and associations. Variables with  $p$  value  $< 0.05$  were interpreted as statistically significant ones.

Multinomial logistic regression model was used to calculate the crude odds ratios (OR) and 95% confidence intervals (CI) for severity of symptoms of depression by using the normal category of symptoms as reference. The analysis based on this model was carried out firstly with all the socio-demographic variables and comparisons were done among the respondents residing in old age home and the respondents residing in their own home. Secondly, this analysis was used for all the intermediate independent variables in order to find the crude odd ratios and 95% confidence interval comparatively among two comparison groups. Another model was also used to find the association of intermediate independent variable with outcome variable which was adjusted for sex, religion, ethnicity, and age, occupation before age of 65 years, marital status and literacy status by enter method. Each intermediate variable was adjusted with all socio-demographic variables one by one. The data was entered and analyzed using the SPSS statistical software package version 20.

#### **4.9 Ethical Approval**

- Consent was taken from VDC for conduction of study.
- Permission was taken from old age home to conduct study.
- Ethical clearance was obtained from Nepal Health Research Council before the field operation.
- Written consent was taken from each respondent.
- Feelings and cultural beliefs, norms and tradition of respondent were respected.
- Questionnaire asking and filling pattern was done in similar manner to every respondent.
- Privacy and confidentiality were strictly maintained.

#### **4.10 Validity and reliability**

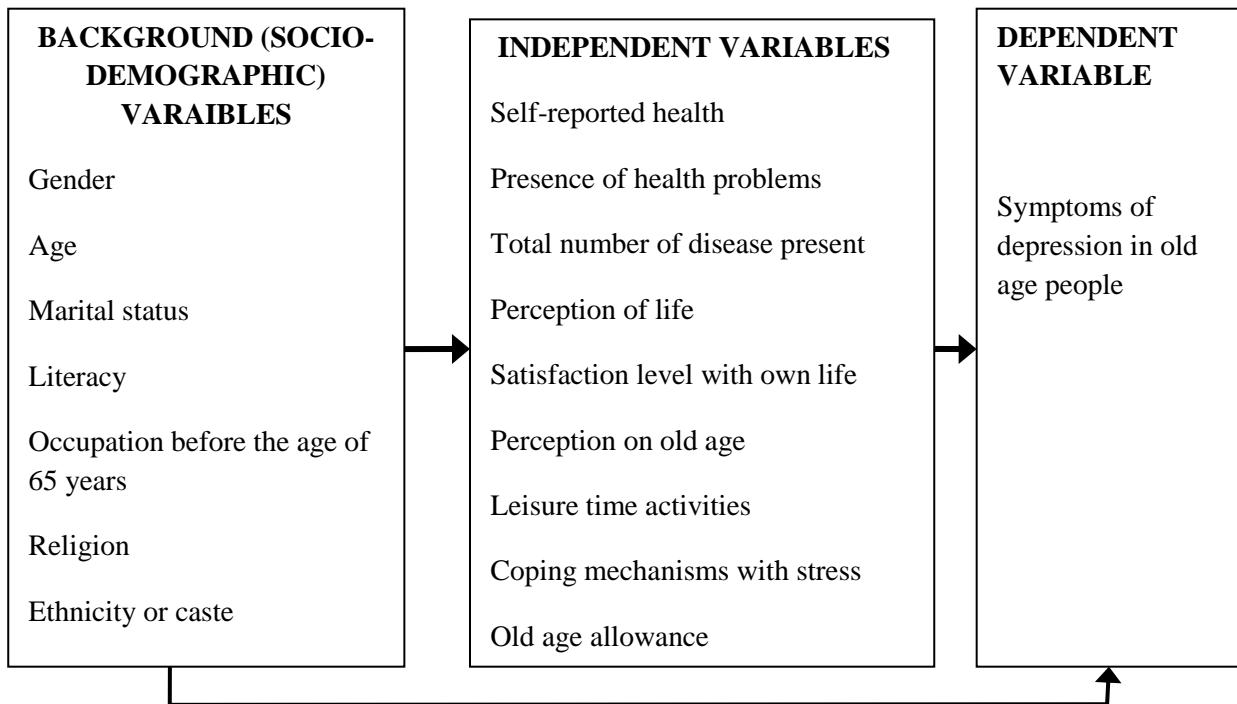
- The validity and reliability of the study was insured by pre-testing the questionnaire.
- Translation of GDS to understandable Nepali form was done.
- Consultation with the supervisors was done.
- Daily editing of data after data collection was performed.
- Scientific tool (Geriatric depression scale- GDS) was applied.
- Field work was carried out by the researcher and as instruction of researcher



#### 4.11 Conceptual framework

The conceptual framework shows how the variables are related to each other. The background variables may affect both independent variables and dependent variable. On the other hand independent variables may affect only the dependent variable. The relation could be known clearly in the result part of the study.

**Figure 2:** Inter-relationship of studied variables



## **5. RESULTS**

The results of the study are described and displayed below in chapters and passages and tables. As the study is a comparative study the results are described and written comparatively among respondents of old age home and the respondents of their own home.

### **5.1 Socio-demographic characteristics**

Most of the respondents in the old age home were male however there were more female respondents in the people living in their own home. Highest number of (35.8 percent) respondents were from the age group 74-79 in the old age home whereas most of the respondent of their own home were from the age group 65-79 (42.3 percent) and the same number of respondent (10.8 percent) from both group belonged to the last age group(80 or older).

The marital status of highest number of respondents from old age home was widow/widower (84.6 percent) and more than half (67.7 percent) of the respondents living in their own home belonged to married category. Most of the respondents from the old age home belong to Hindu religion and none of them were Christians whereas the most of the respondent living in their own home were following Buddhist religion, some of them were Christians and none of them were Hindu. Comparing the literacy status, majority of the respondents from both groups were literate.

Nearly half of the respondents were housewives (47.7 percent) in old age home followed by agriculture/animal husbandry as their occupation before the age of 65 years and in the other group highest number of respondent had agriculture/animal husbandry (31.5 percent) as their occupation followed by the others category. Highest numbers of respondents of old age home were from Brahmin ethnicity followed by Chhetri and Newar. On the other hand more than half of the respondents living in their own home were from the Tamang ethnicity followed by Newar and none of them were Brahmin and Chhetri. (Table 3)

**Table 3:** Comparison of frequency of socio-demographic characteristics among respondents living in old age home and their own home

Background (Socio-demographic) characteristics	Old age home		Own home	
	N=130	%	N=130	%
<b>Gender</b>				
Male	67	51.5	53	40.8
Female	63	48.5	77	59.2
<b>Grouped age</b>				
65-69 Years	26	20	55	42.3
70-74 Years	44	33.8	38	29.2
75-79 Years	46	35.4	23	17.7
80 or older	14	10.8	14	10.8
<b>Marital status</b>				
Married	0	0	88	67.7
Living Separate	20	15.4	0	0
Widow/Widower	110	84.6	42	32.3
<b>Literacy status</b>				
Literate	107	82.3	91	70.0
Illiterate	23	17.7	39	30
<b>Occupation before the age of 65 Years</b>				
Agriculture/ Animal Husbandry	42	32.3	41	31.5
Agricultural labor	11	8.5	23	17.7
Housewife	62	47.7	30	23.1
Others	15	11.5	36	27.2
<b>Religion</b>				
Hindu	115	88.5	17	13.1
Buddhist	15	11.5	104	80.0
Christian	0	0	9	6.9
<b>Race</b>				
Brahmin	41	31.5	0	0
Chhetri	32	24.6	0	0
Newar	38	29.2	22	16.9
Tamang	10	7.7	82	63.1
Lama	0	0	26	20
Others	9	6.9	0	0

## 5.2 Determinants of symptoms of depression

The majority of respondents of old age home had poor health however majority of the respondents living in their own home had average health status. About one half of the respondents from both groups had 3-4 diseases present in them (slightly higher number of respondent from old age home had 5-6 disease than the respondent of their own home). About one-third of the respondent from old age home perceived life as sorrow and almost same number of respondents living in their own home

perceived the life as living. Nearly equal number of respondent from both group perceived the life as both happiness and sorrow. More than half of the respondents living in old age home were dissatisfied with their life whereas almost two-third of the respondents living in their own home were satisfied with their life. Exactly half of the respondent in old age home perceived old age as sorrow and only 33.1 percent respondents living in their own home perceived so. Higher number of the respondent in their own home perceived old age as normal phenomenon and 27.7 percent of them perceived it as loneliness. (Table 4)

**Table 4:** Comparison of determinants of symptoms of depression among old aged people living in old age home and their own home

Determinants of symptoms of depression (Independent variables)	Old age home		Own home	
	N=130	%	N=130	%
<b>Self-reported health</b>				
Good	17	13.1	34	26.2
Average	21	16.2	72	55.4
Poor	92	70.8	24	18.5
<b>Total number of diseases present, grouped</b>				
1-2 diseases	28	21.5	30	23.1
3-4 diseases	62	47.7	63	48.5
5-6 diseases	40	30.8	37	28.5
<b>Perception of life</b>				
Sorrow	41	31.5	26	20.0
Struggle	29	22.3	37	28.5
Living	33	25.4	44	33.8
Both happiness and sorrow	27	20.8	23	17.7
<b>Level of satisfaction with own life</b>				
Satisfied	25	19.2	86	66.2
Average	30	23.1	23	17.7
Dissatisfied	75	57.7	21	16.2
<b>Perception on old age</b>				
Sorrow	65	50	43	33.1
Loneliness	18	13.8	36	27.7
Normal Phenomenon	47	36.2	51	39.2
<b>Leisure time activities</b>				
Household activities	77	59.2	53	40.8
Gossiping	25	19.2	34	26.2
Staying alone	25	19.2	25	19.2
Others	3	2.3	18	13.8
<b>Coping mechanisms with stress</b>				
Weeping	34	26.2	29	22.3
Staying alone	44	33.8	50	38.5
Smoking	25	19.2	20	15.4
Others	27	20.8	31	23.8
<b>Receiving old age allowances from government</b>				
Yes	105	80.8	76	58.5
No	25	19.2	54	41.4
<b>Level of satisfaction with the old age allowances</b>				
Satisfied	<b>105</b>	<b>81.9</b>	<b>76</b>	<b>72.4</b>
Dissatisfied	19	18.1	21	27.6

Almost two-third respondents in old age home used to do household activities in their leisure time whereas 40.8 percent respondents living in their own home used to do so. Every fifth of respondent in both groups likes staying alone in their leisure time. Higher number of the respondents in both the groups uses staying alone as the main coping mechanism with stress. The often mechanism to cope with stress were evenly distributed in both groups. Four of five respondents in old age home were receiving old age allowances from government and slightly more than one half in their own home was receiving it. Most of the respondents who receive allowances were satisfied in what they get in both of the comparison groups. Only 18.1 percent in old age home and 27.6 percent in their own home were dissatisfied. (Table 4)

### 5.3 Severity of symptoms of depression

Only 9.2 percent of the respondents in old age home scored normal when the severity of symptoms of depression was calculated using the GDS compared to 35.4 percent respondents living in their own home. The majority of the respondents in old age home had severe symptoms of depression (59.2 percent) and one-third of them had mild symptoms. Whereas among the respondents living in their own home only one in five had severe symptoms and 43.8 percent had mild symptoms of depression. (Table 5)

**Table 5:** Comparison of severity of the symptoms of depression among old aged people living in old age home and their own home

Dependent variable	Old age home		Own home	
	N	%	N	%
<b>Severity of symptoms of depression</b>	<b>130</b>		<b>130</b>	
Normal (0-9 score)	12	9.2	46	35.4
Mild symptoms (10-19 score)	41	31.5	57	43.8
Severe symptoms ( 20-30 score)	77	59.2	27	20.8

### 5.4 Association of symptoms of depression and socio-demographic characteristics

The severity of symptoms of depression had significant association with gender with  $p$  less than 0.05 in both groups with more number of females having severe symptoms of depression than males. Marital status was also significantly associated with the severity of symptoms in both the groups with more number of widows/widowers having severe symptoms of depression than the other categories. Age and occupation before the age of 65 years was also significantly associated in

respondents living in their own home. The number of respondents with severe symptoms of depression was increasing with increasing age except for the age group 65-69 which had the highest number of respondents with severe symptoms of depression. In case of occupation there was higher number of respondents with severe symptoms of depression in agriculture/animal husbandry category followed by others except for housewife which had 7.4 percent respondent with severe symptoms. The variables religion, race and literacy status didn't show any kind of association with severity of symptoms of depression in neither of the groups. (Table 6)

**Table 6:** Association of symptoms of depression and socio-demographic characteristics among old aged people living in old age home and their own home

Socio-demographic characteristics	Level of symptoms of depression							
	Old age home(N=130)				Own home(N=130)			
	Normal (N=12)	Mild (N=41)	Severe (N=77)	P-value	Normal (N=46)	Mild (N=57)	Severe (N=27)	P-value
	%	%	%		%	%	%	
<b>Gender</b>				<b>0.002</b>				<b>&lt;0.001</b>
Male	66.7	70.7	39.0		54.3	47.4	3.7	
Female	33.3	29.3	61.0		45.7	52.6	96.3	
<b>Grouped age</b>				0.170				<b>0.016</b>
65-69 Years	33.3	19.5	18.2		37.0	50.9	33.3	
70-74 Years	33.3	29.3	36.4		32.6	31.6	18.5	
75-79 Years	25.0	48.8	29.9		26.1	8.8	22.2	
80 thru high	8.3	2.4	15.6		4.3	8.8	25.9	
<b>Marital status</b>				<b>0.002</b>				<b>&lt;0.001</b>
Married	0	0	0		78.3	77.2	29.6	
Living Separate	50.0	14.6	10.4		0	0	0	
Widow/Widower	50.0	85.4	89.6		21.7	22.8	70.4	
<b>Literacy status</b>				0.482				0.220
Literate	75.0	87.8	80.5		71.7	63.2	81.5	
Illiterate	25.0	12.2	19.5		28.3	36.8	18.5	
<b>Occupation *</b>				0.248				<b>0.038</b>
Agriculture/ AH	16.7	26.8	37.7		39.1	22.8	37.0	
Agricultural labor	16.7	4.9	9.1		13.0	14.0	33.3	
Housewife	58.3	61.0	39.0		19.6	33.3	7.4	
Others	8.3	7.3	14.2		28.3	29.8	22.2	
<b>Religion</b>				0.564				0.836
Hindu	83.3	85.4	90.9		10.9	12.3	18.5	
Buddhist	16.7	14.6	9.1		80.4	80.7	77.8	
Christian	0	0	0		8.7	7.0	3.7	
<b>Race</b>				0.290				0.970
Brahmin	25.0	17.1	40.3		0	0	0	
Chhetri	25.0	22.0	26.0		0	0	0	
Newar	33.3	41.5	22.1		15.2	17.5	18.5	
Tamang	8.3	9.8	6.5		63.0	64.9	59.3	
Lama	0	0	0		21.7	17.5	22.2	
Others	8.3	9.8	5.2		0	0	0	

\*= before the age of 65 years, AH = Animal Husbandry

The logistic regression analysis (using category normal of symptoms of depression as the reference) showed that male gender was statistically significant with the severe symptoms category in the both comparison groups [OR 0.31, 95%CI (0.08-0.15) and OR 0.03, 95% CI (0.00-0.25)] when female gender was the reference category (OR 1.0). This implied that male gender had less likelihood of having the severe symptoms of depression. All the categories of the variable age were statistically significant with severe symptoms of depression in the living in their own home group when 80 or older age group was reference. Higher age had higher likelihood of having severe symptoms of depression in the people living in their own home. (Table 7)

**Table 7:** Odd ratios and 95%CI of symptoms of depression due to Socio-demographic characteristics

<b>Regression analysis of symptoms of depression and socio-demographic characteristics</b>				
Socio-demographic characteristics	People residing in old age home		People residing in their own home	
	OR 95% CI		OR 95% CI	
	Mild symptoms (N=41)	Severe Symptoms (N=77)	Mild symptoms (N=57)	Severe symptoms (N=27)
<b>Gender</b>				
Male	1.20(0.30-4.78)	<b>0.31(0.08-0.15)</b>	0.75(0.34-1.64)	<b>0.03 (0.00-0.25)</b>
Female	1.0	1.0	1.0	1.0
<b>Marital status</b>				
Married	NA	NA	0.94(0.36-2.39)	<b>0.11(0.04-0.34)</b>
Living Separate	<b>0.17(0.04-0.71)</b>	<b>0.11(0.03-0.44)</b>	NA	NA
Widow/Widower	1.0	1.0	1.0	1.0
<b>Grouped age</b>				
65-69 Years	2.00(0.09-41.00)	0.29(0.029-2.97)	0.68(0.11-3.91)	<b>0.15(0.02-0.88)</b>
70-74 Years	3.00(0.15-59.89)	0.58(0.06-5.77)	0.48(0.08-2.83)	<b>0.09(0.01-0.61)</b>
75-79 Years	6.66(0.52-137.4)	0.63(0.06-6.82)	0.16(0.02-1.16)	<b>0.14(0.02-0.91)</b>
80 or older	1.0	1.0	1.0	1.0
<b>Literacy status</b>				
Literate	2.40(0.48-11.97)	1.37(0.33-5.71)	0.67(0.29-1.56)	1.73(0.54-5.55)
Illiterate	1.0	1.0	1.0	1.0
<b>Occupation *</b>				
Agriculture/ AH	1.0	1.0	1.0	1.0
Agricultural labor	0.18(0.15-2.15)	0.24(0.02-2.02)	1.84(0.51-6.61)	2.70(0.74-9.81)
Housewife	0.54(0.11-3.64)	0.29(0.05-1.54)	<b>2.92(1.00-8.49)</b>	0.40(0.07-2.22)
Others	0.54(0.03-8.27)	0.75(0.06-9.23)	1.81(0.65-4.99)	0.83(0.24-2.86)
<b>Religion</b>				
Hindu	1.16(0.20-6.69)	2.00(0.36-11.00)	1.12(0.33-3.83)	<b>1.76(4.57-6.79)</b>
Buddhist	1.0	1.0	1.0	1.0
Christian	NA	NA	0.80(0.18-3.43)	0.44(0.04-4.20)
<b>Race</b>				
Brahmin	0.58(0.04-7.66)	2.06(0.17-24.00)	NA	NA
Chhetri	0.75(0.05-9.61)	1.33(0.11-15.70)	NA	NA
Newar	1.06(0.09-12.27)	0.85(0.07-9.44)	1.12(0.38-3.30)	1.29(0.35-4.75)
Tamang	1.0	1.0	1.0	1.0
Lama	NA	NA	0.78(0.28-2.13)	1.08(0.33-3.54)
Others	1.00(0.45-22.17)	0.80(0.37-17.19)	NA	NA

\* = before the age of 65 years, AH = Animal Husbandry, NA = Not Applicable

Living separate category of marital status was statistically significant with both mild and severe symptoms in the respondents of old age home [OR 0.17, 95%CI (0.04-0.71) and OR 0.11, 95% CI (0.03-0.44)]. Married category was statistically significant with the severe symptoms category in respondents living in their own home [OR 0.11, 95%CI (0.04-0.34)] when the category widow/widower was taken as reference. In case of respondents of both the groups widow/widower had higher likelihood of having severe symptoms of depression (OR1.0) than the other.

Literacy status was not statistically significant with the severity of the symptoms in neither of the comparison groups. Housewife category of the variable occupation before the age of 65 years was statistically significant [OR 2.92, 95% CI (1.00-8.49)] with the mild symptoms category in respondents living in their own home when agriculture/animal husbandry was taken as reference. It shows that housewife had nearly 3 times higher likelihood (OR 2.92) of having symptoms of depression than the respondents with agriculture/animal husbandry as occupation (OR 1.0) in the living in their own home group. In the variable religion, only Hindu religion was significant and only in living in their own home group [(OR 1.76, 95% CI (4.57-6.79)] with severe symptoms of depression when Buddhist category was taken as reference. Hindu respondents had two times more likelihood of having severe symptoms of depression than the Buddhist (OR 1.0) among the living in their own home group. The variable race wasn't statistically significant with any of the categories. (Table 7)

### **5.5 Association of symptoms of depression and their determinants**

Self-reported health was significantly associated with the symptoms of depression in respondents in old age home but not in the respondents living in their own home. There were more numbers of respondents with mild and severe symptoms of depression who perceived their health as poor in old age home. Perception of life was associated in case of respondents living in their own home but not in the respondents living in old age home. There was more number of respondents living in their own home with severe depression who perceived life as sorrow. The other determinants of symptoms of depression including total number of diseases present, satisfaction with own life, perception about old age, leisure time activities, coping mechanism against stress, receiving old age allowance and satisfaction with old age allowance had no significant association with the severity of symptoms of depression in both the groups while the cross tabulation was performed. (Table 8)



**Table 8:** Association of symptoms of depression and their determinants among old aged people living in old age home and their own home

Determinants of symptoms of depression	Level of symptoms of depression							
	Old age home(N=130)				Own home(N=130)			
	Normal (N=12)	Mild (N=41)	Severe (N=77)	P-value	Normal (N=46)	Mild (N=57)	Severe (N=27)	P-value
	%	%	%		%	%	%	
<b>Self-reported health</b>				<b>0.014</b>				0.543
Good	41.7	4.9	13.0		32.6	19.3	29.6	
Average	16.7	22.0	13.0		52.2	61.4	48.2	
Poor	41.6	73.3	74.0		15.2	19.3	22.2	
<b>Total disease present, grouped</b>				0.679				0.251
1-2 diseases	16.7	19.5	23.4		26.1	17.5	29.6	
3-4 diseases	66.6	48.8	44.2		39.1	59.6	40.8	
5-6 diseases	16.7	31.7	32.4		34.8	22.8	29.6	
<b>Perception of life</b>				0.236				<b>0.034</b>
Sorrow	16.7	36.6	31.2		10.9	19.3	37.0	
Struggle	25.0	31.7	16.9		37.0	21.1	29.7	
Living	25.0	22.0	27.3		41.2	35.1	18.5	
Both happiness and sorrow	33.3	9.8	24.7		10.9	24.5	14.8	
<b>Level of satisfaction with own life</b>				0.148				0.064
Satisfied	16.7	12.2	23.4		65.2	70.2	59.3	
Average	0.0	26.8	24.7		19.6	8.8	33.3	
Dissatisfied	83.3	61.0	51.9		15.2	21.1	7.4	
<b>Perception on old age</b>				0.306				0.447
Sorrow	41.7	48.8	51.9		26.1	35.1	40.8	
Loneliness	33.3	9.8	13.0		26.1	26.3	33.3	
Normal Phenomenon	25.0	41.4	35.1		47.8	38.6	25.9	
<b>Leisure time activities</b>				0.141				0.222
Household activities	66.7	56.1	59.7		45.7	29.8	55.6	
Gossiping	8.3	24.4	18.2		26.1	31.8	14.8	
Staying alone	25.0	12.2	22.1		13.0	26.3	14.8	
Others	0.0	7.3	0.0		15.2	12.3	14.8	
<b>Coping mech. with stress</b>				0.208				0.183
Weeping	25.0	17.1	31.2		19.6	29.8	11.1	
Staying alone	41.7	26.8	36.4		45.7	35.1	33.3	
Smoking	16.7	22.0	18.2		13.0	10.5	29.6	
Others	16.7	34.1	14.3		21.7	24.6	25.9	
<b>Getting OAA from</b>				0.627				0.287
Yes	75.0	85.4	79.2		63.0	50.9	66.7	
No	25.0	14.6	20.8		37.0	49.1	33.3	
<b>Satisfaction with OAA</b>	N=105			0.337	N=76			0.560
Satisfied	100.0	80.0	80.3		69.0	79.3	66.7	
Dissatisfied	0.0	20.0	19.7		31.0	20.7	33.3	

OAA=Old Age Allowance, mech. = mechanisms

The regression analysis showed that the good health category of self-reported health was statistically significant with both mild and severe symptoms of depression in the residents of old age home whereas insignificant for all the categories in the residents of their own home when the reference category was poor. It implied that respondents who perceived their health as good had less likelihood of having severe symptoms of depression (OR 0.17) while respondents who perceived their health as poor had higher likelihood (OR 1.0) in the living in old age home group. (Table 9)

There were no statistically significant relation between the determinants “total no. of disease present in respondents” and severity of symptoms of depression in the two comparison groups. The category struggle of determinant perception of life was statistically significant with mild symptoms of depression in living in their own home group [OR 0.25, 95% CI (0.07-0.88)]. There were no other statistically significant relations for this variable when the category “both happiness and sorrow” was used as reference.

However in case of level of satisfaction of life (category dissatisfied as the reference), the categories satisfied and average were statistically significant with severe and mild symptoms respectively in the respondents living in old age home. The respondents who were satisfied with their life and those who had average satisfaction level had less likelihood of having the symptoms of depression with odd ratio less than 1 and the respondents who were dissatisfied with their life had higher likelihood (OR 1.0) in living in old age home group. The determinants like perception on old age, getting old age allowance and satisfaction level with the old age allowance did not show any significant relation with symptoms of depression.

The staying alone category of the determinant leisure time activities was statistically significant [OR 0.58, 95% CI (0.01-0.99)] with mild symptoms in residents of old age home when household activities was taken as reference category. In case of coping mechanisms with stress, the category staying alone was statistically significant [OR 1.28, 95% CI (2.81-5.89)] with the severe symptoms in living in their own home group and when the category weeping was used as reference. Among the respondents living in their own home who weep to cope with stress had less likelihood of having symptoms of depression (OR 1.0) and those who stay alone (OR 1.0) had higher likelihood (Table 9)

**Table 9:** Odd ratios and 95%CI for symptoms of depression due to their determinants

<b>Regression analysis of symptoms of depression and their determinants</b>				
Determinants of symptoms of depression	People residing in old age home		People residing in their own home	
	OR 95% CI		OR 95% CI	
	Mild symptoms (N=41)	Severe Symptoms (N=77)	Mild symptoms (N=57)	Severe symptoms (N=27)
<b>Self rep. health</b>				
Good	<b>0.06(0.01-0.44)</b>	<b>0.17(0.04-0.71)</b>	0.46(0.13-1.59)	0.62(0.15-2.49)
Average	0.75(0.12-4.54)	0.43(0.07-2.58)	0.92(0.31-2.73)	0.63(0.17-2.27)
Poor	1.0	1.0	1.0	1.0
<b>Total disease</b>				
1-2 diseases	0.61(0.07-5.27)	0.72(0.09-5.60)	1.02(0.33-3.12)	1.33(0.38-4.57)
3-4 diseases	0.38(0.07-2.10)	0.34(0.06-1.74)	2.32(0.91-5.88)	1.22(0.39-3.79)
5-6 diseases	1.0	1.0	1.0	1.0
<b>Perception of life</b>				
Sorrow	7.50(0.99-56.77)	2.52(0.41-15.29)	0.78(0.18-3.41)	2.50(0.45-13.64)
Struggle	4.33(0.66-28.11)	0.91(0.17-4.77)	<b>0.25(0.07-0.88)</b>	0.58(0.12-2.80)
Living	3.00(0.44-20.15)	1.47(0.29-7.45)	0.37(0.11-1.24)	0.32(0.06-1.70)
Both happiness and sorrow	1.0	1.0	1.0	1.0
<b>Satisfaction with own life</b>				
Satisfied	1.00(0.16-6.02)	<b>2.25(1.44-11.33)</b>	0.77(0.27-2.21)	1.86(0.34-10.06)
Average	<b>1.10(4.51-27.07)</b>	NA	0.32(0.07-1.36)	3.50(0.56-21.66)
Dissatisfied	1.0	1.0	1.0	1.0
<b>Perception on old age</b>				
Sorrow	0.70(0.14-3.39)	0.88(0.19-4.03)	1.66(0.65-4.21)	2.88(0.88-9.37)
Loneliness	0.17(0.02-1.12)	0.27(0.05-1.46)	1.25(0.47-3.27)	2.35(0.70-7.92)
Normal	1.0	1.0	1.0	1.0
<b>Phenomenon</b>				
<b>Leisure time activities</b>				
Household activities	1.0	1.0	1.0	1.0
Gossiping	3.47(0.38-31.26)	2.43(0.28-21.18)	1.85(0.70-4.89)	0.46(0.12-1.73)
Staying alone	<b>0.58(0.01-0.99)</b>	0.98(0.23-4.15)	3.08(0.98-9.68)	0.93(0.22-3.89)
Others	NA	NA	1.23(0.36-4.21)	0.80(0.19-3.23)
<b>Coping mech. with stress</b>				
Weeping	1.0	1.0	1.0	1.0
Staying alone	0.94(0.16-5.24)	0.70(0.15-3.23)	0.50(0.18-1.39)	<b>1.28(2.81-5.89)</b>
Smoking	1.92(0.25-14.88)	0.87(0.13-5.89)	0.52(0.13-2.12)	4.00(0.74-21.49)
Others	3.00(0.40-22.30)	0.68(0.10-4.71)	0.74(0.23-2.32)	2.10(0.41-10.66)
<b>Getting OAA</b>				
Yes	1.94(0.40-9.32)	1.27(0.30-5.24)	0.60(0.27-1.34)	1.17(0.43-3.18)
No	1.0	1.0	1.0	1.0
<b>Satisfaction with OAA</b>				
Satisfied	NA	NA	1.72(0.52-5.69)	0.90(0.25-3.16)
Dissatisfied	1.0	1.0	1.0	1.0

OAA = Old Age Allowance, NA=Not Applicable, mech. = mechanisms, rep. =reported

The regression analysis with crude odd ratios simultaneously adjusted for all the socio-demographic showed that good and average categories of self-reported health were statistically significant in respondents living in old age home, the category good was significant with both mild and severe symptoms and average was significant with the mild symptoms only. Those who reported their health as good had less likelihood (OR 0.06) and those who reported their health as poor (OR 1.0) had higher likelihood of having the symptoms of depression in the living in old age home group. In case of “total number of diseases present”, 3-4 diseases category was statistically significant with mild symptoms of depression in respondents of old age home [OR 0.19, 95%CI (0.02-0.52)]. The respondents of old age home with 5-6 diseases had higher odds of having symptoms of depression (OR 1.0) whereas the respondents with 3-4 diseases (OR 0.19) had lower odds. (Table 10)

In case of perception of life, the category sorrow showed statistically significant relation with severe symptoms in old age home group [OR 1.97, 95%CI (1.26-14.78)]. The category “struggle” showed statistically significant relation with both mild and severe symptoms in living in their own home group. The category living showed significant relation with severe symptoms in living in their own home group [OR 0.20, 95%CI (0.02-0.89)] when the category “both happiness and sorrow” was used as reference. The respondents who perceived their life as sorrow in both the groups had higher likelihood of having the symptoms of depression.

On the other hand the category average of “level of satisfaction with own life” showed statistically significant relation with mild symptoms in the both the comparison groups while the category dissatisfied was used as reference. The respondents who were averagely satisfied with their life had less likelihood of having the symptoms of depression. In the variable perception on old age the category loneliness was statistically significant with mild symptoms in the respondents living in old age home [OR 0.10, 95%CI (0.01-0.94)] when normal phenomenon was used as reference category. Staying alone category was statistically significant [OR 3.23, 95%CI (9.22-11.33)] with mild symptoms in living in their own home group in case of leisure time activities. On the other hand, after adjusting coping mechanism with the stress was totally insignificant in both the comparison groups. The yes category of getting old age allowance variable showed statistically significant relation with the mild symptoms in living in their own home group after the adjustments when the getting no allowances was used as the reference. Satisfaction level with the old age allowance was insignificant in both groups after the adjustments also. (Table 10)

**Table 10:** Adjusted odd ratios and 95% CI of symptoms of depression due to their determinants

<b>Regression analysis of symptoms of depression and their determinants *</b>				
Determinants of symptoms of depression	People residing in old age home		People residing in their own home	
	OR 95% CI		OR 95% CI	
	Mild symptoms (N=41)	Severe Symptoms (N=77)	Mild symptoms (N=57)	Severe symptoms (N=27)
<b>Self rep. health</b>				
Good	<b>0.03(0.00-0.34)</b>	<b>0.06(0.00-0.46)</b>	0.50(0.13-1.86)	0.80(0.11-5.52)
Average	<b>1.20(1.14-10.07)</b>	0.58(0.07-4.96)	1.16(0.34-3.70)	1.01(0.17-5.74)
Poor	1.0	1.0	1.0	1.0
<b>Total disease</b>				
1-2 diseases	0.66(0.06-7.33)	1.12(0.10-12.92)	0.90(0.27-2.97)	2.77(0.49-15.64)
3-4 diseases	<b>0.19(0.02-0.52)</b>	0.18(0.02-1.46)	2.47(0.90-6.47)	2.30(0.47-11.09)
5-6 diseases	1.0	1.0	1.0	1.0
<b>Perception of life</b>				
Sorrow	5.63(0.64-49.44)	<b>1.97(1.26-14.78)</b>	1.20(0.24-5.96)	4.33(0.42-43.75)
Struggle	5.14(0.64-41.08)	0.89(0.12-6.16)	<b>0.24(0.06-0.95)</b>	<b>0.38(0.04-0.34)</b>
Living	3.53(0.41-30.18)	2.09(0.30-14.39)	0.37(0.10-1.37)	<b>0.20(0.02-0.89)</b>
Both happiness and sorrow	1.0	1.0	1.0	1.0
<b>Satisfaction+</b>				
Satisfied	1.15(0.16-8.02)	2.23(0.36-13.86)	0.68(0.21-2.18)	2.18(0.17-26.82)
Average	<b>7.00(2.54-19.24)</b>	NA	<b>0.22(0.04-0.56)</b>	6.53(0.41-102.05)
Dissatisfied	1.0	1.0	1.0	1.0
<b>Perception^</b>				
Sorrow	0.31(0.04-2.13)	0.30(0.04-2.06)	2.02(0.73-5.56)	1.46(0.47-12.75)
Loneliness	<b>0.10(0.01-0.94)</b>	0.17(0.02-1.45)	1.16(0.41-3.52)	4.04(0.76-21.47)
Normal	1.0	1.0	1.0	1.0
<b>Phenomenon</b>				
<b>Leisure time act.</b>				
Household activities	1.0	1.0	1.0	1.0
Gossiping	3.20(0.28-35.86)	3.02(0.26-35.24)	1.69(0.59-4.84)	0.60(0.10-3.40)
Staying alone	0.49(0.07-3.13)	0.72(0.13-4.00)	<b>3.23(9.22-11.33)</b>	2.12(0.23-19.29)
Others	NA	NA	1.01(0.27-3.76)	0.77(0.10-5.88)
<b>Coping mech. with stress</b>				
Weeping	1.0	1.0	1.0	1.0
Staying alone	0.57(0.08-4.17)	0.40(0.06-4.61)	0.49(0.17-1.42)	3.64(0.37-35.38)
Smoking	1.55(0.13-18.37)	0.41(0.03-4.61)	0.51(0.11-2.25)	13.05(0.92-183.4)
Others	1.48(0.15-13.85)	0.28(0.02-2.85)	0.66(0.20-2.19)	3.42(0.29-39.25)
<b>Getting OAA</b>				
Yes	1.56(0.14-16.69)	0.77(0.07-7.66)	<b>1.07(1.28-4.03)</b>	0.59(0.07-5.05)
No	1.0	1.0	1.0	1.0
<b>Sat. with OAA</b>				
Satisfied	2.32(6.38-8.45)	NA	1.58(0.42-5.89)	0.039(4.99-30.36)
Dissatisfied	1.0	1.0	1.0	1.0

OAA=Old Age Allowance, act. = activities, mech. = mechanisms, rep. = reported, NA = Not Applicable, ^ = on old age, + = level with own life, \*= adjusted for socio-demographic characteristics like gender, age, marital status, literacy, occupation before the age of 65 years, religion, race or ethnicity

## 5.6 Association of symptoms of depression and place of residence

There was strong significant association ( $p < 0.001$ ) between the severity of symptoms and the place of residence. There were higher numbers of respondents with severe symptoms of depression in old age home than those living in their own home. On the other hand there were higher numbers of respondents with normal status in living in their own home group than those living in old age home. (Table 11)

**Table 11:** Association of symptoms of depression and place of residence

Variable name and their respective categories	Old age home		Own home		P-Value
	N=130	%	N=130	%	
<b>Severity of symptoms of depression</b>					<b>&lt;0.001</b>
Normal (0-9 score)	12	9.2	46	25.4	
Mild (10-19 score)	41	31.5	57	43.8	
Severe( 20-29 score)	77	59.2	27	20.8	

The regression analysis of symptoms of depression with the category normal as reference showed old age home as the place of residence was statistically significant with both the mild and severe symptoms [OR 2.757, 95%CI (1.30-5.84) and OR 10.93, 95%CI (1.30-5.84)]. The respondents of old age home had nearly two times (OR 2.75) more likelihood of having mild symptoms and more than ten times (OR 10.93) higher likelihood of having severe symptoms of depression than the respondents living in their own home (OR 1.0). (Table 12)

**Table 12:** Odds ratio and 95%CI of symptoms of depression due to place of residence

Regression analysis of severity of symptoms of depression and place or residence		
Place of residence	Severity	
	OR 95% CI	OR 95% CI
	Mild Symptoms	Severe Symptoms
Old age home	<b>2.757(1.30-5.84)</b>	<b>10.93(5.05-23.65)</b>
Own home	1.0	1.0

## 6. DISCUSSION

### 6.1 Summary of the findings

The aim of this study was to compare the symptoms of depression among the elderly people living in old age home and in their own. The majority (59.2 percent) of the respondents in old age home had severe symptoms of depression and one-third of them had mild symptoms. However, in the respondents living in their own home only one in five had severe symptoms of depression which clearly showed high severity of depression in residents of old age home than those living in their own home.

Gender and marital status were significantly associated with symptoms of depression in both groups of residents with female having higher likelihood of having severe symptoms of depression than male. Similarly widows/widowers also had the higher likelihood of having severe symptoms of depression than the respondents of other marital status. Age and occupation had significant association in the residents of their own home. The number of respondents with severe symptoms of depression was increasing with increasing age except for the age group 65-69. The analysis showed no association of symptoms of depression with race and literacy in either of the groups. Self-reported health was significantly associated with the severity of the symptoms of depression in the case of residents of old age home. There were more numbers of respondents with mild and severe symptoms of depression who perceived their health as poor in old age home. Similarly perception of life was associated in case of residents of their own home. There were more numbers of respondents living in their own home with severe depression who perceived life as sorrow. There was strong significant association ( $p < 0.001$ ) between the severity of symptoms and the place of residence with higher frequency of severe symptoms in the people living in old age home.

In logistic regression analysis, male gender showed the protective association to the symptoms of depression whereas female gender had higher likelihood of having severe symptoms. The higher age had higher likelihood of having severe symptoms of depression in the people living in their own home. In case of respondents of both the groups widow/widower were had higher likelihood of having the severe symptoms of depression than the other. Housewife as the occupation before the age of 65 years had nearly 3 times higher likelihood of having symptoms of depression than the respondents of other occupation in the living in their own home group. Hindu respondents had two times more likelihood of having severe symptoms of depression than the Buddhist among the living in their own home group. The respondents who perceived their health as good had protective

association to severe symptoms of depression in the living in old age home group. The respondents who were satisfied with their life and those who had average satisfaction level showed less likelihood of having symptoms of depression with odd ratio less than one and the respondents who were dissatisfied with their life had higher likelihood in living in old age home group. The respondents who stayed alone in their leisure time had the protective association to symptoms of depression and those who did household activities had higher likelihood of having symptoms of depression in living in old age home group. The respondents living in their own home who weep during the stress had the protective association and those who stayed alone had higher likelihood of having symptoms of depression.

The regression analysis with adjusted odd ratios (adjusted for all the socio-demographic variables) showed that the respondents who perceived their health as good had the protective association with the symptoms of depression in the living in old age home group. The respondents of old age home with “5-6 diseases” had higher likelihood of having symptoms of depression than the respondents with “3-4 diseases”. The respondents who perceived their life as sorrow in both the groups had higher likelihood of having severe symptoms of depression whereas the respondents with other perceptions had protective association. The respondents who were averagely satisfied with their life had protective association with mild symptoms of depression and those who were dissatisfied had higher likelihood of having symptoms of depression in case of both the groups.

## **6.2 Discussion of the findings with previous studies**

The type of study in which the comparison of symptoms of depression among the elderly living in old age home and in their own home was not found during the literature review. Yet the previous studies cited in this thesis have done the assessment of symptoms of depression in the people living in any institution and community separately for the determinants and severity. The tool (GDS) used in this thesis was also used in many previous studies which allows joint discussion for the researcher.

### **6.2.1 Symptoms of depression in old aged people living in old age home**

The result of this study are in accordance with the study of Damian and colleagues in the institutionalized elderly people in Spain which showed that perceived health status is significantly associated with symptoms of depression [OR10.45 95% CI(5.84-18.68)]. People who perceived



their health as poor tend to have high level of depressive symptoms (Damián et al. 2008). Similarly this study goes in line with the study by Aich and colleagues and Nepal resulting that the symptoms of depression increase with the increased age (Aich et al. 2012) and the problem is persistent in most of the developing countries. This study found symptoms of depression in majority of old aged people living in old age homes which goes in accordance with the study of Khatri and Nepal conducted in an institution of Nepal showing more than 50 percent of old aged people suffered with symptoms of depression (Khattri & Nepal 2006).

In contrast to our study, the study of Bruce and colleagues in USA showed that the severity of symptoms of depression is associated with total number of physical illnesses present and that it has no association with the any socio-demographic variables (Bruce et al. 2002). The difference may indicate the difference of the determinant of symptoms of depression in old aged people residing in an institution in developed and developing countries. The symptoms of depression is higher among female elderly people (Aribi et al. 2010) is in line with the findings of this study. The study of Aribi and colleagues was carried in Tunisia and showed higher likelihood of female gender having symptoms of depression. The findings of Jongenelis and colleagues in a study in Netherlands that severity of symptoms of depression is higher in institutionalized elderly than among community dwellers and that loneliness is also associated with the severity of symptoms (Jongenelis et al. 2004), is more or less similar to what this study has found.

This study was in accordance with some of the findings of the study of Osborn and colleagues carried out in UK and contradict with some other findings of the same study. The association of age, female gender and marital status (OR1.2) with higher symptoms of depression is similar but the association of number of physical illness (OR1.6) is dissimilar with this study. (Osborn et al. 2003)

#### 6.2.2 Symptoms of depression in old aged people living in their own home

This study was in accordance with a comparative study of the level of depression among the people with and without disabilities within 11 countries of Western Europe showing most of the sufferers of depression as female elderly people (Rodríguez & Pérez 2012). Unlike in the study of Socco and colleagues carried out in Italy in which symptoms of depression and their severity had strong correlation for degrading the quality of life of elderly (Scocco et al. 2006), the result of this study did not show the significant association of depression with self-reported health (quality of life) in the people living in their own home. The study of Muslant and colleagues in USA found that severe

symptoms of depression resulted in poor self-rated health and the multinomial regression also revealed the association of depression with low education (Mulsant et al. 1997) contradict the finding of this study, which showed no association of self-rated health and literacy level with symptoms of depression among the people living in their own home. This study did not get support from the study of Mashhadi and colleagues in China showing the number of physical illnesses was associated with the symptoms of depression after adjusting for the potential confounders (Mashhadi et al. 2009).

This study went in accordance with some of the results of the study by Verma and colleagues in Singapore showing symptoms of depression were more prevalent among women than men and contradict with the findings of the same study showing the association of symptoms of depression with physical illness like diabetes mellitus. (Verma et al. 2010)

In contrast with the study of Gautam and colleagues carried out in Nepal which showed no association of satisfaction level of life with symptoms of depression (Gautam et al. 2007), in this study average level of satisfaction of life had the significant association with mild symptoms of depression. The finding that the female gender is a vital risk factors of depression among the community respondents (Cole 2003) parallels with result of this study because this study showed high likelihood of female gender of having severe symptoms of depression and it had also the similarity with the study of Ganguly and colleagues in India which found high depression in female under study (Ganguli et al. 1999). Marital status was significantly associated with symptoms of depression (Jain & Aras 2007) is in line with the result of this study showing protective association of married women to symptoms of depression and widow/widower with high likelihood of having severe symptoms of depression.

The outcomes of this study are in total contrast with the study of Kaneko and colleagues carried out in Japan, implying that loneliness, stress and worse self-perceived health conditions are strongly associated with the symptoms of depression (Kaneko et al. 2007). This study showed significant association of symptoms of depression to the average level of satisfaction of life in mild symptoms in line with some results of the study done by Tsai and colleagues in Taiwan resulting dissatisfied living as a determinant for severe symptoms of depression (Tsai et al.2005). The severity of symptoms of depression increased significantly with added years to life with  $p$  less than 0.001 (Gautam & Houde 2011) which was almost similar to the result of this study with  $p < 0.016$  for the age among the elderly people residing in their own home implying symptoms of depression increases with added years to life.

So, to summarize the study at hand showed significant association of symptoms of depression with gender and marital status in the both groups of comparison whereas Age, Occupation before the age of 65 years and religion were associated to symptoms of depression in the people living in their own home only. In case of determinants of symptoms of depression self-reported health, total number of disease present and perception of respondents on old age were significantly associated with symptoms of depression in case of residents of old age home however only the determinants leisure time activities and getting old age allowance was associated in case of residents of their own home. On the other hand the determinants like perception of life and satisfaction level with own life were significantly associated with symptoms of depression in case of the residents of both the groups. The results for the determinants were the results after adjusting the odd ratios with all the socio-demographic characteristics of the study. The most convincing aspect of the results of this study was that, symptoms of depression are significantly associated to the place of residence with more number of people with severe symptoms in the residents of old age home compared to those residing in their own home. It implied that people living in their own home had less likelihood of having the symptoms of depression than those living in old age home.

Beyond the expectation literacy level and ethnicity and the determinants like coping mechanism with stress and satisfaction with old age allowance did not show any association with symptoms of depression in case of the residents of both places.

### **6.3 Strengths of the study**

The study was based on the cross sectional data collected by trained researcher. The study was conducted by comparing the symptoms of depression among elderly people living in old age home and those living in their own home. A reliable mode of analysis was used and the loss of data was properly taken in account. The study addressed a topic which might be a big and enhancing issue in future in the country concerned.

### **6.4 Limitation of the study**

Since the study is for the academic purpose, it has limitations in time and resources which could not cover all aspects of mental problems of elderly population. The target populations of the study were elderly people which conceal other significant age groups of the study area. The array of variables

selection may not cover the whole problems/conditions of elderly population and there may be relevant aspects of the topic left out in the study. The sample size of 130 from a single old age home and 130 from the community of a single district is relatively small and might not be enough to represent the scenario of whole country.

## **7. CONCLUSION**

This study aimed to compare the severity of symptoms of depression among the old aged people residing in old age home and in their own home in Nepal. There were higher percentages of people with severe symptoms of depression (59.2 percent) in old age home than those living in their own home (20.8 percent). Gender and marital status were significantly associated with the symptoms of depression in both groups of elderly population. Female gender had higher likelihood of having severe symptoms of depression than male gender. Likewise widows/widowers also had higher likelihood of having symptoms of depression than the respondents with other marital status. After adjusting for all the socio-demographic variables the determinants like self-reported health, total number of disease present, satisfaction level with life, perception of life and perception on old age showed significant association with mild and severe symptoms of depression in the people living in old age home. Whereas among the people living in their own home only the determinants like perception of life, satisfaction level with own life and leisure time activities were significantly associated with the mild and severe symptoms of depression.

Literacy level and ethnicity of the respondents didn't show any significant association with the severity of the symptoms in neither of the groups. Similarly the determinants like coping mechanism with the stress and satisfaction level with old age allowance had no association with the severity of symptoms of depression in both the groups. So to conclude it might be said that there may be slight different determinants of symptoms of depression for residents of old age home and the residents of own home.

Own home as a place of residence showed the less likelihood of having the severe symptoms of depression than old age home with high likelihood of having the severe symptoms of depression among the old aged people of 65 years and above.

### **7.1 Hypothesis testing**

- H0: There is no difference in the symptoms of depression of old aged people living in old age home and those living in their own home.
- H1: The symptoms of depression of old aged people living in old age home are higher in severity compared to those living in their own home.

The true hypothesis (H1) implying that the symptoms of depression of old aged people living in old age home are higher in severity compared to those living in their own home was accepted. The null

hypothesis (H0) implying that there is no difference in the symptoms of depression of old aged people living in old age home and those living in their own home was rejected.

## **7.2 Recommendations for further research**

The comparative study among elderly people living in old age home and those living in their own home including more socio-demographic variables and other variables like quality of life, physical activities might turn out to be more fruitful and useful. The increase in sample size and coverage of more old age homes and more districts for data collection may give more comprehensive and useful results. More qualitative data on symptoms of depression would be beneficial to assess whether the depression among the people residing in old age home was acquired because of living in old age home or not.

## **7.3 Recommendations for policy implications**

Conduction of income generation programs and skills based programs for elderly to promote active ageing might be helpful in upcoming days. Formulation of community based rehabilitation units for elderly in each districts may be a better option for elderly welfare as the elderly people living in old age home were seen more vulnerable towards severity of the symptoms of depression. Emphasis on researches on elderly issues and promotion of IEC/BCC programs and awareness campaign through mass media to boost up the understanding of ageing, elderly issues and family welfare will be supportive enough from developmental point of view. The quality stay facilities and a home environment for the elderly people in old age home might be fruitful in controlling the symptoms of depression among those living in old age home. The smooth implementation of strategies and policies and building strong commitments for the rights of elderly people will be beneficial to all the old aged people in community and old age home.

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## 10. ANNEXES

### Annex 1. Questionnaires used

University of Tampere  
School of Health Sciences  
Tampere, Finland  
**Questionnaire**

*(Study of symptoms of depression: a comparative study among old aged people living in an old age home and in their own home)*

(Note: The answers will be kept confidential and will be used only in research activity)

**Questions to be asked to the elderly aged 65 years and above without diagnosed mental illness**

#### A) General Information:

001. Form No: ..... Date: .....

002. District: ..... 003. VDC: ..... 004. Ward No: .....

005. Tole: ..... 006. Religion: ..... 007. Race: .....

#### 1) General Information of Respondent:

01 Name of respondent	02 Age	03 Gender	04 Literacy	05 Occupation before the age of 65 years	06 Marital status

#### Indicator:

Religion	Gender	Occupation	Marital Status
1. Hindu	1. Male	1. Agriculture/animal husbandry	1. Unmarried
2. Buddhist	2. Female	2. Labor- agriculture	2. Married
3. Christian	3. Others	3. Labor- non agriculture	3. Living separate
4. Muslim		4. Service	4. Divorced
		5. Business	5. widow/widower
		6. Housewife	
		7. Physical disable/ dependent	
		8. Political worker	
		9. Social worker	
		10. Literalist Artist/Painter/Journalist	

#### Health Status:

2) How do you perceive your health?(Self-reported health)

a	Excellent	1
b	Very good	2
c	Good	3
d	Poor	4
e	Very poor	5

3) Are you suffering from any health related problems?

a	Yes	1
b	No	2
c	Don't know	3
d	Don't want to response	9

4) If yes, what are the problems?

1

2

a	Diabetes	Yes	No
b	High blood pressure	Yes	No
c	Heart disease	Yes	No
d	Disability	Yes	No
e	Cough/ Asthma	Yes	No
f	Renal problems	Yes	No
g	Oral cavity problems	Yes	No
h	ENT problems	Yes	No
i	Varicose veins	Yes	No
j	Cancer	Yes	No
k	Liver/gall bladder problems	Yes	No
l	Bone related problems/backache	Yes	No
m	Gastritis	Yes	No
n	Tingling and prickling sensation in hands and legs	Yes	No
o	Stool/urine incontinence	Yes	No
p	Others		

5) Where do you treat yourself and your family members during illness?

a	Health institution	1
b	Traditional healers	2
c	Home	3
d	Others	4

6) How much are you satisfied with your life?

a	Too much satisfied	1
b	Much satisfied	2
c	Satisfied	3
d	Dissatisfied	4
e	Too much dissatisfied	5

### Expectation

7) Have you heard about old age allowance provided by the government?

a	Yes	1
b	No	2

8) Are you receiving old age allowance provided by the government?

a	Yes	1
b	No	2

9) If yes are you satisfied with the amount of allowance you get?

a	Yes	1
b	No	2
c	Don't want to response	9

10) If not satisfied what are your expectations from the government?.....

**Socioeconomic condition**

11) What is your perception towards life? .....

12) What is your perception towards old age? .....

13) Have you faced any differences in behavior of your family members before and after old age?

a	Yes	1
b	No	2
c	Don't know	3
d	Not stated	9

12) If yes, what are the differences? .....

13) Does your family members involve you in household decision making?

a	Yes	1
b	No	2
c	Don't want to response	9

14) If yes, in which aspects? .....

15) How often do your family members abuse you?

a	Always	1
b	Usually	2
c	Sometimes	3
d	Never	4

16) If yes, what kind of abuse?

1

2

a	Physical	Yes	No
b	Mental	Yes	No
c	Financial	Yes	No
d	Social	Yes	No

17) Are you involved in any social or political activities?

a	Yes	1
b	No	2

18) How do you spend your leisure time?

a	Going temple/religious places/visiting	1
b	Doing household activities	2
c	Gossiping	3
d	Others	4

19) What do you usually do when you are in stress?  
.....

20) Are you involved in any income generating activities?

a	Yes	1
b	No	2



21) How much you are satisfied with your economic status in comparison to your neighbor or other people?

a	Extremely satisfied	1
b	Very much satisfied	2
c	Quite Satisfied	3
d	Dissatisfied	4
e	Very much dissatisfied	5

**Only for people in old age home**

22) Since how long have you been staying in old age home?

.....

23) What are the main reasons for you to stay in an old age home?

.....

24) Who was the carrier to take you to old age home?

.....

25) Are you satisfied with the facilities provided by the old age home?

a	Yes	1
b	No	2
c	Not stated	3

Thank you!

.....

Signature of the interviewer

## Annex 2. Geriatric Depression Scale (GDS) Long form

Name of the respondent: ..... Date: .....

QN	Questions	Yes	No
1	Are you basically satisfied with your life?	0 ▪	1 ▪
2	Have you dropped many of your activities and interest?	1 ▪	0 ▪
3	Do you feel that your life is empty?	1 ▪	0 ▪
4	Do you often get bored?	1 ▪	0 ▪
5	Are you hopeful about the future?	0 ▪	1 ▪
6	Are you bothered by thoughts that you just cannot get out of head?	1 ▪	0 ▪
7	Are you in good spirits most of the time?	0 ▪	1 ▪
8	Are you afraid that something bad is going to happen to you?	1 ▪	0 ▪
9	Do you feel happy most of the time?	0 ▪	1 ▪
10	Do you often feel helpless?	1 ▪	0 ▪
11	Do you often get restless and fidgety?	1 ▪	0 ▪
12	Do you prefer to stay at home rather than going out and do new things?	1 ▪	0 ▪
13	Do you frequently worried about the future?	1 ▪	0 ▪
14	Do you feel you have more problems with memory than most?	1 ▪	0 ▪
15	Do you think it is wonderful to be alive now?	0 ▪	1 ▪
16	Do you often feel downhearted and blue?	1 ▪	0 ▪
17	Do you feel pretty worthless the way you are now?	1 ▪	0 ▪
18	Do you worry a lot about the past?	1 ▪	0 ▪
19	Do you find life very exciting?	0 ▪	1 ▪
20	Is it hard for you to get started on new projects?	1 ▪	0 ▪
21	Do you feel full of energy?	0 ▪	1 ▪
22	Do you feel that you situation is hopeless?	1 ▪	0 ▪
23	Do you think that most people are better off than you are?	1 ▪	0 ▪
24	Do you frequently get upset over little things?	1 ▪	0 ▪
25	Do you frequently feel like crying?	1 ▪	0 ▪
26	Do you have trouble concentrating?	1 ▪	0 ▪
27	Do you enjoy getting up in the morning?	0 ▪	1 ▪
28	Do you prefer to avoid social gatherings?	1 ▪	0 ▪
29	Is it easy for you to make decisions?	0 ▪	1 ▪
30	Is your mind as clear as it used to be?	0 ▪	1 ▪

Note: 1 indicates 1 score for symptom of depression and 0 indicates no score. If the total score for respondent is 0-9 it's Normal, 10-19 its mild depression and 20-30 its severe depression. (J. Yesavage et al. 1983)

### **Annex 3. Written consent form**

**School of Health Science  
University of Tampere, Tampere Finland**

#### **Symptoms of depression in elderly: A comparative study on old age people living in old age home and those living in their own home in Nepal**

##### **Written Consent Form**

We are requesting you to be a respondent in a research called "*Symptoms of depression in elderly: A comparative study among old age people living in old age home and those living in their own home in Nepal*". Prakash K.C., a student of Masters of Health Science, Public Health, School of Health Science, University of Tampere, and Tampere, Finland is in charge of this study( contact number: 9841701503) and Dr. Tapio Kisri from University of Tampere is his supervisor.

First of all this study is carried out as a thesis part completion of Prakash K.C. as fulfillment of his master's degree in Public Health. The purpose of this study is to see the symptoms of depression in the old age people of above 65 years and the symptoms are seen comparatively among the old age persons living in the old age home and the old age persons living in their own home. If you agree to be a respondent, we will ask some questions regarding your daily life to you. There are several questions about how you feel about your life and you're your surrounding and your expectations towards government. There are some questions which are little bit personal but it will be good for us if we will get answers for all the questions we ask. If you don't want to answer any of the questions it is ok to skip it for proceeding. We will ask you nearly 40 questions which may take half an hour and feel free it is a onetime survey. There may be some questions which may be uncomfortable to some extent but it is our promise to you that it will be kept confidential and it won't cause any mischief to you.

Answering the questions and being part of this study is up to you and none of us can force you to be the part and please know the thing that you won't mislay anything if you won't be our respondent. For any queries about the rights as respondent or other details please feel free to contact Prakash K.C., Mobile number: 9841701503

By signing this consent you will ensure that you became the part of the study by your wish by reading above mentioned matters and answered all the questions truly.

---

Signature of respondent

---

Date

#### Annex 4. Results for old aged people living in old age home only

##### Frequency of independent variables among old aged people living in old age home only

Variable name and their respective categories	Old age home	
	N=130	%
<b>Main reasons to be in old age home</b>		
Loneliness in home	47	36.2
Betrayed by family	51	39.2
Disabled and dependent life	32	24.6
<b>Total time spent in old age home (Grouped)</b>		
1-4 Years	64	49.2
5-8 Years	36	27.7
9-12 Years	30	23.1
<b>Satisfaction with the facilities of old age home</b>		
Yes	93	71.5
No	37	28.5

##### Cross Tabulation of Independent variables with dependent variable among old aged people living in old age home only

Variable name and their respective categories	Level of symptoms of depression			
	Old age home			P-value
	Normal	Mild	Severe	
	%	%	%	
<b>Main reasons to be in old age home</b>				0.564
Loneliness in home	50.0	36.6	33.8	
Betrayed by family	16.7	41.5	41.6	
Disabled and dependent life	33.3	22.0	24.7	
<b>Total time spent in old age home(Grouped)</b>				0.414
1-4 Years	50.0	48.8	49.4	
5-8 Years	8.3	31.7	28.6	
9-12 Years	41.7	19.5	22.1	
<b>Satisfaction with the facilities of old age home</b>				0.902
Yes	66.7	70.7	72.7	
No	33.3	29.3	27.3	

## Annex 5. Results for old aged people living in their own home only

### Frequency of independent variables among elderly living in own home only

Variable name and their respective categories	Own home	
	N=130	%
<b>Difference in behavior shown by family members after being old</b>		
Yes	71	54.6
No	59	45.4
<b>Involvement in household decision making</b>		
Yes	74	56.9
No	56	43.1
<b>Frequency of abuse by family members</b>		
Usually	10	7.7
Sometimes	75	57.7
Never	45	34.6

### Cross Tabulation of Independent variables with dependent variable among elderly living in own home only

Variable name and their respective categories	Level of symptoms of depression			
	Own home			P-value
	Normal	Mild	Severe	
	%	%	%	
<b>Difference in behavior shown by family members after being old</b>				<b>0.014</b>
Yes	47.8	68.4	37.0	
No	52.2	31.6	63.0	
<b>Involvement in household decision making</b>				0.376
Yes	58.7	50.9	66.7	
No	41.3	49.1	33.3	
<b>Frequency of abuse by family members</b>				0.173
Usually	6.5	8.8	7.4	
Sometimes	56.5	66.7	40.7	
Never	37.0	24.6	51.9	