ASSESSMENT OF NUTRITIONAL STATUS, DIET AND DISEASE PROFILE OF ELDERLY LIVING IN OLD AGE HOMES AND DAY CARE CENTRES OF NAGALAND

APRIL 2023

LENDINA T. JAMIR

B.Sc. (Hons.)

Community Science

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A DISSERTATION SUBMITTED TO THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA IN PARTIAL FULLFILLMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN FAMILY AND COMMUNITY SCIENCES FOODS AND NUTRITION (DIETETICS)

BY

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DEPARTMENT OF FOODS AND NUTRITION

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GUJARAT

CERTIFICATE

This is to certify that the research work embodied in this thesis has been carried out independently by Ms. Sonal under the guidance of Prof. Komal Chauhan in pursuit of master's degree (Family and Community Sciences) [M.Sc. (F.C.Sc)] with major in Public Health Nutrition, Department of Food and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara and represents her original work.

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April 2023

ACKNOWLEDGEMENT

My sincere thanks to Almighty God for making this thesis a grand success. Thankful for granting me the vision, perception, confidence and well-being that enabled me to complete my thesis.

For the success of this dissertation, many people have contributed right from the initial groundwork stage to the final compilation stage. I owe my heartfelt gratitude to those who have made this dissertation achievable and possible. The learning experience and memories during the process will always be cherished forever.

I would like to express my heartfelt gratitude to my guide, Dr Komal Chauhan, Professor, Department of Foods and Nutrition, The Maharaja Sayajirao University of Baroda, Vadodara for her unconditional support and guidance. She helped and motivated me as well as shared her valuable suggestions throughout my study. Her expertise and encouragement played a crucial role in systematic completion of my study for which I will forever be indebted to her.

I would like to thank Prof. Dr Mini Sheth, Head, Department of Foods and Nutrition, The Maharaja Sayajirao University of Baroda, Vadodara for providing me the knowledge and guidance to carry out my research and giving me various facilities to complete my work. Along with her, I would like to thank all the teaching and non-teaching staffs of the department for their endless support.

I would like to thank the Chairperson of the Institutional Ethics Committee for Human Research (IECHR) for the ethical approval to carry out my study.

I am also grateful to Prof. Uma Iyer, Dean Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara for providing me with facilities to carry out my research work.

I sincerely express my deepest gratitude to my parents and brother for their indirect contribution which has been remarkable and incomparable. Most importantly this would not have been possible without my family members' love, prayer, support and positivity towards me.

I would like to convey my respectful gratitude to all the elderly subjects, who willingly gave their consent to participate in my study. Their willingness to share their experiences and insights has been valuable to my research and played a pivotal role in making this thesis a success. Thank you for your time and contribution. And also, to all the institutions that helped and provided me with all the needs for my study.

I am deeply thankful to all my friends and classmates for their love and support during the entire study.

I am grateful to everyone who has supported me throughout this process. Without your help and guidance, this thesis would not have been possible.

Lendina T. Jamir

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LIST OF ABBREVIATIONS

OAH	-	Old Age Home
DCC	-	Day Care Centre
BMI	-	Body Mass Index
WHR	-	Waist Hip Ratio
MNA	-	Mini Nutritional Assessment
GDI	-	Geriatric Depression Inventory scale
MMSE	-	Mini Mental Status Examination
CIT	-	Cognitive Impairment Test
WHOQOL	-	World Health Organisation Quality of Life scale

ABSTRACT

ABSTRACT

As we age, our bodies become more vulnerable to illness and disease. A healthy and balanced diet can help strengthen the immune system, which can protect against infections, chronic diseases, and age-related declines. Older adults are more likely to have chronic conditions like diabetes, heart disease, and hypertension. A nutritious and healthy diet can help manage these conditions and prevent further complications. A well-balanced and nutritious diet can help older adults feel more energized, maintain a healthy weight, and stay independent for longer. Overall, good nutrition is essential for older adults to maintain their health, prevent chronic conditions, and hence improve their quality of life. Present study was thus carried out with a broad objective to assess the nutritional status, diet and disease profile of elderly living in Old Age Homes and Day Care Centres of Nagaland. The specific objectives of this study included situational analysis of the institutions, baseline data collection and assessment of sociodemographic profile, lifestyle pattern, nutritional status, dietary pattern, disease profile, mental and physical health profile. **Methodology:** A total of 106 subjects of both genders from both old age homes and day care centres were enrolled in the study. Sociodemographic profile, lifestyle pattern including activity pattern and substance abuse was assessed using semi structured questionnaire. Nutritional status was assessed in terms of anthropometric measurements which included height, weight, BMI, waist circumference, hip circumference and waist hip ratio (WHR). The diet related information on general dietary aspects, 24-hour dietary recall and Mini Nutritional Assessment (MNA) was obtained through a semi structured questionnaire. Disease profile was assessed using a detailed and exhaustive checklist of major, minor and general health problems. Mental health profile was assessed using Geriatric Depression Inventory scale (GDI), Mini Mental Status Examination (MMSE), Cognitive Impairment Test (CIT) and WHO Quality of life scale (WHOQOL). Physical health profile was assessed by assessing their standing balance, walking speed, rise from chair and grip strength. **Results:** Out of total 106 subjects, 45 subjects were from Old Age Homes (group 1) and 61 subjects from Day Care Centre (group 2). Sociodemographic profile showed that the mean age of male elderlies from group 1 was 76.5±5.0 years and the mean age of female was 76.5±3.56 years. The mean age of male elderlies from group 2 was 77±4.7 years and the mean age of female was 76.7±3.4 years. Majority of the subjects were female (71.11%) from group1 and from group 2 majority of the subjects were male (57.38%).

Most of the subjects 57.78% of subjects were widows/widowers in group 1 and 49.18% of subjects from group 2 were married. It was observed that almost all the subjects from both the groups of both genders belonged to Christian religion, only 7.61% of male subjects from group 1 belonged to Hindu religion. Almost all the subjects from both the groups were Christians and belonged to Naga ethnic group. It was observed that more than half of the subjects with 66.67% of subjects from group 1 were dependent on their children for their source of income, whereas more than half 63.93% of subjects from group 2 were living with their own pension as a source of income. The time spent by elderly subjects from both group 1 and group 2 was approximately 6 hours in leisure activities similarly, the time spent in religious activities among both the groups was 1 hour approximately. The anthropometric measurements showed that majority of the subjects of both the genders from both groups fell under normal category of BMI. Whereas, only 7.69% of male subjects and 6.25% of female subjects from group 1 fell under underweight category compared to 11.43% of male subjects and 7.69% of female subjects from group 2. Only 7.69% of male subject from group 1 fell under overweight category. With regard to dietary pattern, elderly subjects of both the genders from both groups were non-vegetarian (100%) except for 15.38% of subjects from group 1 who were vegetarian. Majority of the male subjects had more than 5 glasses of water intake daily whereas, majority of the females had 3-5 glasses of water intake. Only one third of total subjects consumed supplements like vitamins and calcium. All the subjects both male and female from both the groups indicated lower intake of energy according to RDA. It also revealed a lower intake of fibre, calcium, iron and β-carotene in both genders of both the groups. The Mini Nutritional Assessment showed that majority of the female subjects from both the groups were found to be at the risk of malnutrition with 75% of subjects from group 1 and 80.7% of subjects from group 2 compared to male subjects. Data on general health profile showed that majority (57.5%) of elderly subjects from both groups had disturbed sleeping pattern. Almost all the subjects wore spectacles and had pain in their bones. Majority of the subjects had difficulty in chewing (90%), majority (86.6%) of group 1 subjects were more reserved than before, whereas majority (62.2%) of subjects from group 2 were still mixing with people as before. The most prevalent major illness was oral cavity problems (96.2%) followed by problems of central nervous system (88.6%), locomotor problems (82%), gastrointestinal problems (78.3%), problems of genitourinary system (66.9%), etc.

The most prevalent minor health problems among all the subjects were back pain, muscle pain, pain in joints and dryness of skin. Irrespective to groups, GDI showed that majority of the elderly subjects from both the groups fell under normal category. However, among the remaining subjects most of the subjects from group 1 fell under mild category. There was significant difference among both male and female subjects of both the groups in normal category ($p<0.01$). Hence, group 1 elderlies were more depressed as compared to group 2. MMSE showed that majority of the subjects from both the groups fell under mild category. When Cognitive Impairment Test was done, it showed that majority of the females with 53.12% of subjects from group 1 were abnormal as compared to only 30.76% of female subjects from group 2. WHOQOL showed that elderlies visiting DCC had better quality of life as compared to those elderlies living in OAH. Physical health status when assessed showed that overall group 2 had better physical health as compared to group 1 subjects. **Conclusion:** The result of the present study showed that elderly living in old age homes had poorer nutritional status, diet and disease profile as compared to those elderlies visiting day care centres.

INTRODUCTION

INTRODUCTION

Health and well-being of any individual depend on various factors like physical, social, psychological and nutritional factors. Nutrition plays an important role as a determinant in contributing to the well-being and quality of life of an individual. Ageing is a normal, physiological, biological and universal phenomenon that happens in all living beings. It is commonly understood as the process of maturing or becoming older. The ‘old age’ is defined as population aged 60 years and above. It is a stage of life, distinct from the rest, by physiological, psychological and social changes and is characterized by a general reduction in functional capacities as well as structural changes in the body.

Malnutrition is a problem for older individuals for a variety of reasons, including age-related changes in physiology and functionality, a lack of financial assistance, and insufficient availability of food. The ability of elderly people to carry out daily tasks, such as food preparation and consumption, has an impact on their nutritional health. In India, poor nutrition and health problems, such as communicable and noncommunicable diseases, exacerbate the issue of the elderly's health. Malnutrition and morbidity create a vicious cycle. Poor nutritional status and malnutrition in the elderly population are important areas of concern especially in those living in institutions. Malnutrition and unintentional weight loss contribute to progressive decline in health, reduced physical and cognitive functional status, increased utilization of health care services, premature institutionalization, and increased mortality. Malnutrition is often due to one or more of the following factors: inadequate food intake; food choices that lead to dietary deficiencies; and illness that causes increased nutrient requirements, increased nutrient loss, poor nutrient absorption, or a combination of these factors. Loss of lean body mass and the decreased basal metabolic rate observed in persons of advanced age also may influence appetite and food intake. Sensory decline in both olfaction and taste decreases the enjoyment of food, leads to decreased dietary variety, and promotes increased dietary use of salt and sugar to compensate for these declines. Thus, there is occurrence of chronic degenerative diseases like Diabetes Mellitus, Hypertension, Congestive Heart Failure, etc. to name a few common ones. The nutrition and health of the elderly is often neglected. Most nutritional intervention programs are directed toward infants, young children, adolescents, and pregnant and lactating mothers. However, nutritional interventions

could play a part in the prevention of degenerative conditions of the elderly and an improvement of their quality of life.

Many illnesses and general impairment are common at old age. Living healthy lifestyle elements are just as significant for illnesses and diseases in old age as changes in biological composition. Because some diseases of old age are incurable, there is a strain on infrastructure resources for both physical and financial health, both at the macro and micro levels. If the atmosphere is supportive, the sense of well-being can nevertheless overcome genuine bodily discomforts.

There is no denying the fact that in India, there is a lot of stigma and misconceptions associated with old-age homes. The very fact that an elderly person is sent to old age home facilities in India generates a thought that the elderly person is being neglected by his/her family and tossed out of their home.
KADJI CARE,2021 stated the situation is completely opposite. Old age homes are the place where elderly people get every kind of facilities for a great living. They are treated with care and responsibility amidst experienced doctors and caregivers. The fact is, old age homes finely serve as the home with safety and security in a much better way for elderly people. It is an ideal place for those elderly who would like to live an independent life of their own volition. For these persons, old age homes offer a safe environment compared to their own home that might be unsafe as they grow old.

Day care centres, a more recent concept in elder care facilities, are comparable but rare institutions that are currently in higher demand among the elderly. They are intended for older people who live in their homes even after their family members have left for work or are out of the house during the day.

Elderly people visit to socialise with others their own age and participate in a variety of recreational pursuits. These facilities successfully improve their mental health and serve as counselling facilities. Also, they offer care for the elderly who are in such bad health and require round-the-clock support. Since they cannot be left alone at home, children leave them in day care centres and day care staffs take care of the elderly needs.

According to WHO 2019, the number and proportion of people aged 60 years and older in the population is increasing. In 2019, the number of people aged 60 years and older was 1 billion. This number will increase to 1.4 billion by 2030 and 2.1 billion by 2050.

This increase is occurring at an unprecedented pace and will accelerate in coming decades, particularly in developing countries.

According to the Report of the Technical Group on Population Projections for India and States 2011-2036, there are nearly 138 million elderly persons in India in 2021 (67 million males and 71 million females) and is further expected to increase by around 56 million elderly persons in 2031.

According to the Ministry of Social Justice and Empowerment, Government of India, 2021 this Ministry is supporting 551 NGO-run old age homes in which 16,290 destitute elderlies are provided accommodation wherein the data of privately managed old age homes is not maintained by the Government. Out of 551, a total of 83 old age homes are in North East with a total of 2570 beneficiaries in which 3 old age homes are from Nagaland with a total of 100 beneficiaries.

WHO with the Global strategy and action plan on ageing and health 2016–2020 and the related UN Decade of Healthy Ageing (2021–2030) works in the following four action areas:

- Change how we think, feel and act towards age and ageing.
- Ensure that communities foster the abilities of older people.
- Deliver person-centred integrated care and primary health services responsive to older people.
- Provide access to long-term care for older people who need it.

Physical Activity

According to Centers for Disease Control and prevention 2018, Adults aged 65 and older need:

- At least 150 minutes a week (for example, 30 minutes a day, 5 days a week) of moderate intensity activity such as brisk walking. Or they need 75 minutes a week of vigorous-intensity activity such as hiking, jogging, or running.
- At least 2 days a week of activities that strengthen muscles.
- Activities to improve balance such as standing on one foot about 3 days a week.

Mental health problems are common among seniors and may include isolation, affective and anxiety disorders, dementia, and psychosis, among others. Many seniors also suffer from sleep and behavioural disorders, cognitive deterioration or confusion states as a result of physical disorders or surgical interventions.

In a study on Geriatric health in India: concerns and solutions, Ingle, G. K., & Nath, A. (2008) stated that, "In India, elderly people experience both communicable and non-communicable diseases as their primary medical issues. The impairment of certain sensory abilities, such as vision and hearing, makes the situation worse. The burden of communicable diseases increases in the aged due to a decreased immune system and age-related physiological changes. According to Government of India statistics, 10% of those over 60 have physical mobility issues, and 10% of them are hospitalised at any given moment. These percentages rise with age. More than 50% of people over the age of 70 have one or more chronic illnesses. Typically, cancer, coronary heart disease, and hypertension are considered chronic conditions".

According to WHO 2017, Over 20% of adults aged 60 and over suffer from a mental or neurological disorder (excluding headache disorders) and 6.6% of all disability (disability adjusted life years-DALYs) among people over 60 years is attributed to mental and neurological disorders. These disorders in older people account for 17.4% of Years Lived with Disability (YLDs). The most common mental and neurological disorders in this age group are dementia and depression, which affect approximately 5% and 7% of the world's older population, respectively. It is estimated that 50 million people worldwide are living with dementia with nearly 60% living in low- and middle-income countries. The total number of people with dementia is projected to increase to 82 million in 2030 and 152 million in 2050. Depression can cause great suffering and leads to impaired functioning in daily life. Unipolar depression occurs in 7% of the general older population and it accounts for 5.7% of YLDs among those over 60 years old.

Good general health and social care is therefore, very important for promoting older people's health, preventing disease and managing chronic illnesses. Training all health providers in working with issues and disorders related to ageing is therefore important. Effective community-level primary mental health care for older people is crucial. It is equally important to focus on the long-term care of older adults suffering from mental disorders, as well as to provide caregivers with education, training and support.

Taking into consideration the above reasons, the study was conducted with the main objective to assess the nutritional status, diet and disease profile of elderly living in Old Age Homes and Day Care Centres of Nagaland. The specific objectives were:

- To assess the institutional profile of the old age home and day care centres and compare the same.
- To assess the sociodemographic profile of elderly living in old age homes/day care centres of Nagaland.
- To assess the nutritional status and health profile.
- To assess the food pattern, dietary intake.
- To assess morbidity profile of elderly.
- To compare the nutritional status, diet and disease profile between old age home and day care centre.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

The relevant review of literature under the light of the study has been divided into broad topics listed below:

1. Ageing
2. Nutritional status and health profile of elderly
3. Morbidity in elderly
4. Quality of life
5. Mental health of elderly

1. Ageing

With increasing number of older adults worldwide, promoting health and well-being becomes a priority for aging well. Well-being and physical and mental health are closely related, and this relation may become more vital at older ages as it may contribute to aging well. At the biological level, ageing results from the impact of the accumulation of a wide variety of molecular and cellular damage over time. This leads to a gradual decrease in physical and mental capacity, a growing risk of disease and ultimately death. These changes are neither linear nor consistent, and they are only loosely associated with a person's age in years. The diversity seen in older age is not random. Beyond biological changes, ageing is often associated with other life transitions such as retirement, relocation to more appropriate housing and the death of friends and partners. By 2030, 1 in 6 people in the world will be aged 60 years or over. At this time the share of the population aged 60 years and over will increase from 1 billion in 2020 to 1.4 billion. By 2050, the world's population of people aged 60 years and older will double (2.1 billion). The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 million (WHO,2022).

In a study carried out by Halaweh et al (2018) on perspectives of older adults on ageing well, the participants perceived that aging well is influenced by positive feelings such as being joyous, staying independent, having a life purpose, self-possessed contentment, and financially secured, in addition to be socially engaged and enjoying good physical and mental health. Hence, enhancing physically active lifestyle, participation in social and leisure activities, healthy eating habits, having a purpose in life, and being intellectually engaged are all contributing factors to aging well. Vital

factors are to be considered in developing strategic health and rehabilitative plans for promoting aging well among older adults.

2. Nutritional status and health profile of elderly

Malnutrition and accidental weight loss contribute to the deterioration of physical and mental functioning, as well as to increased use of medical services, early institutionalisation, and mortality. Khole and Soletti, 2018 studied on nutritional status of elderly in old age homes of Pune city. A sample size of 131 elderly were assessed. The tool used for assessment included 24 -hour dietary recall and anthropometry which was analyzed using Statistical Package for the Social Sciences (SPSS). Out of the entire population, it was seen that 54.6 percent elderly had normal nutritional status. About 46 percent suffered from malnutrition which was analysed in the form of under and overnutrition, 11.5 percent were underweight, 26.2 percent were overweight and the rest of them belonged to Grade I and Grade II obesity. The study indicated high prevalence of malnutrition among the elderly living in the OAHs. This indicates there is a need to promote healthy eating habits at an institution level.

They concluded that as this study was carried out in institutes, more such empirical research needs to be done to assess nutrition status among the elderly. Geriatric Nutrition Assessment should be included and monitored from time to time and thus calls for further research in the field of geriatric nutrition. Regular monitoring and intervention can improve the health outcomes of the elderly.

A cross-sectional study was conducted by Vaish K et al., during November 2015 to April 2017 in two urbanized villages of East Delhi among 353 elderly (>60 years) individuals. To determine the prevalence of malnutrition, Mini Nutritional Assessment scale was used. The prevalence of possible malnutrition was found to be 49.3%. Hence, concluded that malnutrition needs to be identified at an early stage using appropriate tools so that proper interventions can be directed to those who need it to ensure healthy aging. Social and economic parameters are linked with the occurrence of malnutrition among the elderly and must be considered in the development of preventive strategies.

Sumaila and Keuvi, 2018 also conducted a study to access dietary intake and nutritional status of the residents of Ripples Care Home for the aged in Korle-Gonno.Thirtyseven (37) study participants were recruited for the study using purposive sampling technique. The Mini Nutritional Assessment (MNA) tool, a validated questionnaire for

investigating malnutrition among the elderly was completed. According to the MNA screening tool criteria for defining malnutrition, about 62% of the subjects were at risk of malnutrition and 8.1% of them were actually malnourished.

(Chauhan et al, 2014) A study on Nutrition and health profile of elderly females residing in old age homes in four major cities of Gujarat was conducted. Baseline data on basic infrastructures and facilities available in 12 old age homes of four major cities (Ahmedabad, Rajkot, Surat and Vadodara) of Gujarat state were collected. Baseline data on nutritional status, life style, general and metal health (GDI, CIT and MMSE) profile of 149 institutionalized elderly females aged > 60 years were also collected. Results: Institutional profile revealed that old age homes of Ahmedabad and Baroda offered better facilities. Poor dietary and other facilities were offered by the old age homes in Rajkot. 75 per cent institutes provided first aid and emergency hospital facilities. Only 7 homes provided less than 3 meals per day. Mean age of the female elderly was 74 years. 33.6 per cent and 14.8 per cent subjects were overweight and obese, respectively. Anemia was prevalent in more than 45 per cent subjects. Study results concluded that, location, environment, activities and meal pattern might have influence on health of the elderly. Better dietary health care with good recreation activities and long term observational as well as interventional studies are recommended for old age home.

Das ,in 2017 conducted a study on the Nutritional Status of Adults Aged 50-70 Years in Dispur Zone, Kamrup (Metro), Assam. With a total of 41 sample size. The adults' population of Assamese Community in the age group of 50-70years was selected for the study. Four stage stratified random sampling method was used where both the genders were included.

Result showed there was prevalence of obesity among the age group. It also showed increased consumption of fat in their diet beyond RDA recommendation. Other nutrients like protein, iron, calcium, vitamin A were found to be inadequate in their diet. There was an association between gender and obesity based on waist to hip ratios.

Ningombam et al, 2018, conducted a cross sectional study in a rural community in Kongpal in Imphal East, Manipur in North-Eastern India. Using a structured interview schedule, data were collected from 245 elderly people aged ≥60 years. For nutritional assessment, Mini nutritional assessment tool (MNA) was used. Descriptive statistics

like mean (SD) and Chi-square test was used. A total of 250 eligible individuals participated. Mean age (SD) was 69.5 (±7.7) years and majority (82.4%) belonged to 60-74 age groups. Around three-fifth of the respondents (56.0%) reported they suffered from co-morbid illnesses. According to MNA tool, one-fifths (20.8%) of respondents were malnourished and 49.2% at risk of malnourished. Significant association was found between being malnourished with older age group, female gender, among unmarried/widow/widower, lower educational level, unemployed/ homemaker and financially dependent on other. Hence, concluded that he overall prevalence of malnutrition and at risk of malnutrition in our study was 20.8% and 49.2%. Approaches to improve the nutritional status of the elderly should focus primarily on those who are older, low educational status, female gender and financially dependence.

A study on assessment of Nutritional Status of Elderly with Mild Dementia in Urban Vadodara conducted by Chauhan K et al,. in 2019 included assessment of nutritional and health status of mild dementia subjects between 60-85 years of age. 250 elderly male and female were screened using Mini Mental Score Examination and Cognitive Impairment Scale. Results showed that females were more overweight/ obese as compared to males in both the age group. There were lower intakes of energy, protein, iron, vitamin B12 and β carotene whereas higher intake of fat, calcium and vitamin C in both the age groups. Hence, early identification of the dementia patients in the long run can preserve the mental health status in the elderly by ensuring the remedial measures.

3. Morbidity in elderly

Degenerative diseases most commonly affect the elderly. The management of these chronic diseases is also very expensive, thereby making it out-of-pocket expenditure for elderly persons. As the elderly population is likely to increase in the future, the concept of active and healthy aging needs to be promoted among the elderly . Pathak et al(2022) carried out a study to estimate the morbidity pattern of the elderly in an urban population of Barpeta, and to evaluate the different morbidity patterns of the young old and old old. The result showed that most of the system disorders were almost equally distributed among elderly males and females. Most common disorders were diseases of the eye and adnexa (46%) followed endocrine, nutritional, and metabolic (37.3%) diseases, and disease of the circulatory system (34.7%). Diseases of the

respiratory system (10.1%) and genitourinary system (10.1%) were more common in males, whereas cataract (29.6%) and hearing impairment (9.9%) were more common in females.

Hence, the prevalence of morbidity increases with increasing age. Early detection of morbidities among elderly and timely referral to secondary or tertiary care facilities by enhancing the capacity of primary health care providers are required to promote active and healthy aging.

Degenerative diseases or chronic illnesses, commonly affect the elderly population and most of them suffer from multiple medical conditions. Elderly people suffer from two types of health problems i.e., medical and psychosocial. Common medical problems are visual, cardiovascular, musculoskeletal, and gastrointestinal diseases. The psychosocial problems commonly reported are impaired memory and intelligence, anxiety, depression, the rigidity of outlook, lack of occupation and earning, dependency and non-satisfaction with family members (Srivastava et al, 2010)

Al-Modeer et al,2013 studied to determine the profile of morbidity among elderly registered at home health care service in Saudi Arabia. The total number of elderly ≥ 60 years were 880. The most prevalent morbidity is hypertension (59.1%) followed by diabetes mellitus (57.3%), stroke (34.9%), dementia (28.5%), osteoarthritis (24.2%) and Alzheimer (21.4%). Females are at higher risks of having many types elderly diseases compared to males. The highest risk was for obesity followed by osteoporosis and fracture neck femur.

This study revealed that elderly attending home care facilities in southern region were suffering from many chronic disorders. Such common co-morbidities need preventive, curative and rehabilitative program in improving the quality of life among elderly patients in home care setting.

Old age is not a disease in itself, but the elderly are vulnerable to long-term diseases of insidious onset. They have multiple symptoms due to decline in various body functions. The problems faced by this segment of the population are numerous owing to the social and cultural changes that are taking place in the Indian society. This poses a greater responsibility on the health services especially in developing countries like India, where there is greater strain on available health infrastructure (Bardhan, 2015)

Padmanabha et al, (2016) conducted a study to assess the morbidity and sociodemographic profile of inmates in old age homes in Mangalore. Totally, 80 inmates were enrolled. Among the 80 inmates, 25% were male and 75% were female, out of which 63% were in the age group of 60–70 years. Among the elders, 69% were widow/widower, 55% did not have any source of income, 29% were illiterate and 46% had completed primary education, 75% had musculoskeletal disorders, 69 % had visual defects, 64% were hypertensive, 30% had dental problems, and 28% were diabetic. Concluded that there is an essential need for specialized geriatric clinics. Proper and regular health checkups should be conducted in old age homes with referral services. There is a need for insurance coverage for all the elders to meet their medical expenses.

Asadullah et al (2012) studied on morbidity profile and quality of life of inmates in old age homes in Udupi district, Karnataka. The study showed the most prevalent morbidities were hypertension and diabetes with the distribution of 47.8% and 43.5% among males, and 43.3% and 34.3% among females respectively. The respondents showed highest quality of life score (60.47±10.14) in environmental domain and least score (34.66±14.88) in social relationship domain which reflected the good environmental condition at old age homes but there is a need to address the issue of social negligence of elderly from family and society. The study concluded that organisational care and support is essential for health and wellbeing of elderly. To improve quality of life in elderly, emphasis should be given on the development of social relationship and self belief restoration by counselling.

4. Quality of life

WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.

One of the most important indicators of health and well being of the elderly is the quality of life they live in (Parsuraman et al,2021).

A study to determine the pattern of physical morbidity in rural elderly population and to study health related quality of life and utilization of health services among them was conducted (Syed Qadri et al,2013) which resulted in an overwhelming majority (68.2%) of elderly enjoyed a good quality of life, while those having a fair/poor quality of life were ≤ 15%. Quality of life was better in males in physical, psychological, social

and environmental domains. It was more in subjects who had graduated and currently married, belonged to non-scheduled cast and living in extended families. Majority of the subjects were anaemic (64.5%), suffering from dental problems (62.2%) and joint pains (51.4%). Maximum numbers of subjects (92.7%) were utilizing non-government health care facility due to long distance from their houses (33.3%).

Therefore, concluded that there is a need to highlight the medical and psychosocial problems that are being faced by the elderly people in India and strategies for bringing about an improvement in their quality of life.

Kiran,Mani et al,2018 conducted a study to assess the nutritional status and quality of life of elderly persons registered in three village senior centers in Anekal Taluk, Bangalore. Concluded that of the 66 study participants, 26(39.4%) were at risk of malnutrition and 7(10.4%) were malnourished. Scores for all four domains of QOL dropped as age increased. Elderly subjects who were involved in household activities (20%) were found to score better in the physical domain of QOL. 32 (49.2%) of the elderly assessed were at risk for fall.

(Mao, Mondal, Manna, 2021) A descriptive comparative research study was conducted to assess the quality of life (QOL) and its components among the older adults staying in old-age home and staying with family in selected area of Kolkata, West Bengal. A total of 100 senior citizens above the age of 60 years were selected as samples for the study, of which 50 were from old-age home and 50 from those staying with family. Standardised tool Short-Form 36 Version 2 - Health Survey and Multidimensional Scale for perceived social support were used to measure the QOL. Descriptive and inferential statistics were used to analyse the data. The study findings showed that there was a significant difference in the mean scores of QOL and the different domains of QOL of older adults staying in old-age home and family at ($P < 0.05$). Older adults staying in old-age home perceived better QOL as compared to those staying with family.

Saikia and Mahanta, 2010 a community based cross-sectional study was conducted between November 2009 and January 2010 in ten randomly selected slums of Guwahati. House to house visits were made and all the elderly above the age of 60 years were studied. Thus, a total of 72 elderly were interviewed with the help of predesigned and pretested schedule. Information on demographic profile, socio-economic status,

living status and number of major meals were included in the schedule. Nutritional assessment was done on the basis of BMI. Statistical analysis was done by using chi-square test. The prevalence of under nutrition (BMI <18.5) was found to be 22.2 % and overnutrition which includes overweight (BMI >25-29.99) and obesity (BMI ≥30) was 12.5%. Significant association was found between nutritional status, socio-economic status and number of major meals a day. No significant relationship could be elicited between living status and nutritional status. Concluded that a high prevalence of under-nutrition was found in elderly living in urban slums. However, a significant observation was a reasonably high prevalence of overnutrition in this underprivileged group. Further studies are needed in this field to delineate the problem in detail.

Thresa in 2020, conducted a cross-sectional descriptive study among in old age homes and family set up of Kanchipuram district, Tamil Nadu. QOL of elderly was assessed using WHO QOL -brief questionnaire. A total of 106 elders from each group old age home and family setup were the study participants. Quality of life was good 72.5% in family and in OAHs it was only 56.2%. The main reason for residing in OAHs was no family, lack of care takers. All the four domains were found to be highly statistically significant. From this study they found out that quality of life in family setup is better than OAHs, psychologically many people were depressed as they live separately from their family and relatives, friends and the community they lived.

In order to improve the quality of life of older people and support prosperity in an ageing society, it is necessary to provide all people over their life course with opportunities for self-fulfilment, learning, education and active life. Linear model of education, work and pension becomes increasingly outdated and boundaries between individual stages of the life cycle become more flexible and less distinct. Older persons have similarly as all other people the right to be assessed as individuals, on the basis of their abilities and needs, regardless of their age, sex, colour of skin, disability or other characteristics. Older persons and their knowledge and experience should be placed in the centre of changes implemented in response to population ageing. Quality of life can be influenced and improved at any age. The life course approach needs to be applied not only to health, but also to education, employability, housing, material welfare or social participation (Panday,2017).

5. Mental health of elderly

Mental health problems can have a high impact on an older person's ability to carry out basic daily living activities, reducing their independency, autonomy and quality of life. The first step to reduce these negative consequences is simply to make a diagnosis. Unfortunately, too often mental health problems are undiagnosed and untreated and many older people struggle on without proper help or any help at all. Today's older adult population is not likely to acknowledge mental illness or to access mental health services. Many stigmas exist regarding the meaning of mental illness. Many elderly people view mental illness as a sign of weakness and are unlikely to admit to experiencing problems, especially when they fear loss of independence. Too many people consider the symptoms of dementia and depression as a normal part of ageing. Many older people also lack the availability of, and access to, services.

Tiwari et al., 2012 conducted an exploratory study to study the mental health and associated morbidities among inhabitants of old age homes in Lucknow. 45 elderly inhabitants who had given their consent to participate in the study were interviewed. The study revealed that depression (37.7%) was found to be the most common mental health problem followed by anxiety disorders (13.3%) and dementia (11.1%).A majority of the inhabitants (64.4%) were having psychiatric morbidity and no one was observed physically fit. The prevalence of mental health problems as well as physical problems were found to be higher in inhabitants of old age homes. The reason could be significantly more psychological stressors, negligible family support, lack of medical (physical/mental) care and facilities, restricted environment of old age homes and financial constraints, etc.

Akbar et al., in 2018 conducted a study to explore prevalence of psychiatric illness (PI) among residents of OAHs of Northern India of districts Bareilly, Lucknow, Varanasi, Dehradun, and Haridwar. A total number of 306 participants (98 male, 208 females) formed the sample of the study. Depression was the most prevalent disorder (53.7%), followed by dementia (21.6%).Most common mental disorder which characterized by declining mood, loss of motivation, lack of physical energy, inability to feel pleasure, disturbed sleep, feelings of hopelessness, helplessness and worthlessness, and poor concentration in depression.

Praveen et al., 2016 conducted a study in Andhra Pradesh to assess and compare depression and anxiety among the elderly people from institutional and noninstitutional

settings. A total of 112 elderly persons, 56 from old-age home and 56 from the community in the field practice area of a tertiary-care institute were enrolled in the study. Overall prevalence of depression was 66.1%, and anxiety was 93.8% among the study population. Prevalence of depression was more among institutional elderly persons compared with those from the community, which was statistically significant.

Mohanty et al., 2016 conducted a study to assess the predictor and prevalence of depression of geriatric population. The data were collected from 100 samples from the residence of various slums of Bhubaneswar. A standardized questionnaire Geriatric Depression Scale short form (GDS) was used to collect the data. According to level of depression it showed that 9% were having no sign depression, 40% were suggestive sign of depression & 51% were having the sign of indicative depression.

Dr.Rajashree Kapure et al., 2019 conducted a comparative study of elderly people staying in old age home and elderly people staying with their family with respect to anxiety and depression (n=60). It concluded that there was a significant difference between elderly people staying in old age home and elderly people staying with their family with their level of anxiety as well as with their level of depression.

A A Goud and Nitin Suhas, 2015 conducted a study to find out prevalence of depression in older adults living in two old age home in Ahmednagar district, Maharashtra. Eighty participants living at old age home in the age group of 60 to 85 years were included in this study. The elderly persons were contacted personally and the Geriatric Depression Scale (GDS) questionnaire was administered in their local language. The prevalence of depression in older adults living in old age home was 53.75%. An increase in depression cases was found as the age increases. The prevalence of depression was higher in elderly living in old age home. Percentage of depression in females was more than men and found to be increasing with increase in age.

MATERIALS AND METHODS

MATERIALS AND METHODS

This study would be carried out on elderly people living in Old Age Homes and Day Care Centres in Nagaland. Data collection would be done after getting permission from the OAH and Day Care Centres and written consent of the respondent. All the respondents above 60 years who gave their consent would be explained about the purpose of the study and will best assured that their response would be confidential.

Sampling technique

Purposive sampling

Sample Selection

Three districts were selected namely- Dimapur, Kohima and Mokokchung out of which a total of 5 institutions were selected where both male and female elderlies were enrolled. Hence, a total of 106 subjects were enrolled from all the 5 institutions. Figure 3.1 shows number of subjects of both genders from each district. Also Figure 3.2 shows number of subjects of both genders with total from each institution.

Figure 3.1: Number of subjects of both genders from each district

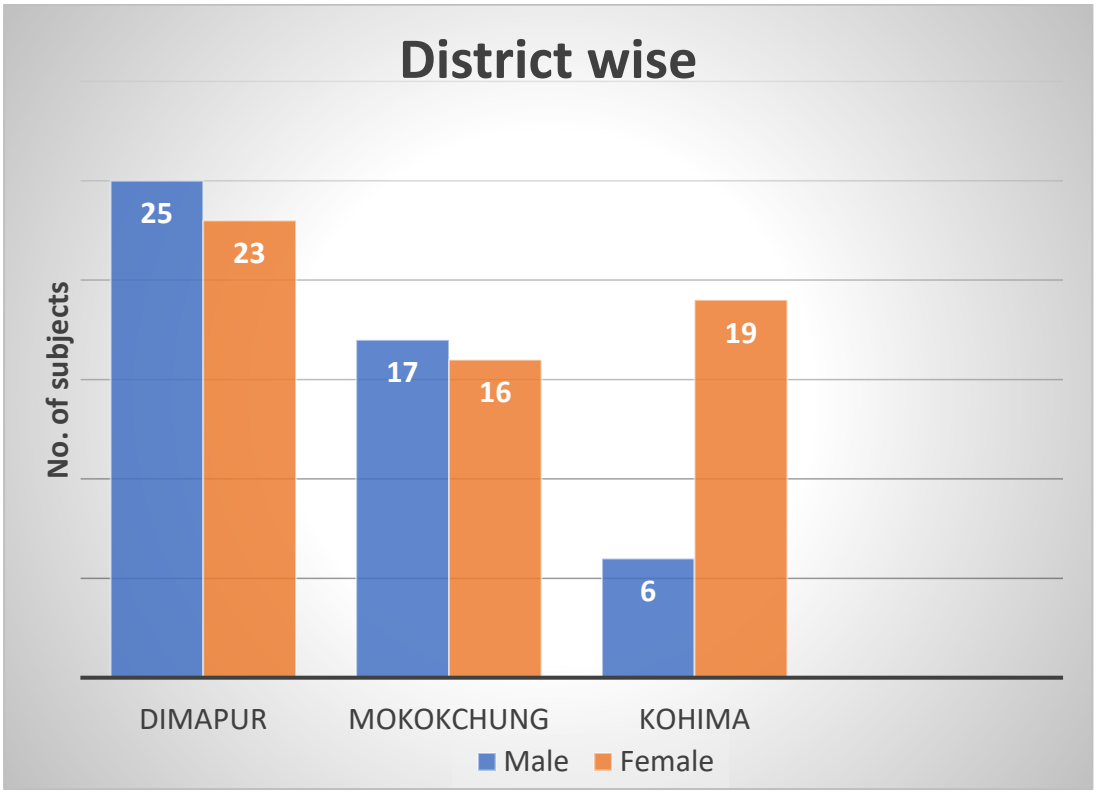
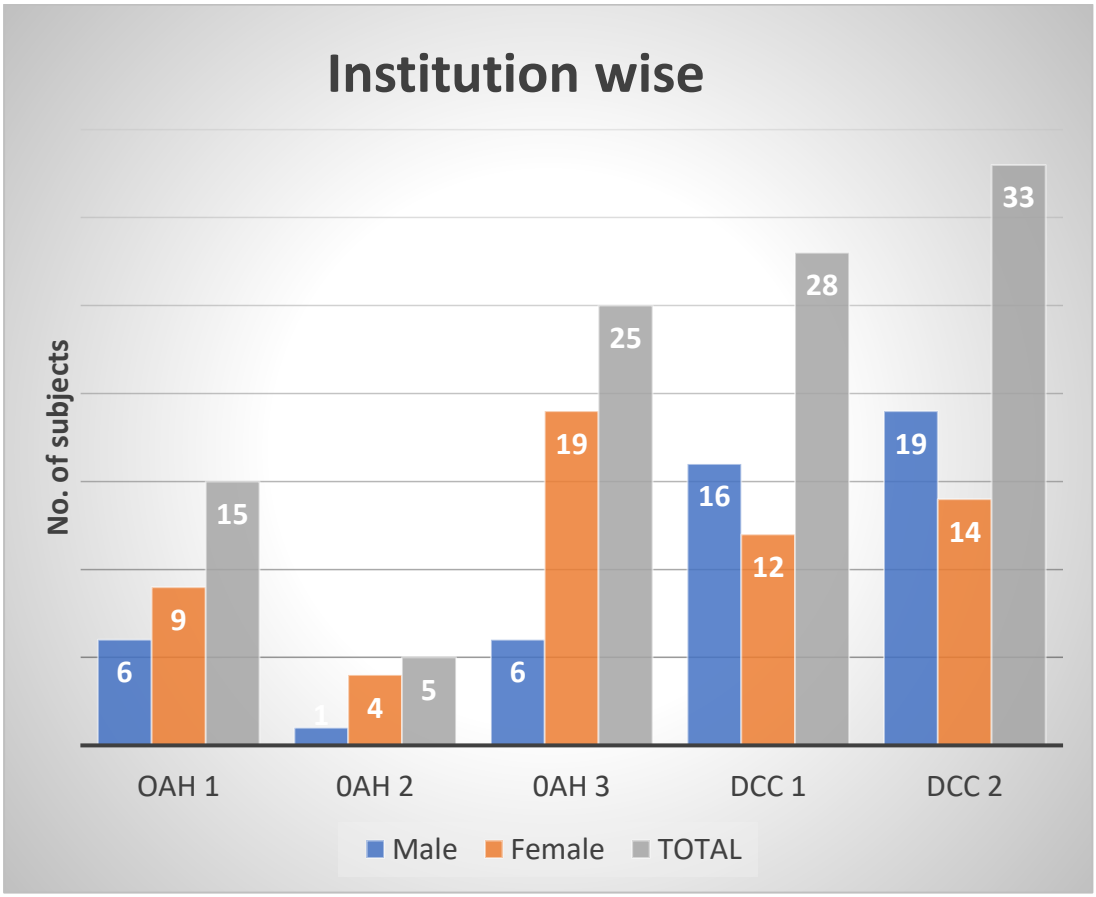


Figure 3.2: Number of subjects of both genders from each institution



CRITERIA FOR SELECTION OF SUBJECTS

The selection criteria of the subjects were as follows:

Inclusion criteria

- Elderly living in Old Age Homes
- Elderly visiting Day Care Centres
- Elderly aged 60 years and above
- Both male and female elderly willing to provide information

Exclusion criteria

- Hospitalized elderly
- Elderly residing at home (For OAH)
- Elderly with any form of disability

The details of the selection of sample, parameter studied and the materials and methods used for data collection are presented under following two phases of study design.

PHASE I: Situational analysis of the Institution

1) Selection of Old Age Homes (Institutions)

PHASE II: Situational analysis of Institutionalized elderly

1) Selection of elderly
2) Baseline data collection and nutritional assessment on following parameters:
   i. Sociodemographic profile
   ii. Lifestyle pattern
   iii. Nutritional status
   iv. Dietary pattern
   v. Disease profile
   vi. Mental health profile
   vii. Physical health profile

The experimental plan of the study is given below:

EXPERIMENTAL PLAN

PHASE I

⇩

Situational analysis of the institutions

Dimapur (n=2)	Kohima (n=1)	Mokokchung (n=1)
• Old age home • Day care centre	• Old age home	• Day care centre

- infrastructure
- administration
- meal pattern
- health and medical services
- religious and recreational activities

PHASE II

⇩

Situational analysis of the institutionalized elderly

Dimapur ⇩	Kohima ⇩	Mokokchung ⇩
n=39 OAH-27 DCC-12	n=30 OAH	n=34 DCC

- Sociodemographic profile
- Lifestyle pattern
- Nutritional status
- Dietary pattern
- Disease profile
- Physical health profile
- Mental health profile

Parameters and Tools used

Parameters	**Tools**
Institutional profile	Semi structured questionnaire
Socio demographic profile	Semi structured questionnaire
Life style pattern (activity pattern & substance abuse)	Semi structured questionnaire
Weight	Bathroom scale
Height	Fiber glass tape
BMI	By standard formula - Weight (kg)/Height (m^2)
Waist measurement	Fiber glass tape
Hip measurement	Fiber glass tape
Waist hip ratio	By standard formula-waist/hip circumference
Dietary intake	24-hour dietary recall method Mini Nutritional Assessment (MNA)
Disease profile	Checklist of major and minor illnesses
Mental status	Geriatric depression inventory scale (GDI) Mini mental status examination (MMSE) Cognitive impairment test WHO Quality of Life Scale
Physical Health status	Standing balance Walking speed Rise from chair Grip strength

Phase I: Situational Analysis of the Institutions and Elderly

In phase I, 3 major districts of Nagaland, namely Dimapur, Kohima and Mokokchung would be selected for the data collection. A total of four institutions would be selected from all the total districts on the basis of the permission obtained. Institutional information would be collected from the trustee or person in charge of the institution. Information regarding the administration, infrastructure, health and medical services provided to the inmates, meal pattern, and various religious and recreational activities conducted was collected.

Phase II: Situational Analysis of Institutionalized Elderly

1) Selection of elderly

Elderlies belonging to the age group of 60 years and above would be purposively enrolled from selected old age homes of the three districts. The subjects would be enrolled according to their willingness to participate and give the required information.

2) Baseline data collection

The elderly profile included information regarding the socio-demographic profile, nutritional status, lifestyle pattern, disease profile, diet profile and mental health status of the elderly males.

i. Socio-demographic profile: This questionnaire would include information about the age, marital status, education, religion, caste, past family history, income and dependency

ii. Lifestyle pattern: It includes activity pattern and substance abuse:
    a. Activity pattern: Information on the daily activity pattern of the subjects living in different districts would be collected by 24 hr activity recall and self-reported time spent in minutes/hours on activity of daily, religious, rest, idle, leisure, and exercise. Whether the inmates performed any activity in the institution was also noted down along with the type of activity.
    b. Substance abuse: The subjects would be asked about their past and present substance abuse of following - cigarette, tobacco, bidi, gutkha, pan masala.

iii. Nutritional status: Assessment of nutritional status would be done using anthropometry and clinical parameters.

a. Anthropometry: This includes weight, height, BMI and WHR which are most common parameters for assessing the nutritional status of an individual.

- Height: A flat floor against a perpendicular wall was identified in a hall and it was marked using fibre tape to an accuracy of 0.1cms. The subject was asked to stand bare feet on a flat floor against a perpendicular wall with feet parallel and with heels, buttocks, shoulders and back of the head touching the wall. The head was held comfortably erect and marked for measuring height with a flat scale touching the top of the head horizontally and its vertical edge flat against the wall.
- Weight: A bathroom weighing scale was used to take the weight. The subjects were weighed barefooted on a standardised, portable bathroom scale. The scale was set to zero before each measurement. The measurements were made to nearest 0.5 kgs.

Body Mass Index (BMI): BMI was calculated as follows

BMI = Weight (in kg) / Height (mt)^2

Table 3.1 Classification of BMI according to Asia Pacific criteria 2004

Presumptive Diagnosis	**BMI (kg/m^2)**
Obese	≥ 25
Overweight	23 - 24.9
Normal	18.5 - 22.9
Underweight	< 18.5

- Waist/Hip ratio (WHR): The waist to hip ratio was calculated by dividing the waist circumference by the hip circumference.

  Waist circumference: waist circumference (cm) was measured at the midpoint between the lowest rib and the iliac crest (WHO site), with the subject standing and breathing normally, with the help of a fibre glass measuring tape.

  Hip circumference: Hip circumference (cm) was measured at the widest point around the greater trochanter with the help of a fibre glass measuring tape.

Table 3.2: Classification of WHR according to WHO

Health risk	Women	Men
Low	<0.80	<0.95
Moderate	0.81-0.85	0.96-1.0
High	>0.86	>1.0

b. Clinical signs and symptoms: The presence of various clinical signs and symptoms of Iron deficiency anemia and Vitamin A deficiency were noted.

iv. Diet profile**:** The data related to subject's dietary intake was obtained using the 24-hour dietary recall method.

a. 24- Hour dietary recall: The dietary intake was calculated using 24 hr dietary recall for with the help of measuring cups and spoons. The mean nutrient intake and percent RDA was calculated for energy, protein, fat, iron, calcium, vitamin C, fibre and β carotene.

b. Mini Nutritional Assessment (MNA): is a screening tool to help identify elderly patients who are malnourished or at risk of malnutrition.

v. Disease profile: This included questions regarding different illnesses experienced by the subjects. A detailed checklist was used for various major and minor health problems. The major health problems included dental, GIT, constipation, respiratory, CVD, endocrine, genitourinary, locomotor and other problems, while the minor health problems included infections, constipation, flatulence, body aches, dryness of skin, sleep disturbances, lethargy and others. The general health profile of the subject was also assessed.

vi. Mental health status: To generate data and evaluate the effect of lifestyle factors on mental health of male elderly, various tools were used which are described below:

a. Geriatric Depression Scale (GDI): This scale was used for diagnosing depression. It is a questionnaire having a total of 30 questions with yes/no as

options. A score greater than 5 is suggestive of depression and score greater than 10 is confirmed depression.

Table 3.3: Geriatric Depression Inventory (GDI) Scale

Categories	**Score**
Normal	1-10
Mild	11-15
Moderate	16 – 20
Severe	≥ 21

Source: Yesavage et al, 1983

b. Mini Mental State Examination (MMSE): This test was used to assess orientation, registration, attention, calculation, memory, language and visuo-spatial abilities of the subjects. The questionnaire contains different sections and the maximum score is 30. The total of all the answers gives the extent of mental health. A cut off was 23-25, those who scored above 26 were considered normal and those below 26 were considered having a mental impairment.

Table 3.4: Mini Mental Status Examination(MMSE) categories

Categories	**Score**
Normal	>26
Mild	21-26
Moderate	11-20
Severe	≤10

Source: Folstein et al., 1975

c. Cognitive Impairment Test**:** This test was used to assess the cognitive function of the selected subjects. Here the score of 1 was given for each incorrect response; maximum weighed error score was 28. Score of 0-11 indicates normality and 11-28 indicates abnormality.

Table 3.5: Cognitive Impairment Test categories

Categories	Score
Normal	11-28
Abnormal	0-10

Source: Katzman, 1983

d. WHO Quality of Life Scale: The WHOQOL is a quality of life assessment tool developed in an attempt to develop a quality of life assessment that would be applicable cross-culturally.

vii. Physical Health status- In order to generate datas on their physical health condition and energy level various tools were used: -

a. Standing balance- This test would be done to know their standing balance side by side and in semi- tandem and full- tandem from 2 seconds- 10 seconds according to which they were marked as- able/not able.
b. Walking speed- This test would be done to know their ability, speed and time taken to walk 2.4 meters twice.
c. Rise from chair- This would be done to know their ability to rise from a chair without any support from the arms of the chair but by keeping their arms across their chest. This was done 5 times and the time taken for each rise was recorded.
d. Grip strength- Dynamometer would be used to know the grip strength of the subjects.

RESULTS AND DISCUSSIONS

RESULTS AND DISCUSSIONS

The present study was conducted to assess the nutritional status, diet and disease profile of elderlies staying in Old Age Home and Day Care Centres of Nagaland. Under the broad objective, assessing the nutritional status and quality of life of elderly living in Old Age Homes and Day Care Centres of Nagaland.

To achieve the objective elderlies living in Old Age Home and those visiting Day Care Centres were enrolled for the study. A total of 106 subjects were involved in carrying out this study, in which they were divided into two groups, i.e., 45 subjects were from Old Age Home (Group1) and 61 subjects from Day Care centres (Group2). The results obtained are discussed in the following chapter.

Phase I- Situational analysis of the Institution

Selection of Old Age Home/Day Care Centres (Institutions): -

The institutions selected for the study were from 3 different districts of Nagaland-Dimapur, Kohima and Mokokchung. Out of which 1 Old Age Home (N=15subjects) and 1 Day Care Centre (N=33 subjects) from Dimapur was included, 1 Old Age Home(N=25subjects) from Kohima and 1 Old Age Home(N=5subjects) and 1 Day Care Centre(N=28subjects) from Mokokchung. Table 4.1 shows all kinds of facilities provided by Old Age Homes and Day Care Centres.

Table 4.1: Checklist of facilities in both the institutes

Facilities	Old Age Home (n=3)	Day Care Centre (n=2)
Infrastructure	Good	Good
Run by private/trust	✓	✓
Kitchen facilities with dining area	✓	✓
Sitting area/recreational rooms	✓	✓
Library	✓ (Only 1 institute)	
Compound with gardening	✓	✓
>2meal	✓ (Only 1 institute)	
<2meal	✓	
Transportation facility	✓	✓
Provision for recreational tours/trips	✓	✓
Temple/Prayer room	✓	
Physiotherapy centre	✓ (only 2 institute)	
Health and medical service	irregular	irregular

Phase II- Situational analysis of institutionalised elderly.

Baseline data collection and nutritional assessment were done on the following parameters:

1. Sociodemographic profile
2. Lifestyle pattern
3. Nutritional status
4. Dietary pattern
5. Disease profile
6. Mental health status
7. Physical health profile

1. Sociodemographic profile

Semi structured questionnaire which included information about the age, marital status, education, religion, caste, past family history, income and dependency were collected. In the analysed results hereby refer Old Age Homes as Group 1 and Day Care Centre as Group 2.

Percentages of elderly subjects from Group 1 and Group 2 showing various socio demographic characteristics have been presented in Table 4.2

Figure 4.1: Percentage of subjects by gender

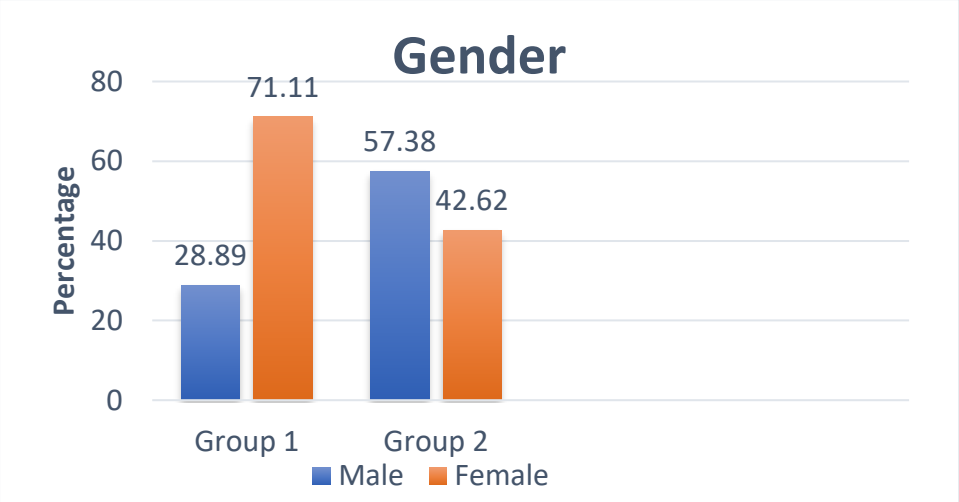


Figure 4.2: Percentage of subjects by age group

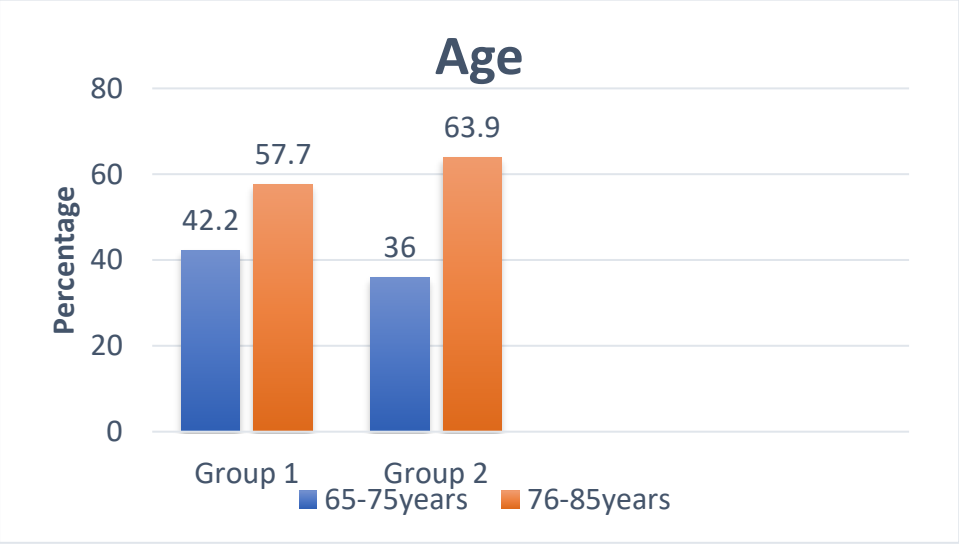


Table 4.2: Percentage of elderly subjects belonging to group 1 and group 2 showing various sociodemographic characteristics

Characteristics	**Group 1(Old Age Home) N=45**		**Group 2(Day Care Centre) N=61**	
Gender	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)
	28.89(13)	71.11(32)	57.38(35)	42.62(26)
Mean±SD (Age in years)	76.5±5.0	76.5±3.56	77±4.7	76.7±3.4
65-75 years	38.45(5)	43.77(14)	34.28(12)	38.46(10)
76-85years	61.52(8)	56.27(18)	65.71(23)	61.54(16)
Marital status				
Married	30.77(4)	9.38(3)	57.14(20)	38.46(10)
Unmarried	0(0)	12.50(4)	0(0)	0(0)
Divorced	15.38(2)	18.57(6)	0(0)	15.38(4)
Widow/Widower	53.85(7)	59.38(19)	42.86(15)	46.15(12)
Religion				
Christian	92.31(12)	100(32)	100(35)	100(26)
Hindu	7.61(1)	0(0)	0(0)	
Other	0(0)	0(0)		
Ethnic group				
Naga	76.92(10)	93.75(30)	100(35)	100(26)
Non-Naga	23.08(3)	6.25(2)	0(0)	
Education				
Illiterate	0(0)	3.13(1)	0(0)	0(0)
Primary	23.08(3)	40.63(13)	0(0)	46.15(12)
Secondary	23.08(3)	21.88(7)	17.14(6)	23.08(6)
Graduate	53.85(7)	34.38(11)	82.86(29)	30.77(8)
Occupation				
Professional practise	7.69(1)	0(0)	22.86(8)	7.69(2)
Business	30.77(4)	34.38(11)	2.86(1)	34.62(9)
Service	46.15(6)	3.13(1)	71.43(25)	15.38(4)
Others	15.38(2)	62.50(20)	2.86(1)	42.31(11)

Type of family				
Nuclear	100(13)	96.88(31)	91.43(32)	96.15(25)
Joint	0	3.13(1)	8.57(3)	3.85(1)
No. of family members				
2 to 4	53.84(7)	65.63(21)	42.86(15)	42.3(11)
More than 4	46.14(6)	34.38(11)	57.14(20)	57.69(15)
Source of income				
Savings	23.08(3)	6.25(2)	2.86(1)	19.23(5)
Pension	15.38(2)	0	94.29(33)	23.08(6)
Children	53.85(7)	71.88(23)	2.86(1)	46.15(12)
Family	7.69(1)	21.88(7)	0(0)	11.54(3)

Figures in parenthesis denote the number of subjects

Table 4.2 shows the sociodemographic characteristics of elderly subjects living in both the Old Age Home and Day Care Centre. It is observed from the above table that, from group 1 majority of the subjects were female (71.11%) and from group 2 majority of the subjects were male (57.38%).

It can be observed that group 1 majority of the female subjects belonged to the age group of 76-85 years and majority of the male subjects from group 2 belonged to the age group of 76-85years of age. Most of the subjects 57.78% of subjects were widow/widower in group 1 and 49.18% of subjects from group 2 were married.

It was observed that almost all the subjects from both the groups of both genders belonged to the Christian religion, only 7.61% of male subjects from group1 belonged to Hindu religion.

A total of 100% of male subjects and 100% of female subjects from group 2 belonged to the ethnic group of Naga while 76.92% of male subjects and 93.75% of female subjects from group 1 belonged to the ethnic group of Naga and the remaining 23.08% of male and 6.25% of female subjects belonged to the ethnic group of non-Naga.

It was observed that only 3.13% of female subjects from group1 were illiterate. While the remaining 40% subjects from group 1 and 60.66% subjects from group 2 of both male and female subjects had attained a graduation degree. And 22.22% from group 1 and 19.67% from group 2 had attained secondary level of education.

It can be observed that majority of male subjects from both the groups with 46.15% from group 1 and 71.43% of from group 2 went for service during their productive years. A total of 7.69% of male subjects from group 1 and 22.86% of male subjects and 7.69% of female subjects were occupied in professional practise like doctor, lawyer etc. While 33.33% and 16.39% of subjects were occupied in business from both group 1 and 2. The remaining subjects from both the groups of 48.89% of subjects and 19.67% of subjects from both the groups were occupied with other occupation such as housewives, daily wager and farmers.

Of both the genders, 97.78% of subjects belonged to nuclear family and 2.22% subjects belonged to joint family from group 1 whereas 93.44% of subjects belonged to nuclear family and 6.56% belonged to joint family type from group 2. Majority of the subjects from group 1 with 62.22% of subjects had a family size of 2 to 4 number of family members while,57.37% subjects of both the genders from group 2 had the size of more than 4 family members.

It was observed that more than half of the subjects with 66.67%of subjects from group 1 were dependent on their children for their source of income since they were living in an old age home, while 21.31% subjects were only dependent on their children from group 2. Whereas more than half 63.93% of subjects from group 2 were living with their own pension as a source of income while only 4.44% subjects from group 1 get their pension as a source of income. The remaining 11.11% and 9.84% subjects from both group 1 and 2 were dependent on their own savings as a source of income.

Thus, the sociodemographic profile data revealed that majority of the subjects belonged to the age group of 76-85 years of age, were Christians, belonged to Naga ethnicity and literate.

2. Lifestyle pattern

The lifestyle pattern included activity pattern and substance abuse, activity pattern included leisure activities like listening to music, watching tv, reading newspaper/novels/magazines etc and religious activities included doing puja/praying, going to temples/church, meditation and yoga. Social activities included going out with families, friends and playing with children/grandchildren.

The daily activity pattern of the elderly subjects living in the institution in terms of mean hours is given below in table 4.2

Table 4.3: The time spent in daily activity pattern of the elderly in terms of mean hours

Sl. No.	**Activities**	**Group 1(N=45) Mean ± SD**	**Group 2 (N=61) Mean ± SD**
1.	**Leisure activities**	6.31±0.94	6.57±0.74
2.	**Religious activities**	1.24±0.43	1.27±0.45
3.	**Social activities**	0.93±1.0	3.98±1.13
4.	**Sleep**	7.15±0.6	7.54±1.05

The above table 4.3 showed that elderly subjects from both group 1 and group 2 spent approximately 6hours in leisure activities similarly the time spent in religious activities among both the groups was 1hour approximately. Not much time was spent in social activities by group 1 subjects as compared to group 2 subjects, as the elderly subjects in group 1 stayed at the old age home and most of them did not have families to go out with which justify their social isolation. Considering the average number of hours that the elderly subjects spent for their daily activities the remaining 7-9 hours they were idle.

A study conducted on 150 elderly males (Mehta et al,.2010) reported that sleep, rest and idle time is greater for the subjects belonging to older age groups i.e., 60-69 years and 70+years and all the subjects were moderately depressed. So, the data suggested that with increase in the age, there is a reduction in occupational activities with subsequent increase in sleep, rest and idle time.

Substance abuse

The subjects were asked about their past and present habits of consuming the following - cigarette, tobacco, bidi, gutkha, pan masala etc. The data is shown in Table 4.4

Table 4.4: Percentage of elderly subjects from group 1 and group 2 showing substance abuse

Sl. No.	**Activity**	**Group 1 (N=45)**	**Group 2 (N=61)**
1.	**Tobacco**	0(0)	1.64(1)
2.	**Supari/pan**	4.44(2)	6.56(4)
3.	**Cigarette**	4.44(2)	4.92(3)
4.	**Alcohol**	0(0)	0(0)
5.	**Others**	0(0)	0(0)
6.	**None**	91.11(41)	86.89(53)

Figures in parenthesis denote the number of subjects

The above table 4.4 depicted the percentage of addiction pattern of elderlies living in the institution. It can be observed that more than 85% of the subjects from both the groups did not have any substance abuse. Only 4.44% of subjects from group 1 had the addiction of Supari/pan and cigarette while in group 2 ,1.64% of subjects in tobacco, 6.56% subjects in supari/pan and 4.92% subjects had the addiction of cigarette.

3. Nutritional status

Elderly subjects were also assessed for determining their nutritional status using different methods like measuring weight on weighing scale, height with measuring tape, calculating body mass index along with their waist hip circumference.

a) Anthropometry

This includes weight, height, BMI and WHR which are most common parameters for assessing the nutritional status of an individual. Data in table shows the average anthropometric measurements of elderly subjects of both gender from both the groups.

Table 4.5: Mean anthropometry measurements of elderly subjects from both group1 and group2

Indices	Group 1(N=45)		Group 2(N=61)		t-value	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)	Male	Female
Height (cm)	162.7±4.22	155.0±3.01	161.2±3.54	154.3±1.64	0.22	0.25

Weight(kg)	53.5±4.03	47.9±2.94	51.0±2.8	46.5±2.30	0.02*	0.04*
BMI(kg/m²)	20.4±1.34	19.8±0.89	19.6±0.90	19.4±0.87	0.02*	0.08

*p-value<0.05 significant

Data in the above table showed that the mean height and weight of male elderly subjects from group1 was 162.7 ±4.22 and 53.5±4.03 whereas, the mean height of male elderly subjects from group2 was 161.2±3.54 and 51.0±2.8. The mean height and weight of female subjects from group1 was 155.0±3.01 and 47.9±2.94 whereas, the mean height and weight of female subjects from group2 was 154.3±1.64 and 46.5±2.30. No significant differences were much found between the height of both the genders from group 1 and group 2. There was significant difference among both male and female subjects in their weights, there was significant difference in BMI only among the male subjects.

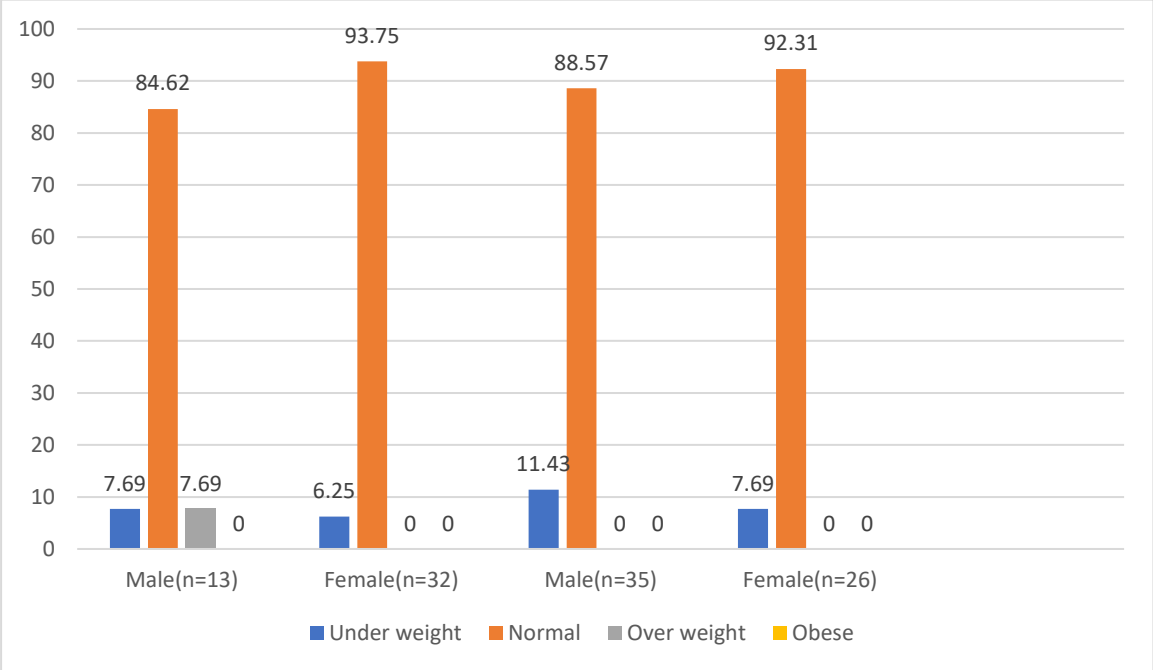
Further the subjects were categorised using BMI classification which is shown in Table 4.6 and figure

Table 4.6: Percentage of elderly subjects from both group 1 and group 2 according to BMI classification

Categories of BMI	Group 1 (N=45)		Group 2 (N=61)	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Under weight	7.69(1)	6.25(2)	11.43(4)	7.69(2)
Normal	84.62(11)	93.75(30)	88.57(31)	92.31(24)
Over weight	7.69(1)	0(0)	0(0)	0(0)
Obese	0(0)	0(0)	0(0)	0(0)

Figures in parenthesis denote the number of subjects

Figure 4.3: Percentage of elderly subjects according to BMI classification



It can be observed from the above Table 4.6 that majority of the subjects of both the genders from both groups fell under normal category of BMI. Whereas, only 7.69% of male subjects and 6.25% of female subjects from group 1 fell under underweight category compared to 11.43% of male subjects and 7.69% of female subjects from group 2. Only 7.69% of male subject from group1 fell under overweight category.

Waist hip ratio

Waist and hip circumference were also taken and waist hip ratio was calculated to know the prevalence of central obesity among the elderly subjects of both the groups. Table 4.7 shows the mean values of WC, HC and WHR of elderly subjects from both group 1 and group 2.

Table 4.7: Mean values of WC, HC and WHR of elderly subjects from group 1 and group 2

Indices	**Group 1 (N=45)**		**Group 2 (N=61)**		**t-value**	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)	Male	Female
Waist Circumference(cm)	79.5±3.49	77.7±2.39	79.9±2.25	76.5±1.38	0.60	0.02
Hip Circumference(cm)	83.6±3.18	82.8±2.40	84.4±3.37	81.6±1.38	0.47	0.02
Waist Hip Ratio (WHR)	0.95±0.011	0.93±0.004	0.94±0.008	0.93±0.002	0.01	0.02

The mean value of waist circumference and hip circumference of male subjects from group1 was 79.5±3.49 and 83.6±3.18 similarly, the waist circumference and hip circumference of male subjects from group2 was 79.9±2.25 and 84.8±3.37. Also the mean value of waist circumference and hip circumference of female subjects from group1 was 77.7±2.39 and 82.8±2.40 similarly for group2 it was 76.5±1.38 and 81.6±1.38. The mean value of WHR of male subjects from group1 was 0.95±0.011 and 0.94±0.008 from group2, while for female subjects the mean WHR for group1 was 0.93±0.004 and 0.93±0.002 for group2.

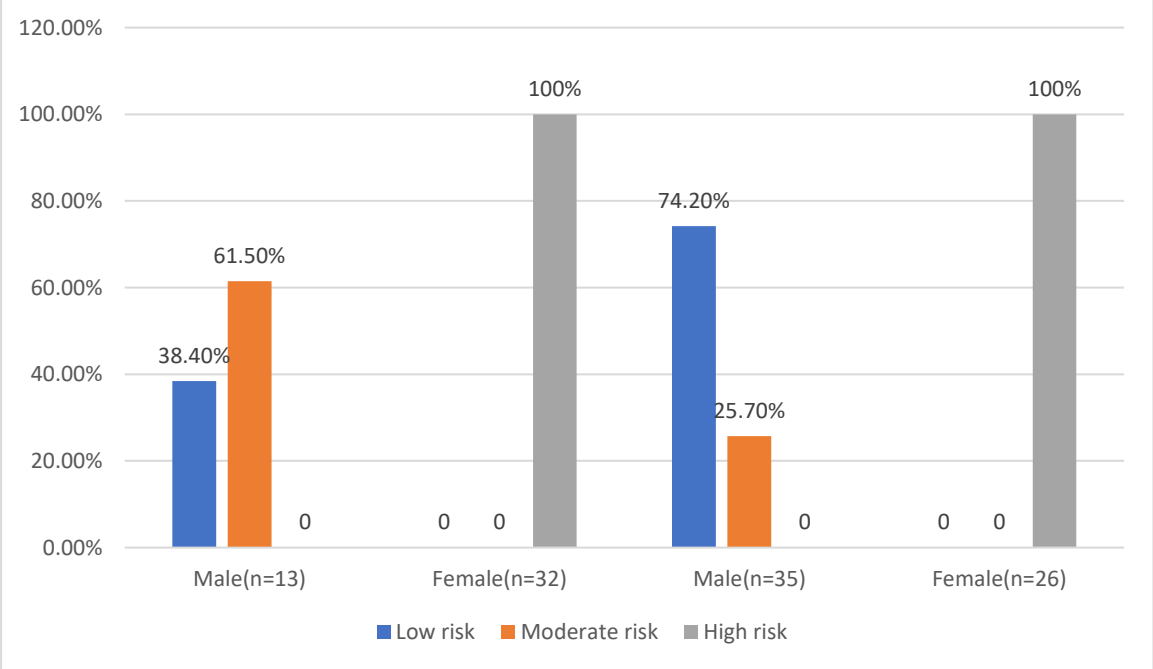
Table 4.8: Percentage of elderly subjects from both groups falling under different classification of WHR

WHR Classification	**Group 1 (N=45)**		**Group 2 (N=61)**	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Low risk (<0.80 for women and <0.95 for men)	38.4(5)	0	74.2(26)	0

Moderate risk (0.81-0.85 for women and 0.96-1.0 for men)	61.5(8)	0	25.7(9)	0
High risk (>0.86 for women and >1.0 for men)	0	100(32)	0	100(26)

Figures in parenthesis denote the number of subjects

Figure 4.4: Percentage of elderly subjects under WHR classification



It can be observed from the above table that female elderly subjects (100%) from both groups were at high risk of central obesity rather than male subjects who had low risk with 38.4% and 74.2% of subjects from group 1 and group 2 and moderate risk with 61.5% of subjects from group 1 and 25.7% from group 2.

Fauziana R et al., in 2016 conducted a study was to establish the prevalence and relationship of Body Mass Index (BMI) and Waist-Hip Ratio (WHR) with chronic health conditions. Concluded that prevalence of high WHR (above 0.90 for men and 0.80 for women) was 79.8 %. Being overweight was associated with hypertension and heart problems, while obesity was associated with hypertension and diabetes, and a high WHR was associated with hypertension and diabetes. This study demonstrated the importance of anthropometric measurements in the elderly and its association with certain chronic physical conditions, indicating their utility in the clinical management of these conditions in the elderly.

Srikanthan P et al., in 2009 conducted a study to assess Waist-Hip-Ratio as a Predictor of All-Cause Mortality in High-Functioning Older Adults aged 70-79, All-cause mortality risk by BMI, waist circumference (WC) and waist-to-hip circumference ratio (WHR) was examined. Results showed that WHR rather than BMI, appears to be the more appropriate yardstick for risk stratification of high-functioning older adults.

b) Clinical signs and symptoms

The presence of various clinical signs and symptoms of Iron deficiency anaemia and Vitamin A were noted.

Table 4.9: Percentage of elderly subjects from group 1 and group 2 who had clinical signs and symptoms

Signs and symptoms	**Group 1 (N=45)**	**Group 2 (N=61)**
Pallor- palm	13.33 (6)	1.64(1)
Pallor -tongue	2.22(1)	0(0)
Pallor-conjunctiva	4.44(2)	1.64(1)
Pallor-nails	33.33(15)	1.64(1)
Bitot spots	2.22(1)	3.28(2)
Night blindness	77.78(35)	67.21(41)

Figures in parenthesis denote the number of subjects

It can be observed from the above table 4.9 that majority of the subjects 77.78% and 67.21% of subjects from both group 1 and group 2 had night blindness as a sign of Vitamin A deficiency respectively.

Almost 33.33% subjects from group 1 and 1.64% of subjects from group 2 also had pallor-nails. A very smaller number of subjects from both the groups had bitot spots with 2.22% of subjects from group 1 and 3.28% of subjects from group 2. 13.33% subjects from group 1 also had pallor-palm whereas only 1.64% of subjects from group 2 had pallor-palm.

Although physiological iron requirements do not differ between adult and elderly men and post- menopausal and elderly women, there is growing evidence that iron metabolism is affected by the ageing process (Susan J. Fairweather-Tait et al.,2013).

c)Dietary pattern

General dietary information was collected among all the elderly subjects. The dietary intake was assessed in terms of nutrient intake using 24- hour recall method.

- General dietary aspects

Other general dietary information was collected through questionnaire with respect to type of diet, water intake, fasting practises, meal pattern, allergic to some food, consumption of supplements.

Table 4.10: Percentage of elderly subjects showing general dietary habits

Dietary aspects	**Group 1(N=45)**		**Group2 (N=61)**	
Type of diet	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Non - vegetarian	84.6(11)	100(32)	100(35)	100(26)
Vegetarian	15.38(2)	(0)	(0)	(0)
Water intake				
Less than 3 glass	(0)	12.5(4)	2.8(1)	7.69(2)
3-5 glass	23(3)	71.8(23)	22.8(8)	84.6(22)
More than 5 glass	76.9(10)	15.6(5)	74.2(26)	7.6(2)

Fasting practise				
Yes	(0)	3.1(1)	(0)	3.8(1)
No	100(13)	96.8(31)	100(35)	96.1(25)
No. of full meals per day				
1 meal	(0)	(0)	(0)	
2 meal	53.8(7)	37.5(12)	54.2(19)	57.6(15)
3 meal	46.1(6)	31.2(10)	45.7(16)	42.3(11)
Allergic to some food				
Yes	(0)	(0)	2.8(1)	(0)
No	100(13)	100(32)	97.1(34)	100(26)
Consumption of supplements				
Yes	30.7(4)	31.2(10)	34.2(12)	26.9(7)
No	69.2(9)	37.5(12)	65.7(23)	73(19)

Figures in parenthesis denote the number of subjects

It can be viewed from the above table that almost all the elderly subjects of both the gender from both groups were non-vegetarian (100%) except 15.38% of subjects from group 1 were vegetarian. It was found that majority of the male subjects from both groups with 76.9% of subjects from group 1 and 72.4% of subjects from group 2 had more than 5 glasses of water intake whereas only 15.6% of female subjects from group 1 and7.6% of subjects from group 2 had more than 5 glasses of water intake. Majority of female subjects with 23% from group 1 and 84.6% of9 subjects from group 2 had 3-5 glasses of water intake. The remaining 12.5% of female subjects from group 1 along with 2.8% of male subjects and 7.69% of female subjects from group 2 had less than 3 glasses of water intake.

Only 3.1% of female subjects from group 1 and 3.8% of female subjects from group 2 followed fasting practises. Most of the subjects had no allergic to any food items except for one male subject from group 2. It was seen from the data that 31.11% of subjects from group 1 were taking supplements like vitamin/calcium and 31.14% of subjects from group 2 also consumed supplements.

- **Nutrient intake**

The nutrient intake of the elderly subjects has been assessed in terms of energy, protein, fat, fibre, iron, calcium, vitamin C and β-carotene. Table 4.11 show the mean nutrient intake

Table 4.11: Mean nutrient intake of elderly subjects of both groups

Nutrients	Male RDA	Female RDA	Group 1(N=45)		Group 2(N=61)		t-value	
			Male(n=13)	Female(n=32)	Male(n=35	Female(n=26)	male	female
Energy(kcal)	2318	1899	1158±137	1093±150	1211±129	1189±113	0.22	0.01**
Protein(g)	60	50	61.14±10.4	59.11±10.4	67.15±10.2	65.28±8.3	0.07*	0.01**
Fat(g)	20	20	37.4±6.4	36.38±6.23	42.76±8.8	40.45±6.1	0.05*	0.01**
Fibre(g)	30	21	18.15±1.7	16.6±3.7	18.77±2.4	17.8±2.3	0.39	0.17
Calcium(mg)	600	600	568±129	545±131	522±85	507±62	0.15	0.17
Iron(mg)	30	21	7.89±1.0	7.29±1.8	7.75±1.3	7.36±0.9	0.73	0.86
Vitamin C(mg)	50	40	87.69±34.3	86.6±20.7	96.01±19.1	94.0±17.6	0.29	0.15
β-carotene(µg)	4800	4800	1562±318	115±223	1539±400	1243±278	0.84	0.17

Source-NIN by (C Gopalan, ICMR, Hyderabad 2010) *p<0.05 significant **p<0.01 significant

As seen from the table 4.11, it can be observed that all the subjects both male and female from both the groups indicated lower intake of energy according to RDA. The table revealed a lower intake of fibre, calcium, iron and β-carotene in both genders of both the group whereas a higher intake of protein, fat and vitamin C. It was observed that the nutrient intake by females subjects of both the group were lower compared to the male subjects. It was also observed that the nutrient intake of both the female and male elderly subjects of group 2 was higher than that of group 1. The reason for this difference might be due to multiple factors like psychological problems, instability of life style, physiological causes of low food intake. There was significant difference of energy among female subjects of both the groups. There was significant difference of protein and fat intake of both genders of both the groups.

Previous study conducted by Chauhan and Thakkar.,2012 in the department of Foods and Nutrition, The M.S. University have also revealed that (n=250) elderly aged 60-85 years of age with mild cognitive impairment had lower intake of energy, protein, iron and β-carotene.

A study conducted by Chauhan and Agarwal (2016) in the department of Foods and Nutrition, The M.S. University, (n=50) among elderly aged 60-85 years revealed that cognition status has an association with food intake (energy and protein) along with vitamin B12 status.

Lorraine M et al., 2021 conducted a study to assess the nutritional status and dietary intake of free-living seniors (n=162) among adults aged 65 years and above in Southern Ireland. A high prevalence of dietary insufficiencies was observed. The most common insufficiencies reported were energy (54.9%), fibre (82.7%), calcium (58.6%), magnesium (62.3%), iron (54.9%), folate (66.0%), vitamin D (93.2%) and vitamin E (61.1%).

Hence, the data on the diet profile revealed that the mean nutrient intake of energy, calcium, fibre, iron and β-carotene was low as per RDA recommendations.

From the above table 4.11 it can be stated that, the p-value of energy, protein and fat among female subjects are p-value<0.05 hence, the value is statistically significant. Whereas the remining nutrients like fibre, calcium, iron, vitamin C and B-carotene were found to be statistically insignificant. The p-value for male subjects was found to be p-value>0.05 for all the nutrients hence, it is statistically insignificant.

d) Mini Nutritional Assessment

Mini Nutritional Assessment (MNA) a screening tool was also used to help identify elderly patients who are malnourished or at risk of malnutrition. (Table 4.12)

Table 4.12: Percentage of elderly subjects showing different category of nutritional status after using MNA tool

Category	Group1 (N=45)		Group2 (N=61)		t-value	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)	Male	Female
Normal Nutritional Status (24-30 points)	38.46(5)	25(8)	45.7(16)	19.2(5)	0.69	0.70
At risk of malnutrition (17-23.5)	61.5(8)	75(24)	54.2(19)	80.7(21)	0.85	0.44
Malnourished (less than 17)	0	0	0	0	0	0
Mean ±SD	23.2±2.8	22.2±2.2	23.4±2.6	21.7±2.5		

Figures in parenthesis denote the number of subjects

After doing the Mini Nutritional Assessment on the elderly subjects, it can be stated that majority of the female subjects from both the groups were found to be at the risk of malnutrition with 75% of subjects from group 1 and 80.7% of subjects from group 2 compared to male subjects. 28.8% of subjects from group 1 and 34.4% of subjects from group 2 had normal nutritional status. With regard to normal nutritional status again more members were found in male as compared to female.

A study was carried out to assess the nutritional status of the elderly using the Mini Nutritional Assessment (MNA) tool, and to study the various epidemiological factors influencing their nutritional status by Agarwalla, R., et al, 2015 (n=360) revealed that the overall prevalence of malnutrition was found to be 15%, but the alarming fact was that the proportion of elderly at risk of malnutrition was relatively very high (55%). Calorie intake was found to be inadequate for the various reasons cited. Therefore, it is necessary to raise awareness of the elderly and their caregivers about the quality, quantity and frequency of food intake of older persons.

4.Disease profile

This included questions regarding different illnesses experienced by the subjects. A detailed checklist was used for various major and minor health problems. The major health problems included dental, GIT, constipation, respiratory, CVD, endocrine, genitourinary, locomotor and other problems, while the minor health problems included infections, constipation, flatulence, body aches, dryness of skin, sleep disturbances, lethargy and others.

- **General health profile**

It was assessed where the subjects were asked about their general health for aspect related to sleep pattern, condition of eyes, ears, teeth, taste, bowel movement, walking, condition of bones, throat, condition of nails, social behaviour etc. The assessed and analysed data interpretation has been shown in Table 4.13

Table 4.13: Percentage of elderly subjects from both Group 1 and Group 2 showing their general health profile

General Health Profile	**Group1 (N=45)**		**Group2 (N=61)**	
Sleep pattern	Male(N=13)	Female(32)	Male(N=35)	Female(26)
Sound	23.08(3)	31.45(10)	42.86(15)	61.54(16)
Disturbed	69.23(9)	68.75(22)	57.14(20)	38.26(10)
Unable to sleep	7.69(1)	0(0)	0(0)	0(0)

Bowel movement				
Regular	46.15(6)	46.88(15)	57.14(20)	46.15(12)
Irregular	30.77(4)	21.88(7)	31.43(11)	34.62(9)
Constipation	7.69(1)	18.75(6)	5.71(2)	11.54(3)
Loose motion	15.38(2)	12.50(4)	5.71(2)	7.69(2)
Condition of eyes				
Normal	15.38(2)	3.13(1)	0(0)	0(0)
Color blindness	0(0)	0(0)	0(0)	0(0)
Wears spectacles	84.62(11)	90.63((29)	100(35)	92.31(24)
Watery eyes	0(0)	6.25(2)	0(0)	7.69(2)
Condition of ears				
Normal	84.62(11)	81.25(26)	65.71(23)	73.08(19)
One abnormal	0(0)	0(0)	2.86(1)	0(0)
Use aid	0(0)	3.13(1)	0(0)	0(0)
Can’t hear low voices	15.38(2)	15.63(5)	31.43(11)	26.92(7)
Taste				
Normal as before	30.77(4)	9.38(3)	22.86(8)	30.77(8)
Change in taste	69.23(9)	90.63(29)	77.14(27)	69.23(18)
Smell				
Normal	100(13)	100(32)	94.29(33)	96.15(25)
Poor	0(0)	0(0)	5.71(2)	3.85(1)
Teeth				
Normal	61.54(8)	62.50(20)	45.71(16)	73.08(19)
Wears dentures	0(0)	0(0)	0(0)	0(0)
Partial dentures	38.46(5)	37.50(12)	54.29(19)	26.92(7)
Walking				
Normal	61.54(8)	68.75(12)	74.29(26)	96.15(25)
Walk with support	38.46(5)	31.25(10)	25.71(9)	3.85(1)
Condition of bones				
Difficulty in standing	0(0)	0(0)	0(0)	0(0)
Pain in bones	100(13)	100(32)	100(35)	100(26)

Skin				
Normal	30.77(4)	9.38(3)	0(0)	0(0)
Prone to allergy/infection	15.38(2)	12.50(4)	28.57(10)	15.38(4)
Dry	53.85(7)	65.63(21)	60(21)	76.92(20)
Redness/spots on skin	0(0)	12.50(4)	11.43(4)	7.69(2)
Throat				
Difficulty in swallowing	0(0)	6.25(2)	0(0)	0(0)
Dryness of throat	23.08(3)	15.63(5)	8.57(3)	11.54(3)
Difficulty in chewing	76.92(10)	78.13((25)	91.43(32)	88.46(23)
Condition of nails				
Brittle/no shine	92.31(12)	100(32)	100(35)	96.15(25)
Shine and smooth	7.69(1)	0(0)	0(0)	3.85(1)
Speech				
Clear speech	61.54(8)	62.50(20)	68.57(24)	61.54(16)
Change in speech	23.08(3)	31.25(10)	28.57(10)	34.62(9)
Stammering of words	15.38(2)	6.25(2)	2.86(1)	3.85(1)
Memory loss (unable to recall)				
Recent events	0(0)	0(0)	0(0)	0(0)
Past events	30.77(4)	34.38(11)	31.43(11)	34.62(9)
Name/address of friends	23.08(3)	0	0	0
Numbers	46.15(6)	65.63(21)	68.57(24)	65.39(17)
Nervous system				
Tremors	23.08(3)	12.50(4)	20(7)	30.77(7)
Irritability	7.69(1)	3.13(1)	8.57(3)	0
Poor reflex	69.23(9)	84.38(27)	71.43(25)	69.23(19)
Less sensitivity				
Loss of jerk sense	84.62(11)	96.88(31)	100(35)	100(26)
Loss of intensity of temperature	7.69(1)	3.13(1)	0	0
Loss of taste sensation	7.69(1)	0	0	0

Social behaviour				
Mixing with people as before	15.38(2)	15.63(4)	48.57(27)	42.31(11)
More reserved than before	84.62(11)	84.38(28)	51.43(18)	57.69(15)
More friendly than before	0	0		
Like to be in isolation	0	0		

Figures in parenthesis denote the number of subjects

In the above table 4.13 shows the percentage of both male and female subjects from both Old Age Home and Day Care Centres suffering from different kinds of general health problems.

It can be observed that 69.23% of male subjects and 68.75% of female subjects in group1 had disturbed sleeping pattern while 57.14% of male subjects in group2 had disturbed sleeping pattern but 61.54% of female subjects in group2 had sound sleep pattern.

Majority of the subjects with 46.6% of subjects from group1 and 52.45% of subjects from group2 had regular bowel movement.

Almost all subjects from both the groups with 88.8% of subjects from group1 and 96.7% of subjects from group2 wore spectacles while only 6.6% of subjects from group1 had normal eyes and none from group2. There were nearly one third of subjects from both the groups who could not hear low voices.

Only 69.23% of female subjects from group2 compared to 90.63% of female subjects from group1 experienced change in their taste buds. While as for male subjects, 69.23% from group1 and 77.14% of subjects from group2 experienced change in their taste buds.

There were 38.46%of male subjects and 37.50% of female subjects from group1 and 54.29% of male subjects and 26.92% of female subjects who wore partial dentures, which is an important factor of old aged people as it affects their eating pattern as to how and what they eat thereby affecting their nutritional status.

Amongst the group1 elderly subjects, there were only 33.3% of subjects who had to walk with support and only 16.39% of subjects from group2 walked with support. All the subjects from both the groups had pain in their bones.

Dryness of skin due to various physiological changes taking place due to ageing was seen among 62.2% of subjects from group1 and 67.2% of subjects from group 2 of both male and female subjects.13.3% from group1 and 22.9% of subjects from group2 also had sensitive skin which were prone to allergy /infections. Only 12.50% of female subjects from group1 and 11.43% of male and 7.69% of female subjects from group2 had redness/spots on skin.

It can be observed that 23.08% of male subjects and 15.63% of female subjects from group1 and 8.57% of male subjects and 11.54% of female subjects from group2 had dryness of throat, while 76.92% of male and 78.13% of female subjects from grouip1 and 91.43% of male and 88.46% of female subjects had difficulty in chewing. Almost all the subjects from both the groups had brittle nails with no shine.

Majority of group1 subjects (62.2%) and group2 subjects (65.5%) had a clear speech. While 28.8% of subjects from group1 and 31.1% of subjects from group2 had change in their speech while having conversations.

It can be seen in the above table that there were 60% of subjects from group1 and 67.2% of subjects from group2 could not recollect numbers, and 33.3%of subjects from group1 along with 32.7% of subjects from group2 could not recollect past events. Also ,80% subjects from group1 and 72.1% subjects from group2 had poor reflex.

Social life is affected mainly due to hearing problems, immobility and isolation and it can be seen that there were 86.6% of elderly subjects from group1 and 54% of elderly subjects from group2 felt that they had become more reserved than before in socialising. Whereas the remaining 62.2% of subjects from group2 and 13.3% of subjects from group1 were still mixing with people as before. The majority of the subjects from group2 (Day Care Centre) were seen to be socialising more with people compared to group1, those living in an Old Age Home.

Overall, the general health profile was better in elderly subjects of those from group2, i.e., Day Care Centre than those in Old Age Home.

A study (Chauhan and Tinwala,2013, n=250) carried out elderly women in the department of Foods and Nutrition, The M.S. University revealed that as age increases, complaints regarding minor health problems and general health profile decreases.

- **Major health problems**

The prevalence of major health problems has been shown in table 4.14

Table 4.14: Percentage prevalence of major health problems among elderly subjects from both group 1 and group 2

Major Health problems	**Group1 (N=45)**		**Group2(N=61)**	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Problems of oral cavity	100(13)	93.75(30)	100(35)	92.30(24)
Problems of the gastrointestinal tract	92.30(12)	84.37(27)	68.57(24)	76.9(20)
Problems of the respiratory tract	61.5(8)	53.12(17)	45.7(16)	34.6(9)
Problems of hepatobiliary tract	0(0)	0(0)	0(0)	7.69(2)
Problems of pancreas	46.15(6)	37.5(12)	8.57(3)	0(0)
Problems of cardiovascular system	46.15(6)	43.75(14)	48.57(17)	38.46(10)
Problems of the endocrine system	38.4(5)	18.75(6)	42.8(15)	15.3(4)
Problems of genitourinary system	76.9(10)	53.12(17)	74.2(26)	69.2(18)

Problems of locomotor system	84.6(11)	96.8(31)	74.2(26)	73(19)
Problems of central nervous system	61.5(8)	84.3(27)	82.8(29)	73(19)

Figures in parenthesis denote the number of subjects

As seen from the above table 4.14 oral cavity problems ranked first (96.2%) with almost all the elderly subjects from both groups. Followed by problems of central nervous system (88.6%),locomotor problems (82%), gastrointestinal problems (78.3%), problems of genitourinary system (66.9%), respiratory tract problems (47.1%), cardiovascular problems (44.3%), problems of endocrine system (28.3%), problems of pancreas (19.8%), problems of hepatobiliary tract (1.8%).

When compared among group 1 and group 2 of both male and female subjects, it was found that group1 subjects had more major health problems of gastrointestinal tract (93.3%), endocrine systems (44.4%), genitourinary systems (40%), locomotor systems (55.5%), central nervous systems (86.6%) while group2 subjects had more problems of oral cavity (78.6%), respiratory tract (72.1%), hepatobiliary tract (31.1%). Hence, it can be concluded that elderly subjects of group 1 had more major health problems as compared to elderly subjects of group 2.

A study conducted on 150 elderly persons on morbidity pattern among elderly in urban area of Barpeta, Assam (Pathak et al., 2022) revealed that most common disorders were diseases of the eye and adnexa (46%) followed endocrine, nutritional, and metabolic (37.3%) diseases, and disease of the circulatory system (34.7%). Diseases of the respiratory system (10.1%) and genitourinary system (10.1%) were more common in males, whereas cataract (29.6%) and hearing impairment (9.9%) were more common in females. Hence, early detection of morbidities among elderly and timely referral to secondary or tertiary care facilities by enhancing the capacity of primary health care providers are required to promote active and healthy aging.

- **Minor health problems**

Data on minor health problems was collected using checklist method and prevalence of various illnesses was obtained. Table 4.15 shows the percent prevalence of minor health problems among elderly subjects.

Table 4.15: Percentage prevalence of minor health problems among elderly subjects from both group 1 and group 2

Minor Health problems	**Group1 (N=45**		**Group2 (N=61)**	
	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Malaria	0(0)	0(0)	0(0)	0(0)
Throat Infections	23.08(3)	12.50(4)	17.14(6)	7.69(2)
Skin Infections	30.77(4)	53.13(17)	48.57(17)	50(13)
Eyes Infections	61.54(8)	71.88(23)	85.71(30)	76.92(20)
Vomiting	23.08(3)	9.38(3)	2.86(1)	0(0)
Diarrhea	15.38(2)	18.75(6)	5.71(2)	7.69(2)
Constipation	15.38(2)	21.88(7)	14.29(5)	11.54(3)
Acidity	15.38(2)	6.25(2)	11.43(4)	7.69(2)
Indigestion	0(0)	40.63(13)	34.29(12)	38.46(10)
Gas	30.77(4)	37.50(12)	37.14(13)	30.77(8)
Chest pain	15.38(2)	15.63(5)	2.86(1)	11.54(3)
Ulcers	0(0)	3.13(1)	5.71(2)	0(0)
Body aches	92.31(12)	100(32)	94.29(33)	96.15(25)
Back pain	92.31(12)	100(32)	100(35)	96.15(25)
Head ache	15.38(2)	12.50(4)	20(7)	19.23(5)
Muscle pain	92.31(12)	100(32)	100(35)	96.15(25)
Pain in joints	92.31(12)	100(32)	97.14(34)	96.15(25)
Dizziness	7.69(1)	0(0)	8.57(3)	3.85(1)
Dryness of skin	61.54(8)	84.38(27)	68.57(24)	57.69(15)
Trembling of limbs	15.38(2)	9.38(3)	0(0)	0(0)
Sleep disturbance	84.62(11)	46.88(15)	45.71(16)	30.77(8)
Fluctuation in B.P	69.23(9)	46.88(15)	54.29(19)	53.85(14)
Low mood	0(0)	6.25(2)	11.43(4)	3.85(1)
Lethargy	53.85(7)	25(8)	14.29(5)	15.83(4)
Lack of appetite	76.92(10)	90.63(29)	68.57(24)	73.08(19)
Fluctuation in mood	46.15(6)	40.63(13)	62.86(22)	50(13)
Itching	61.54(8)	68.75(22)	60(21)	53.85(14)

Figures in parenthesis denote the number of subjects

It can be seen from table 4.15 that, the number of subjects suffering from minor health problems such as diarrhoea, constipation, acidity, throat infection, dizziness, low mood etc were found to be very minimal compared to other problems.

Almost 68.8% of subjects from group 1 and 81.9% of subjects from group 2 of both the gender suffered from eye infections as a sign of poor eye sight. It can be observed that 40.63% of female subjects from group 1 had indigestion problem compared to only 36% of subjects of both male and female from group 2.

Almost all the subjects from both the groups with 97.7% of subjects from group 1 and 95% of subjects from group 2 had body aches similarly, 97.7% of subjects from group 1 and 98.3% of subjects from group 2 also had backpain. Muscle pain and pain in the joints were also found to be very common among the elderlies from both the institutions.

More than half of the subjects from both the groups with 35 subjects from group 1 and 39 subjects from group 2 had dryness of their skin irrespective of the weather condition.

Sleep disturbance was mostly seen in female with 46.88% of subjects from group 1 whereas in group 2 it was mostly common in male subjects with 45.71% of subjects. Fluctuation of blood pressure was also observed with 69.23% of male and 46.88% of female subjects from group 1 as well as 54.29% of male and 53.85% of female subjects from group 2. Lack of appetite was also one of the most common issues amongst the elderly subjects belonging to both the groups.

Upon comparison among group1 and group2 of both genders, it was found that almost both the groups had similar minor health problems such as back pain, muscle pain, pain in joints and dryness of skin.

5.Mental Health Status

Mental Health Status of the elderly subjects from both the groups were assessed using structured questionnaires for Geriatric Depression Inventory (GDI) scale, Mini Mental Status Examination (MMSE) and Cognitive Impairment Test (CIT).

Table 4.16: Percentage of elderly subjects from both groups falling under various categories 0f GDI, MMSE and CIT

Categories	Group1 (N=45)		Group2 (N=61)		t-value	
GDI	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)	Male	Female
Normal (1-10)	61.5(8)	78.12(25)	85.7(30)	84.6(22)	0.004	0.003**
Mild (11-15)	38.4(5)	18.75(6)	11.4(4)	15.3(4)	0.51	0.33
Moderate (16-20)	0	3.12(1)	2.8(1)	0	0	0
Severe (≥21)	0	0	0	0		
Mean± SD	7.2±5.9	8.9±2.5	6.8±3.1	7.0±3.3	t-value	
MMSE	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)	Male	Female
Normal (>26)	38.46(5)	6.25(2)	42.85(15)	23.07(6)	0.46	0.01**
Mild (21-26)	53.84(7)	59.37(19)	45.71(16)	65.3(17)	0.83	0.53
Moderate (11-20)	7.69(1)	34.37(11)	11.42(4)	11.5(3)		0.61
Severe (<10)	0	0	0	0		
Mean± SD	25±3.8	21.8±2.9	25.2±3.4	23.6±3.5	t-value	
CIT	Male(n=13)	Female(n=32)	Male(n=35)	Female(n=26)	Male	Female
Normal (0-10)	61.53(8)	46.87(15)	68.57(24)	69.23(18)	0.74	0.25
Abnormal (11-28)	38.46(5)	53.12(17)	31.42(11)	30.76(8)	0.46	0.41
Mean± SD	9.9±2.5	10.5±7.2	6.3±6.3	6.4±6.8		

Figures in parenthesis denote the number of subjects **p<0.01 significant

Majority of the elderly subjects from both the groups fell under normal category in Geriatric Depression Inventory scale. 38.4% of male and 18.75% of female subjects from group 1 and 11.4% of male and 15.3% of female subjects from group 2 showed mild depression whereas just one each subject with 3.12% of female subject from group 1 and 2.8% of male subject suffered from moderate depression. Hence, as per the percentage of subjects falling under mild category it can be stated that elderly subjects residing in an Old Age Home were more depressed as compared to elderlies visiting Day Care Centres.

U. Mohan et al, 2015, studied to assess the depression among elderlies living in community and old age home in Lucknow city where, Geriatric Depression Scale hindi version was used to diagnose depression in elderly people. Concluded that depression was more common among elderly living in OAHs compare to those living in community. Similarly, it was more among the single than those who were married and living with their partner.

(Roopa GB et al, 2018) conducted a study to determine the prevalence of Geriatric depression amongst the elderly population in a rural old age homes of Tumkur district Karnataka, India. Rural old age homes were visited and survey done for collection of data by using a pre-designed and pre-validated 30 item Geriatric Depression Scale (GDS), developed by the Yesavage JA in 1983. 80 samples were taken out of which the overall prevalence of depression in elderly in the study population was estimated to be 62.16%. Hence, prevalence of depression in the present study, amongst elderly population in a rural old age homes was found to be high.

Under the Mini Mental Status Examination, majority of the subjects from both the groups fell under mild category. While 26.6% of elderly subjects from group1 fell under moderate category as well as 11.4% of subjects from group 2. Therefore, overall, more than 38% of subjects had cognitive impairment.

When Cognitive Impairment Test was done, it showed that majority of the females with 53.12% of subjects from group 1 were abnormal as compared to only 30.76% of female subjects from group 2 which shows that female elderlies residing in the old age home had more abnormal cognitive impairment. The remaining subjects with 51.11% of subjects from group 1 and 68.8% of subjects from group 2 fell under normal category. Thus, the, mental status did not show good picture of elderly irrespective of group 1 and group 2.

WHO Quality of Life

WHO Quality OF Life Scale tool was also used to assess the quality-of-life assessment among elderlies living in old age home as well as day care centres. The data is shown in table 4.17

Table 4.17: Percentage of elderly subjects from both groups falling under various category of WHO Quality of Life Scale

Questions	Group1(N=45)		Group2(N=61)	
How would you rate your quality of life?	Male (n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Very poor-Poor	0	0	0	0
Neither poor nor good	0	0	0	0
Good-Very good	100(13)	100(32)	100(35)	100(26)
How satisfied are you with your health?				
Very dissatisfied-Dissatisfied	0	0	0	0
Neither	0	9.3(3)	0	0
Satisfied- Very satisfied	100(13)	90.6(29)	100(35)	100(26)
To what extent do you feel that physical pain prevents you from doing what you need to do?				
Not at all-A little	23.07(3)	34.3(11)	37.14(13)	46.15(12)
A moderate amount	76.9(10)	65.6(21)	62.8(22)	46.15(12)
Very much- An extreme	0	0	0	7.6(2)

How much do you need medical treatment to function your life?				
Not at all-A little	69.2(9)	78.1(25)	71.42(25)	100(26)
A moderate amount	30.7(4)	21.8(7)	22.8(8)	0
Very much- An extreme	0	0	0	0
How much do you enjoy life?				
Not at all-A little	0	0	0	0
A moderate amount	0	0	0	0
Very much- An extreme	100(13)	100(32)	100(35)	100(26)
To what extent do you feel your life to be meaningful?				
Not at all-A little	0	0	0	0
A moderate amount	0	0	0	0
Very much- An extreme	100(13)	100(32)	100(35)	100(26)
How well are you able to concentrate?				
Not at all-A little	7.69(1)	0	12.5(4)	0
A moderate amount	76.9(10)	68.75(22)	57.14(20)	0
Very much- An extreme	15.3(2)	31.25(10)	17.14(6)	100(26)
How safe do you feel in your daily life?				
Not at all-A little	0	0	0	0

A moderate amount	0	0	0	46.1(12)
Very much- An extreme	100(13)	100(32)	100(35)	53.8(14)
How healthy is your physical environment?				
Not at all-A little	0	0	0	0
A moderate amount	0	0	0	0
Very much- An extreme	100(13)	100(32)	100(35)	100(26)
Do you have enough energy for everyday life?				
Not at all-A little	0	0	0	0
A moderate amount	0	25(8)	17.14(6)	0
mostly-completely	100(13)	75(24)	82.8(29)	100(26)
Are you able to accept your bodily appearance?				
Not at all-A little	0	0	0	0
A moderate amount	0	0	0	11.5(3)
Mostly-completely	100(13)	100(32)	100(35)	88.4(23)
Do you have enough money to meet your needs?				
Not at all-A little	30.7(4)	18.75(6)	0	0
A moderate amount	30.7(4)	34.3(11)	5.7(2)	34.6(9)
Mostly-completely	38.46(5)	78.1(25)	94.2(33)	65.3(17)

How available to you is the information that you need in your day-to-day life?				
Not at all-A little	0	0	0	0
A moderate amount	0	0	0	0
Mostly-completely	100(13)	100(32)	100(35)	100(26)
To what extent do you have the opportunity for leisure activities?				
Very poor-poor	0	0	0	0
Neither	7.69(1)	6.25(2)	0	0
Well-very well	92.3(12)	93.75(30)	100(35)	100(26)
How well are you able to get around?				
Very poor-poor	0	0	0	0
Neither	0	0	5.7(2)	0
Well-very well	100(13)	100(32)	94.2(33)	100(26)
How satisfied are you with your sleep?				
Very dissatisfied-Dissatisfied	0	9.3(3)	5.7(2)	0
Neither	30.7(4)	31.25(10)	14.2(5)	7.6(2)
Satisfied- Very satisfied	69.2(9)	59.3(19)	80(28)	92.3(24)
How satisfied are you with your ability to perform your daily living activities.				
Very dissatisfied-Dissatisfied	0	0	0	0
Neither	7.69(1)	6.25(2)	0	0
Satisfied- Very satisfied	92.3(12)	93.75(30)	100(35)	100(26)
How satisfied are you with your capacity for work?				
Very dissatisfied-Dissatisfied	0	0	0	0

Neither	15.3(2)	6.25(2)	8.5(3)	7.6(2)
Satisfied- Very satisfied	84.6(11)	93.75(30)	91.4(32)	92.3(24)
How satisfied are you with yourself?				
Very dissatisfied- Dissatisfied	0	0	0	0
Neither	0	0	0	0
Satisfied- Very satisfied	100(13)	100(32)	100(35)	100(26)
How satisfied are you with your personal relationships?				
Very dissatisfied- Dissatisfied	0	0	0	0
Neither	0	15.6(5)	0	3.8(1)
Satisfied- Very satisfied	100(13)	84.3(27)	100(35)	96.1(25)
How satisfied are you with the support you get from your friends?				
Very dissatisfied- Dissatisfied	0	0	0	0
Neither	23.07(3)	18.75(6)	0	0
Satisfied- Very satisfied	76.9(10)	81.25(26)	100(35)	100(26)
How satisfied are you with the conditions of your living place?				
Very dissatisfied- Dissatisfied	0	0	0	0
Neither	0	0	0	0
Satisfied- Very satisfied	100(13)	100(32)	100(35)	100(26)

How satisfied are you with your access to health services?				
Very dissatisfied-Dissatisfied	0	0	0	0
Neither	0	0	0	0
Satisfied- Very satisfied	100(13)	100(32)	100(35)	100(26)
How satisfied are you with your mode of transportation?				
Very dissatisfied-Dissatisfied	0	0	0	0
Neither	0	9.3(3)	0	0
Satisfied- Very satisfied	100(13)	90.6(29)	100(35)	100(26)
How often do you have negative feelings, such as blue mood, despair, anxiety, depression?				
Never-Seldom	69.2(9)	50(16)	74.2(26)	69.2(18)
Quite often	30.7(4)	50(16)	25.7(9)	30.7(8)
Very often-Always	0	0	0	0

Figures in parenthesis denote the number of subjects

It can be observed from the above table 4.17 that all the elderly subjects rated their quality of life as good or very good. Almost half of the subjects from both the groups had physical pain which prevented them from doing what they needed to do.

Only 26.6% of subjects from group 1 were able to concentrate only for a longer period of time whereas ,52.4% of subjects from group 2 shows that elderlies visiting Day Care Centres had better concentration compared to those living in old age home. 22.2% of subjects from group 1 had very little-not at all enough money to meet their needs shows that the elderlies living in old age home had more financial status as compared to the ones visiting day care centres.

30.7% of male subjects and 50% of female subjects from group 1 quite often had negative feelings such as blue mood, despair, anxiety and depression as compared to only 25.7% of male and 30.7% of female subjects from group 2.This shows that the elderlies living in old age home were not always happy and contented.

A cross sectional study was conducted by Sahaya.S.T and Indumathi S, 2020 among elderly in old age homes and family set up of Kanchipuram district, Tamil Nadu. QOL of elderly was assessed using WHO QOL. A total of 106 elders from each group old age home and family setup were the study participants. As a result, quality of life was good (72.5%) in family and in OAHs it was only 56.2%. The main reason for residing in OAHs was no family and lack of care takers. Therefore, it was concluded that quality of life in family setup was better than OAHs, where psychologically many people were depressed as they live separately from their family and relatives, friends and the community they lived.

6. Physical Health Status

Physical Health Status of the elderly subjects were assessed on the basis of standing balance, walking speed, a timed test of five rises from the chair and grip strength. The data is presented in table 4.18

Table 4.18: Percentage of elderly subjects from both groups falling under various categories of timed activities.

Timed activities	Group1 (N=45)		Group2 (N=61)	
Standing side by side(10 secs)	Male (n=13)	Female(n=32)	Male(n=35)	Female(n=26)
Able	92.3(12)	100(32)	100(35)	100(26)
Not able	7.69(1)	(0)	0	0
Semi tandem (10 secs)				
Able	92.3(12)	87.5(28)	100(35)	96.1(25)
Not able	7.69(1)	12.5(4)	0	3.8(1)

Full tandem ((≤ 9 secs)				
Able	7.69(1)	9.3(3)	37.14(13)	30.7(8)
Not able	92.3(12)	90.6(29)	62.8(22)	69.2(18)
Full tandem (10secs)				
Able	7.69(1)	0	2.8(1)	0
Not able	92.3(12)	100(32)	97.1(34)	100(26)
Walking speed (2.4m)				
1-20 seconds	100(13)	93.75(30)	94.2(33)	96.1(25)
>20 seconds	0	6.25(2)	5.7(2)	3.8(1)
5 raises from chair				
1-10seconds	30.7(4)	25(8)	65.7(23)	26.9(7)
11-20seconds	69.2(9)	75(24)	34.2(12)	73(19)
Grip strength				
0kg	23(3)	62.5(20)	20(7)	61.5(16)
1-10kg	69.2(9)	37.5(12)	65.7(23)	38.4(10)
>10kg	7.69(1)	0	14.2(5)	0

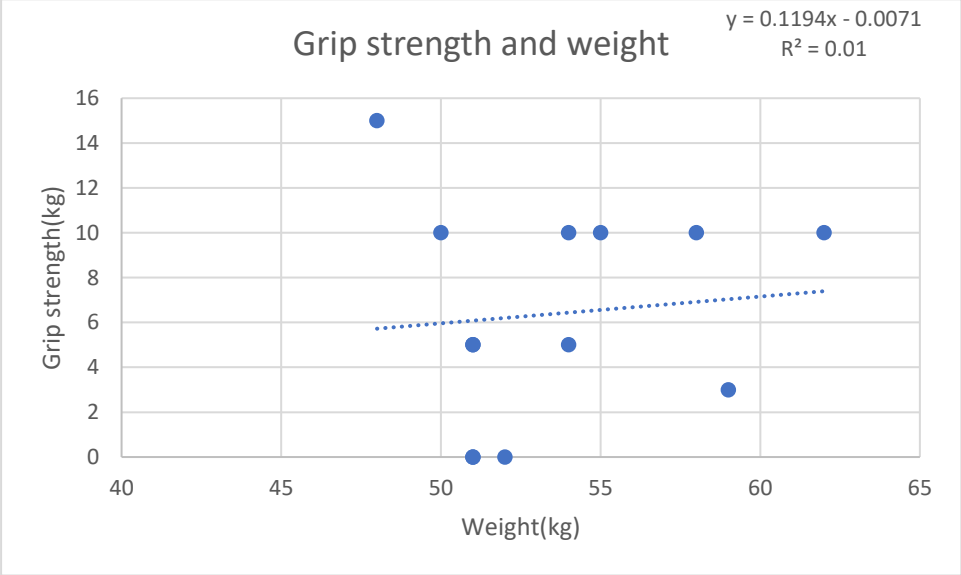
Figures in parenthesis denote the number of subjects

It can be observed from the above table 4.18 that almost all the elderly subjects from group 1 and group 2 were able to stand side by side for 10seconds while only 1 male subject from group 1 was not able. 98.3% of subjects from group 2 were able to stand in semi tandem for 10 seconds whereas only 88.8% of subjects from group 1 could do it. A very small number of subjects were able to stand in full tandem for 10seconds.The time taken for walking speed for a distance of 2.4m was mostly 1-10 seconds by almost all the elderly subjects from both the groups.

As compared to elderlies residing in the old age home, the elderlies visiting day care centres took less time in raising from the chair. Dynamometer which was used to know their grip strength showed that 46.6% of subjects from group 1 and 54% of subjects from group 2 showed grip strength of 1-10kg while the remaining 51% of subjects from group 1 and 37.7% of subjects from group 2 showed 0kg of grip strength. Only 1 subject from group 1 had the grip strength of >10kg whereas from group 2 ,5 subjects had the grip strength of >10kg. Hence, the elderlies belonging to group 2 had better grip strength compared to those from group 1.

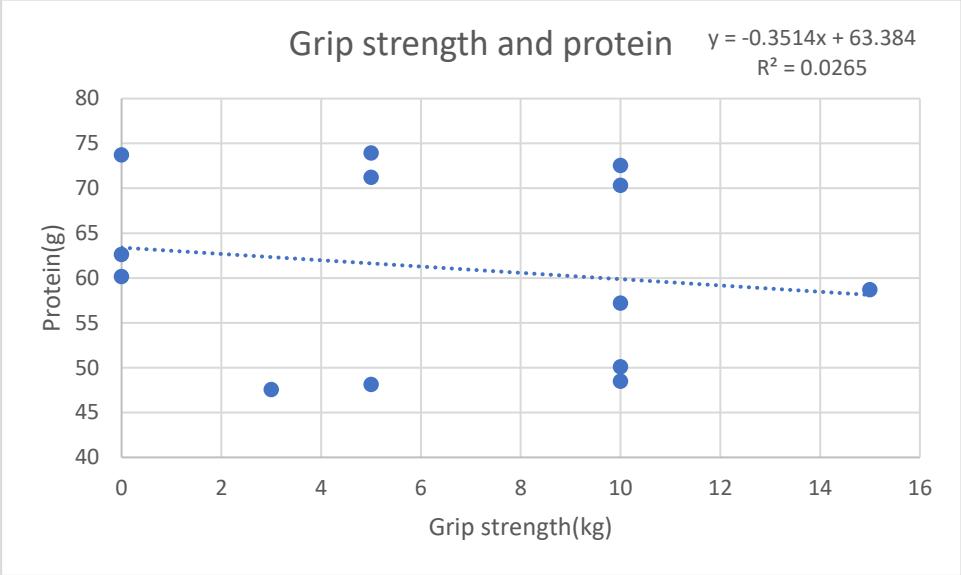
A study to determine the association between Waist Hip Ratio (WHR) and Physical Performance (PP) in older adults was conducted (n=85) where mean age was 78.06 ± 8.40 years by Espinoza Gutierrez et al., in 2021. PP was evaluated with the Short Physical Performance Battery, with most of the participants (67.86%; n=57) presenting adequate PP, and 47.62% (n=40) had a body mass index within normal parameters. The results suggested that WHR and PP were not associated.

Figure 4.5: Correlation of grip strength and weight of male subjects from group 1



The above figure 4.5 shows a positive correlation between grip strength and weight of male subjects from group 1. Therefore, the more the weight of a subject the more its grip strength will be.

Figure 4.6: Correlation of grip strength and protein of male subjects from group 1



The above figure 4.6 shows almost negative correlation between grip strength and protein intake of the male subjects of group 1. Hence, with increase in protein intake, the grip strength remains same.

Figure 4.7: Correlation of grip strength and weight of female subjects from group 1

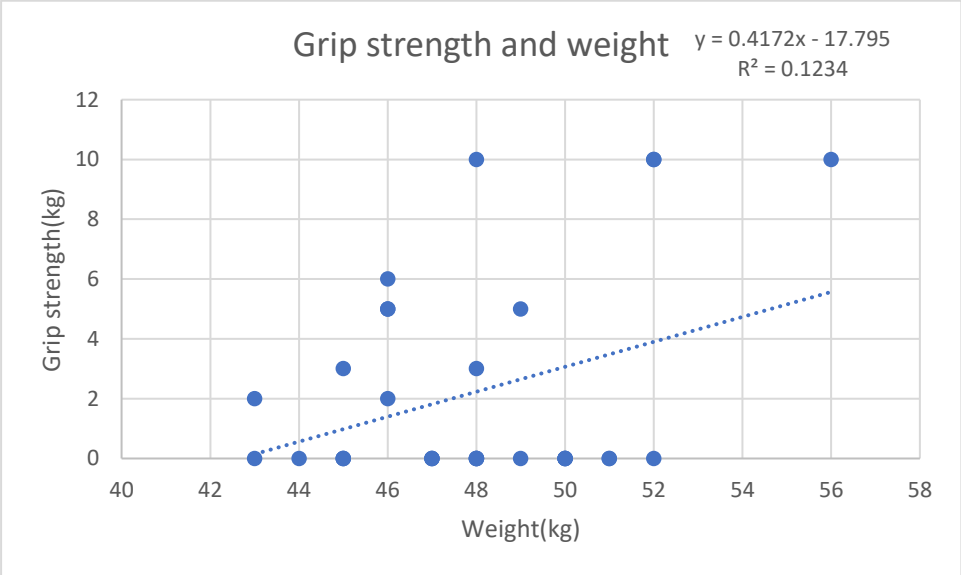
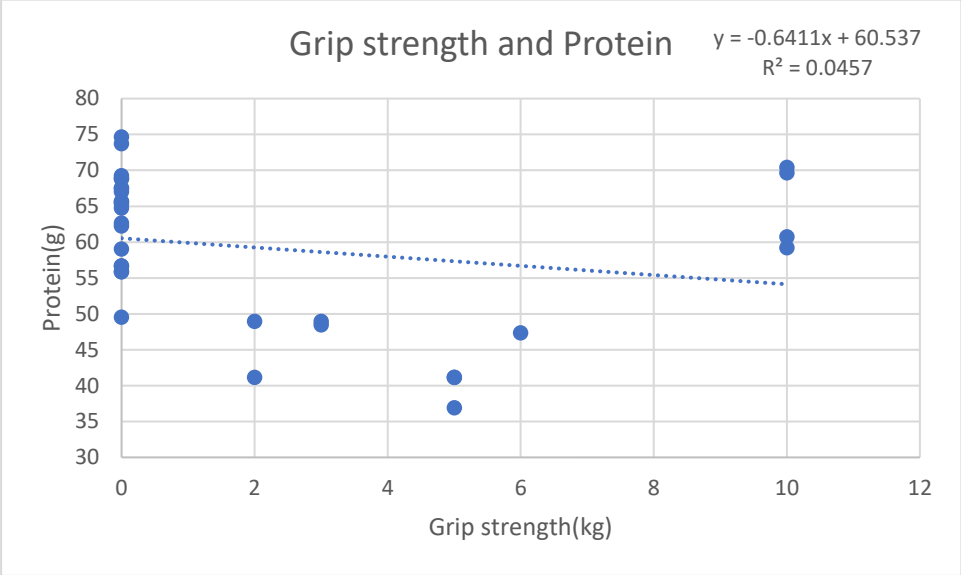


Figure 4.8: Correlation of grip strength and protein of female subjects from group 1



The above figure 4.7 shows a positive correlation between grip strength and weight of female subjects from group 1. Similarly, the more the weight of a subject the more its grip strength will be.

The above figure 4.8 shows a lower degree of negative correlation between grip strength and protein intake of the female subjects of group 1. Hence, with increase in protein intake, the grip strength remains same.

Figure 4.9: Correlation of grip strength and weight of male subjects from group 2

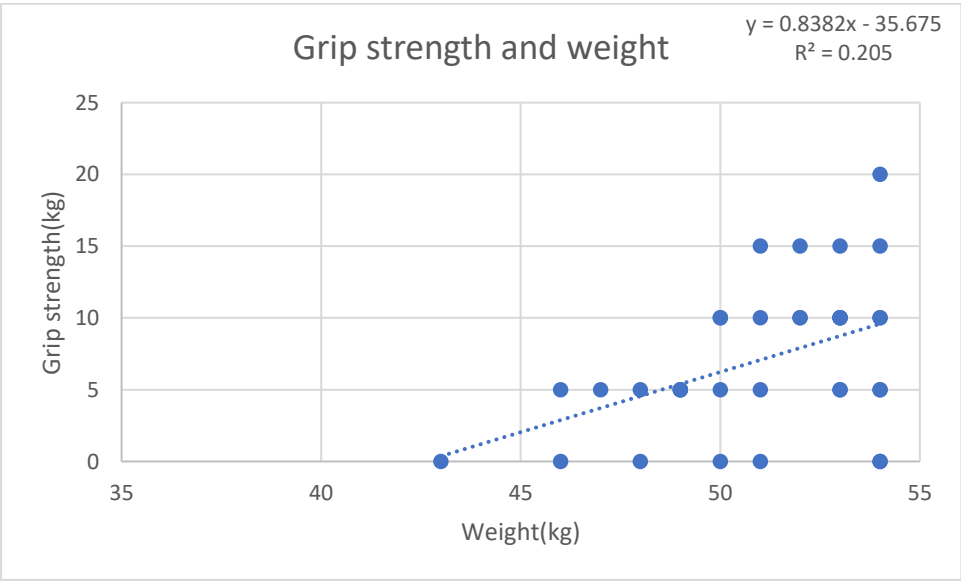
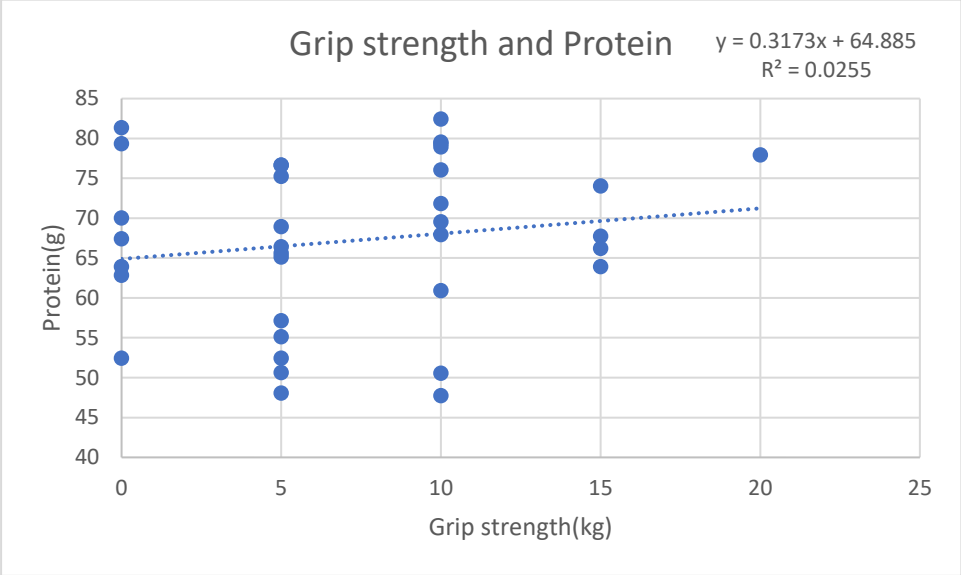


Figure 4.10: Correlation of grip strength and protein of male subjects from group2



The above figure 4.9 ad 4.10 shows a positive correlation between grip strength and weight as well as grip strength and protein intake of male subjects from group 2. The more the weight of a subject the more its grip strength will be. At the same time with increased intake of protein, the grip strength of the subjects increases.

Figure 4.11: Correlation of grip strength and weight of female subjects from group2

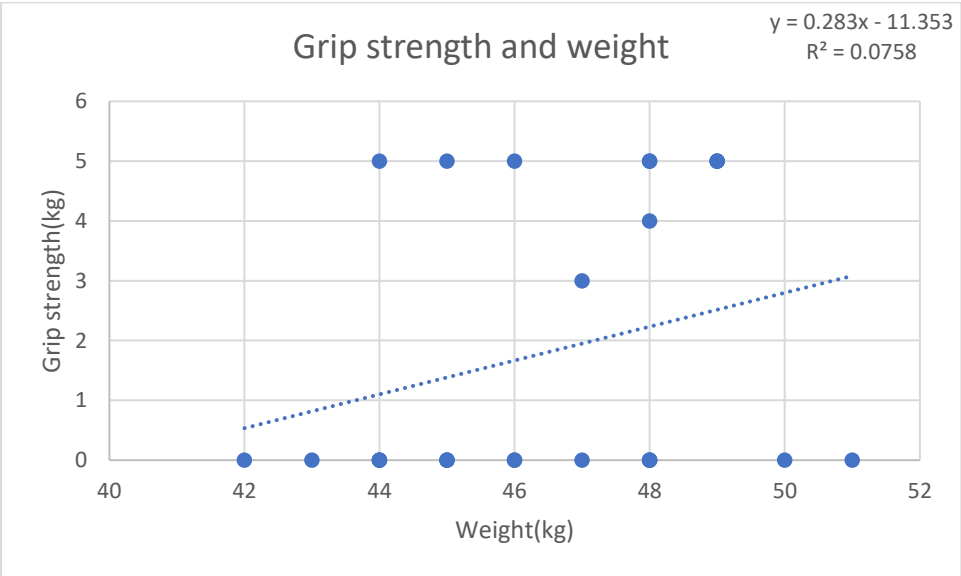
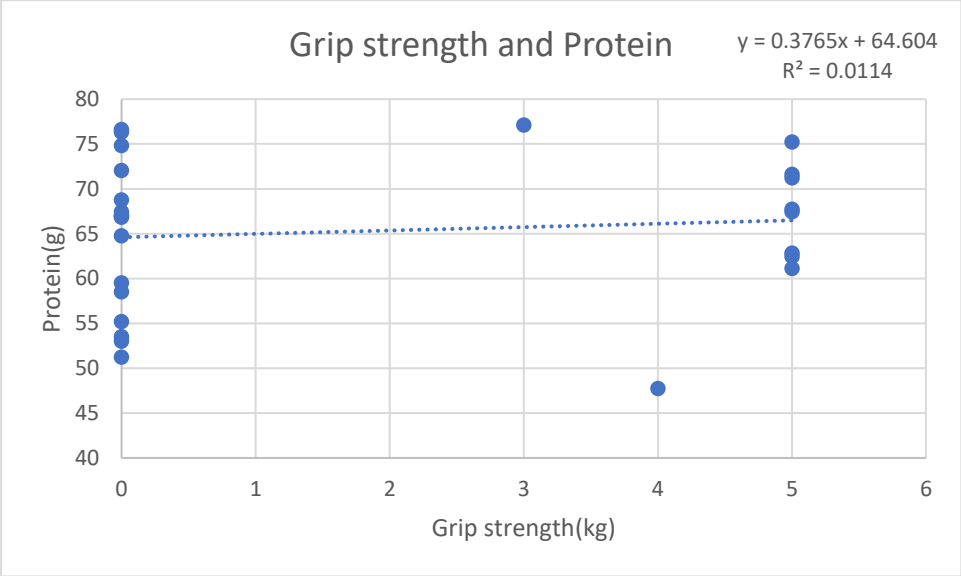


Figure 4.12: Correlation of grip strength and protein of female subjects from group2



The above figure 4.11 shows a positive correlation between grip strength and weight of female subjects from group 2. The more the weight of a subject the more its grip strength will be.

The above figure 4.12 shows a lower degree of positive correlation between grip strength and protein of female subjects from group 2. Hence, the more the intake of protein, there will be increase in the grip strength of the subjects as well.

SUMMARY AND CONCLUSION

SUMMARY AND CONCLUSION

Elderly people, also known as seniors or older adults, typically refers to individuals who are over the age of 65. As a group, they make up a significant and growing portion of the population in many countries, particularly in developed nations. The world's population is aging rapidly, with the number of people aged 60 or over expected to double by 2050. According to the World Health Organization, there are currently around 703 million people aged 65 or older, and this is projected to increase to 1.5 billion by 2050. Older adults are more likely to experience health issues such as chronic diseases, disabilities, and cognitive decline. Elderly people are at a higher risk of social isolation and loneliness, which can have negative impacts on their mental health and well-being. Factors that contribute to social isolation among seniors include mobility issues, lack of transportation, and loss of family and friends.

The nutritional status of elderly individuals is an important aspect of their overall health and well-being. As people age, they may experience changes in their metabolism, appetite, and digestive system, which can affect their ability to absorb nutrients from food. Additionally, many elderly individuals may have chronic health conditions or take medications that can affect their nutritional status. Malnutrition occurs when the body does not get enough nutrients to function properly. This can occur due to a lack of food intake, poor food choices, or problems with nutrient absorption. Elderly individuals may be at risk for deficiencies in vitamins and minerals, such as vitamin D, vitamin B12, and calcium. These nutrients are important for bone health, immune function, and cognitive function. Many elderly individuals experience unintentional weight loss, which can be a sign of underlying health issues or a lack of adequate nutrition. Major chronic diseases, such as diabetes, heart disease, and cancer, can affect the nutritional status of the elderly.

Despite the challenges associated with aging, many elderly people lead active and fulfilling lives. Engaging in physical activity, socializing with others, and pursuing hobbies and interests can all help promote healthy aging. It is important to recognize the value and contributions of elderly people, and to provide support and resources to help them maintain their health, well-being, and independence as they age.

Considering these facts, the present study was planned with major aim to assess the nutritional status, diet and disease profile of elderly in old age homes and day care centres of Nagaland. The specific objectives included data collection on institutional profile of the old age homes and day care centres, sociodemographic profile of the elderly subjects. Nutritional status was assessed in terms of anthropometric measurements which included height, weight, BMI, waist circumference, hip circumference and waist hip ratio.24-hr recall method was used to assess their food pattern and dietary intake. Disease profile was assessed with checklist of major and minor diseases. Cognitive function was assessed using Geriatric Depression Inventory Scale (GDI), Mini Mental State Examination (MMSE) and Cognitive Impairment Test (CIT). The study design, sample selection, parameters, tools and techniques used for the study are summarized under the following headings.

Plan of the study:

PHASE I: Situational analysis of the Institution

The institutions selected for the study were from 3 different districts of Nagaland-Dimapur, Kohima and Mokokchung. Out of which 1 Old Age Home (N=15subjects) and 1 Day Care Centre (N=33 subjects) from Dimapur was included, 1 Old Age Home(N=25subjects) from Kohima and 1 Old Age Home(N=5subjects) and 1 Day Care Centre(N=28subjects) from Mokokchung.

PHASE II: Situational analysis of Institutionalized elderly

Baseline data collection and nutritional assessment on following parameters:

The elderly profile included information regarding the socio-demographic profile, nutritional status, lifestyle pattern, disease profile, diet profile and mental health status of the elderly males.

1. Sociodemographic profile

This questionnaire would include information about the age, marital status, education, religion, caste, past family history, income and dependency.

2. Lifestyle pattern

Information on the lifestyle pattern included daily activity pattern of the subjects living in different districts were collected by 24 hr activity recall and self-reported time spent in minutes/hours on activity of daily, religious, rest, idle, leisure, and exercise. Whether the inmates performed any activity in the institution was also noted down along with the type of activity.

Substance abuse: The subjects were asked about their past and present addiction pattern of following - cigarette, tobacco, bidi, gutkha, pan masala.

3. Nutritional status

Assessment of nutritional status was done using anthropometry, clinical signs and symptoms.

a. Anthropometry: This includes weight, height, BMI and WHR. For weighing bathroom scale was used and fibre glass tape was used for height, waist and hip circumference. Thus, BMI and WHR was calculated.

b. Clinical signs and symptoms: The presence of various clinical signs and symptoms of Iron deficiency anemia and Vitamin A deficiency were noted.

4. Dietary pattern

a. General dietary profile was obtained using 24-hr recall method with the help of cups and spoons.
b. Mini Nutritional Assessment (MNA): is a screening tool was also used to help identify elderly patients who are malnourished or at risk of malnutrition.

5. Disease profile

It was assessed using a detailed and exhaustive checklist of various general health problems, major and minor health problems.

6. Mental health profile

To generate data and evaluate the effect of lifestyle factors on mental health of male elderly, various tools were used which are described:

a. Geriatric Depression Scale (GDI): This scale was used for diagnosing depression. It is a questionnaire having a total of 30 questions with yes/no as options.
b. Mini Mental State Examination (MMSE): This test was used to assess orientation, registration, attention, calculation, memory, language and visuo-spatial abilities of the subjects.

c. Cognitive Impairment Test**:** This test was used to assess the cognitive function of the selected subjects.

d. WHO Quality of Life Scale: The WHOQOL is a quality-of-life assessment tool developed in order to assess the quality of life of elderlies.

7. Physical health profile

In order to generate datas on their physical health condition and energy level various tools were used:

a. Standing balance- This test was done to know their standing balance side by side and in semi- tandem and full- tandem from 2 seconds- 10 seconds according to which they were marked as- able/not able.
b. Walking speed- This test was done to know their ability, speed and time taken to walk 2.4 meters twice.
c. Rise from chair- This was done to know their ability to rise from a chair without any support from the arms of the chair but by keeping their arms across their chest. This was done 5 times and the time taken for each rise was recorded.
d. Grip strength- This test was done using a dynamometer to know their grip strength.

Statistical Analysis

Different statistical softwares (Microsoft Office Excel 2021 and NSR-NutriCal) were used to obtain various nutrients calculations, mean, SD, percentage, student's t-test and correlation.

The findings of the study are briefly summarized below:

PHASE I: Situational analysis of the Institution

All the institutions were run by private/trust. It also revealed that all the institutions had proper kitchen facilities and dining area. It also provided sitting area as well as recreation rooms. Out of the 3 OAHs only 1 provided full 3 meals per day, both the DCCs provided 2 meals per day. Most of the institutions had provision for recreational tours/trips once or twice a year.

PHASE II: Situational analysis of Institutionalized elderly

1. **Sociodemographic profile**
    - It was observed that, from group 1 majority of the subjects were female (71.11%) and from group 2 majority of the subjects were male (57.38%).
    - Group 1 majority of the female subjects belonged to the age group of 76-85 years and majority of the male subjects from group2 belonged to the age group of 76-85years of age.
    - Almost all the subjects from both the groups were Christians and belonged to Naga ethnic group.
2. **Lifestyle pattern**
    - Both group 1 and group 2 subjects spent approximately 6 hours in leisure activities similarly the time spent in religious activities among both the groups was 1hour approximately.
    - Not much time was spent in social activities by group1 subjects as compared to group2 subjects.
    - Substance abuse- Only 11.3% of total subjects had addiction pattern of chewing supari/pan, tobacco and smoking cigarettes.
3. **Nutritional status**
    a. Anthropometry
    - Majority of the subjects of both the genders from both groups fell under normal category of BMI. Whereas, only 7.69% of male subjects and 6.25% of female subjects from group1 fell under underweight category compared to 11.43% of male subjects and 7.69% of female subjects from group2.

- For WHR, female elderly subjects (100%) from both groups were at high risk of central obesity rather than male subjects who had low risk with 38.4% and 74.2% of subjects from group1 and group2 and moderate risk with 61.5% of subjects from group1 and 25.7% from group2.

b. Clinical signs and symptoms

It was observed that majority of the subjects had night blindness as a sign of vitamin A deficiency. Also 15% of the subjects from both groups had pallor nails and 6% had pallor palm as a sign of Iron deficiency anaemia.

4. Dietary pattern

a. General dietary aspects

- It was observed that majority of the subjects were non-vegetarian except for 15.38% who were vegetarian. Majority of the male subjects had more than 5 glass of water intake daily whereas majority of the females had 3-5 glasses of water intake.

b. Nutrient intake

- It was observed that all subjects from both groups indicated lower intake of energy according to RDA. The subjects also had lower intake of fibre, calcium, iron and β-carotene whereas higher intake of protein, fat and vitamin C. It was also observed that the nutrient intake of both the genders from group 2 was higher than that of group 1.

c. Mini Nutritional Assessment

Majority of the female subjects from both the groups were found to be at the risk of malnutrition with 75% of subjects from group1 and 80.7% of subjects from group2 compared to male subjects.

5. Disease profile

a. General health problems

Majority of the elderly subjects had disturbed sleeping pattern, dryness of skin. Brittle nails with no shine. Almost all the subjects wore spectacles. Most of the female subjects experienced change in taste buds as compared to male subjects.

b. Major health problems

Oral cavity problems ranked first among almost all the elderly subjects from both groups. Followed by problems of central nervous system, locomotor problems, gastrointestinal problems, problems of genitourinary system,

respiratory tract problems, cardiovascular problems , problems of endocrine system, problems of pancreas and problems of hepatobiliary tract.

c. Minor health problems

Back pain, muscle pain and pain in joints were the most common problems faced by the elderlies from both the groups. Lack of appetite was also another problem commonly faced by the elderly subjects.

6. Mental health status

a. Geriatric Depression Inventory Scale (GDI)

Majority of the elderly subjects from both the groups fell under normal category. However, the remaining number of subjects that fell under mild category was higher in group 1 as compared to group 2.

b. Mini Mental Status Examination (MMSE)

Majority of the subjects from both the groups fell under mild category. 26.6% of elderly subjects from group 1 fell under moderate category as well as 11.4% of subjects from group 2.

c. Cognitive Impairment Test

Majority of the subjects from both the groups fell under normal category however among the females subjects majority of subjects from group 1 were abnormal as compared to female subjects from group2.

d. WHO Quality of Life scale

It was observed that majority of the subjects rated their quality of life as good or very good. Least number of elderlies from group1were able to concentrate for a longer period of time as compared to elderlies from group 2. Majority of the elderlies from group 1 also had negative feelings such as blue mood, despair, anxiety and depression as compared to elderlies from group 2.

7. Physical health profile

a. Standing balance

Almost all the subjects were able to stand side by side for 10 seconds. Majority of the subjects form both the groups were able to stand in semi-tandem for 10 seconds whereas a lesser number of total subjects were able to stand in full-tandem for 10 seconds.

b. Walking speed

The time taken for walking speed for a distance of 2.4m was mostly 1-10 seconds by almost all the elderly subjects from both the groups.

c. Rise from chair

As compared to elderly subjects from group 1, the elderly subjects from group 2 took less time in raising from the chair.

d. Grip strength

Elderly subjects from group 2 had better grip strength as compared to elderly subjects from group 1.

From the findings of the present study following concluding remarks can be made:

1. Both institutions overall provided good facilities for the elderlies.
2. Lifestyle factors like sitting idle, spending less time on sleep and unsocial behaviour may be a risk factor for cognitive impairment.
3. The elderly subjects from both the groups had poor nutrient intake as compared to RDA.
4. There was not much difference in anthropometric measurements among the elderlies from both groups.
5. The prevalence of major illness was more among elderlies living in old age homes as compared to day care centres.
6. The elderlies living in old age home were more depressed and cognitively impaired as compared to those visiting day care centres.
7. The elderlies visiting day care centres had better quality of life as well as physical health status.
8. Elderly subjects living in old age homes had poorer nutritional status, diet and disease profile as compared to those visiting day care centres.

RECOMMENDATIONS

From the conclusions of the present study, the following recommendations are made:

1. The institutions should have regular medical check-ups as well as counselling sessions in order to maintain a stable the physical and mental health of the elderlies.
2. A need to include more amount of foods rich in nutrients to improve their nutritional status should be emphasized for both old age homes and day care centres.
3. To encourage age home elderlies to be more socially active by attending various senior citizens programs outside, in order to prevent them from being socially isolated.
4. To encourage mental health activities for elderlies in old age homes as this will help them to maintain a healthy cognitive state.
5. To make sure that every individual is met with their needs, be it physically, mentally or spiritually.

LIMITATIONS

1. With growing age and poor mental health, 24 -hour dietary recall had shown over estimated/under estimated results.

FUTURE SCOPE

1. Research studies on the nutritional status, diet and disease profile of elderlies should be carried out in Northeast region.
2. Studies on effects of proper and healthy diet on mental health of an individual and compare region wise.
3. Major impact on the mental health of elderly in different set up and correlation with diet/ diseases/ social health.

BIBLIOGRAPHY

BIBLIOGRAPHY

Akbar, S., Tiwari, S. C., Tripathi, R. K., Pandey, N. M., & Kumar, A. (2018). Prevalence of Psychiatric Illness among Residents of Old Age Homes in Northern India. *Journal of neurosciences in rural practice*, *9*(2), 193–196.

Agarwalla, R., Saikia, A. M., & Baruah, R. (2015). Assessment of the nutritional status of the elderly and its correlates. *Journal of family & community medicine*, *22*(1), 39–43.

Chauhan K and Agarwal. (2016). Vitamin B12 and Omega-3 Fatty acid interventions for cognition in elderly- A V.O.I.C.E.TRAIL. (Ph..d dissertation)Dept of Foods and Nutrition, the M.S.University of Baroda.

Anantlaxmi Ananthram Goud, N.S. (2015). Prevalence of depression in older adults living in old age home. IAIM, 2015; 2(11): 1-5.

Anna, K.S. (2018). Dietary intake and nutritional status of elderly people living in a care home in Accra.

Centers for Disease Control and Prevention,. How much physical activity do older adults need?, .Physical Activity, Older adults.

Chauhan, K. Assessment of Nutritional Status of Elderly with Mild Dementia in Urban Vadodara. *Age*, *67*(4.33), 68-88.

Chauhan K, Tinwala S,. (2013). Assessment of diet, nutrition and disease profile of Muslim elderly women of Urban Vadodara in relation to mild ocgnitive impairment:Impact of Vitamin B12 supplementation among Muslim elderly women with mild cognitive impairment.

Das, D. (2017). *The Nutritional status of adults aged 50-70 years in Dispur zone, Kamrup(metro) ,Assam.*

Evans C. (2005). Malnutrition in the elderly: a multifactorial failure to thrive. *The Permanente journal*, *9*(3), 38–41. https://doi.org/10.7812/TPP/05-056

Espinoza Gutierrez, G. A., Yance-Cacñahuaray, G., Runzer-Colmenares, F. M., Chambergo-Michilot, D., Falvy-Bockos, I., & Vidal-Neira, L. F. (2022). Association Between Hip-Waist Ratio and Physical Performance in Older Adults. *Electronic Journal of General Medicine*, *19*(2).

Fairweather-Tait SJ, Wawer AA, Gillings R, Jennings A, Myint PK. Iron status in the elderly. Mech Ageing Dev. 2014 Mar-Apr;136-137:22-8. doi: 10.1016/j.mad.2013.11.005. Epub 2013 Nov 22. PMID: 24275120; PMCID: PMC4157323.

Fauziana R, Jeyagurunathan A, Abdin E, Vaingankar J, Sagayadevan V, Shafie S, Sambasivam R, Chong SA, Subramaniam M. Body mass index, waist-hip ratio and risk of chronic medical condition in the elderly population: results from the Well-being of the Singapore Elderly (WiSE) Study. BMC Geriatr. 2016 Jun 18;16:125.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *Journal of psychiatric research*, *12*(3), 189–198.

Gaitri, R. (2021). A study of elderly living in Old Age Homes in Manipur,India.

Giridhar Pathak, D.K. (2022). Study on morbidity pattern among elderly in urban area of Barpeta, Assam, India.*Journal of Family Medicine and Primary Care.*

Gomanthy Parsuraman, P.V. (2021). An epidemiological study on quality of life among elderly in an urban area of Thirumazhisai, Tamil Nadu. J*ournal of Family Medicine and Primary Care.*

Hadeel Halaweh, S.D.-I.(2018).Perspectives of older adults on ageing well. *Journal of Aging research.*

Harsh Bardhan, A.M. (2015). Morbidity profile of elderly population in Ghaziabad district: A cross sectional study.

https://pib.gov.in/Pressreleaseshare.aspx?PRID=1781361

Ingle, G. K., & Nath, A. (2008). Geriatric health in India: concerns and solutions. *Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine*, *33*(4), 214–218.

Isabella, T. (2022). *Old Age Homes in India.* Wishes and Blessings.

Joymati O.Ningombam Minita, R.B. (2018). Assessment of Nutritional status among elderly population in a rural area in Manipur.

Kadji Care, Old Age Homes, 2021, Old Age Home facilities are better for elderly people.

Kajal Srivastava, S.G. (2010). Morbidity profile of elderly. *Journal of Community Health.*

Katzman, R., Brown, T., Fuld, P., Peck, A., Schechter, R., & Schimmel, H. (1983). Validation of a short Orientation-Memory-Concentration Test of cognitive impairment. The American journal of psychiatry, 140(6), 734–739.

Kiran mani, K. A. (2018). Assessment of nutritional status and quality of life in the elderly registered at three rural elderly day care centres in Anekal Taluk, Bangalore Urban District.

Chauchan K, Mehta P.(2014). Nutrition and health profile of elderly females residing in Old Age homes in four major districts of Gujarat.*Food science research journal.* vol 5. 75-80.

Mao Lidzusa, M. K. (2018). A comparative study on quality of life of older adults.

Maeve Lorraine O'Connell, T.C. (2021). The Nutritional status and dietary intake of free-living seniors: A cross sectional study.

Md.Asadullah, K.K.(2012). A study on morbidity profile and quality of life of inmates in old age homes in Udupi district, Karnataka,India.

Mehata P,P.S.(n.d).A study on Nutrition and Health profile of depressed adult and elderly men of Baroda city:Impact of herbal intervention with Brahmil(Bacopa monneira). *Indian Journal of gerontolgy.vol 24.No.1.,49-58.*

Mohamed A.AI-Modeer, N.S. (2013). *Profile of Morbidity among elderly at home health care service in Southern Saudi Arabia.*

Mujumdar, D.K.(2019). A comparative study of elderly people staying in Old Age and elderly staying with their family with respect to anxiety and depression.

Praveen Kumar BA, S.E.(2016). Depression and anxiety among the elderly persons from institutional and noninstitutional settings in the field practise area of a tertiary-care institute, Andhra Pradesh.

Pathak, G., Kalita, D., & Deka, B. (2022). Study on morbidity pattern among elderly in urban area of Barpeta, Assam, India. *Journal of family medicine and primary care*, *11*(2), 553–558.

Panday, R., & Kumar, P. (2017). Quality of life among elderly living in old age home: A brief overview. *Delhi psychiatry journal*, *20*(2), 1-6.

Report of the technical group on population projections,July 2020.,People's Archive of Rural India. https://ruralindiaonline.org/en/

R, C.K.(2012). A study on lifestyle pattern, nutritional status, dietary profile and morbidity profile of elderly population of Urban Vadodara in relation to mental health.

Roopa GB, E.M.(2018).Geriatric Depression among elderly people residing in old age homes.

Sahaya.S.T,Indumathi.S.(2020). Quality of life among elderly living in old age homes and in family of Kancheepuram district, Tamil Nadu, India. *International Journal of community Medicine and Public Health*.

Saikia Anku Moni, M.N.(2010). *A study of Nutritional status of elderly in terms of Body Mass Index in Urban Slums of Guwahati city*.

Senior Citizens - status in India — Vikaspedia

Sailabala Mohanty, S. P. (2016). Depression in Old age: Prevalence and predictors.

Soletti, C.V.(2018).Nutritional status of elderly in the old age homes: A study in Pune city.*Current research in Nutrition and Food Science.*

Srikanthan, P., Seeman, T. E., & Karlamangla, A. S. (2009). Waist-hip-ratio as a predictor of all-cause mortality in high-functioning older adults. *Annals of epidemiology*, *19*(10), 724–731.

Syed Qadri, S.A.(2013).An epidemiological study on quality of life among rural elderly population of Northern India.

Tiwari, S. C., Pandey, N. M., & Singh, I. (2012). Mental health problems among inhabitants of old age homes: A preliminary study. *Indian journal of psychiatry*, *54*(2), 144–148.

U.Mohan,A.G.(2015). Study of Depression in Geriatric population:Old Age Home and Community in Lucknow.

Usha RAni S Padmanabha, N.U.(2016).Morbidity profile of inmates in old age homes in Mangalore,South India.

Vaish, K., Patra, S., & Chhabra, P. (2020). Nutritional status among elderly: A community-based cross-sectional study. *Indian Journal of Public Health*, *64*(3), 266.

WHO Mental Health of older adults, 2017. https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults

WHO, Health topics- Ageing https://www.who.int/health-topics/ageing#tab=tab_1

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1982). Development and validation of a geriatric depression screening scale: a preliminary report. *Journal of psychiatric research*, *17*(1), 37–49.

APPENDICES

ANNEXURE I

QUESTIONNAIRE

SOCIO DEMOGRAPHIC PROFILE:

1) Name:
2) Address:
3) Age:
4) Gender - Male/Female:
5) Marital status:
   a) Married b) Unmarried c) Divorced d) Widow/Widower
6) Religion:

a)Christian b)Hindu c)Muslim d)Sikh

7) Ethnic group:

a) Naga b) Non-Naga

8) Residing in Nagaland since:
   a) <5 yrs b) 5-10 yrs c) >10 yrs
9) Education:
   a) Primary b) Secondary c) Graduate d) Post-Graduate e) Illiterate
10) Type of Family (Past history)
   a) Joint b) Nuclear

11) No of family members-

12) Payment to institution is done by:
   a) Self b) Children c) Other relatives d) Dependent on institution e) Free
13) Do you use aid(s)? Yes/No (If yes then tick)
   a) Hearing aid b) Stick c) Spectacles d) Wheelchair e) Dentures f) Inhalers
   g) Walker h) Any other, specify …….

14) Do you suffer from any of the following substance abuse?
   a) Tobacco b) Supari/pan c) Cigarette d) Alcohol e) Any other, specify _____
15) Do you help in the working of the institution? Yes / No
   (If yes then which activity?)

a) Administration b) Purchasing c) Cutting d) Cleaning e) Serving

f) Any other, specify: _____

16) How do you buy things from outside (If allowed)?

a) Buy myself b) Take help from family c) Take help from attendant d) Other inmates

17) Have you encountered any incidence of theft in the institution?

a) Yes b) No

If yes, please specify: _____

ECONOMIC BACKGROUND:

1) Occupation: (a) before 50 yrs

i. professional practice (doctor, lawyer)

ii. Business

iii. Freelancer

iv. Service

V. others

(b) Currently_____

2) Monthly income: past/present _____

3) Source of income: (a) savings

(b) Dependent on family Members

(c) Dependent on children

(d) Dependent on institution

(e) Pension

(f) Activities that require help	**Present**	**Since what age**
i. walking		
ii. Climbing		
iii. Bathing		

iv. Eating		

DIETARY INFORMATION:

Are you a vegetarian or non vegeterian?

How much of water do you consume daily?

Do you observe fast?

Are you allergic to any food item?

Do you consume any health supplement?

If yes, specify_____

ITEMS	QUANTITY	FREQUENCY	REASON
Ayurvedic			
Nutritive supplements			
Herbs			
Medicines			
Any other, specify			

Has your food consumption reduced as compared to past few years?

REASON	YES/NO
Lost appetite	
No mood	
Developed disliking	
Any other _____	

LIFE STYLE PATTERN (PAST & PRESENT)

(I) ACTIVITY PATTERN:

(a) Leisure time Activities		

i. Listening music: mins/hrs/day		
ii. Watching TV: mins/hr/day		
iii. Reading(newspaper/ novels/magazines): mins/hr/day		
iv. sleeping: hrs/day		
(b) Religious activities		
i. Doing puja/praying : hrs/day		
ii. Doing meditation: hrs/day		
iii. Going temple:hrs/day		
iv. Yoga:hrs/day		
(c Socializing activities		
i. Going out with family members: hrs/day/week		
ii. Outings with friends: hrs/day/week		
iii. Playing with children at home:hrs/day		

WHO Quality of Life Scale

1. How would you rate your quality of life?

Very poor	Poor	Neither poor nor good	Good	Very good
1	2	3	4	5

2. How satisfied are you with your health?

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
1	2	3	4	5

3. To what extent do you feel that physical pain prevents you from doing what you need to do?

Not at all	A little	A moderate amount	Very much	An extreme
1	2	3	4	5

4. How much do you need any medical treatment to function in your life? Not at all A little A moderate amount Very much An extreme

5. How much do you enjoy life?

Not at all A little A moderate amount Very much An extreme

6. To what extent do you feel your life to be meaningful?

Not at all A little A moderate amount Very much An extreme

7. How well are you able to concentrate?

Not at all A little A moderate amount Very much An extreme

8. How safe do you feel in your daily life?

Not at all	Slightly	A moderate amount	Very much	extremely
1	2	3	4	5

9. How healthy is your physical environment?

Not at all A little A moderate amount Very much An extreme

10. Do you have enough energy for everyday life?

Not at all	A little	Moderately	Mostly	Completely
1	2	3	4	5

11. Are you able to accept your bodily appearance?

Not at all A little Moderately Mostly Completely

12. Do you have enough money to meet your needs?

Not at all A little Moderately Mostly Completely

13. How available to you is the information that you need in your day-to-day life?

Not at all A little Moderately Mostly Completely

14. To what extent do you have the opportunity for leisure activities?

Very poor	Poor	Neither poor nor well	Well	Very well
1	2	3	4	5

15. How well are you able to get around?

Very poor Poor Neither poor nor well Well Very well

16. How satisfied are you with your sleep?

Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
1	2	3	4	5

17. How satisfied are you with your ability to perform your daily living activities.

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

18. How satisfied are you with your capacity for work?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

19. How satisfied are you with yourself?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

20. How satisfied are you with your personal relationships?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

21. How satisfied are you with the support you get from your friends?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

22. How satisfied are you with the conditions of your living place?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

23. How satisfied are you with your access to health services?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

24. How satisfied are you with your mode of transportation?

Very dissatisfied Dissatisfied Neither satisfied nor dissatisfied Satisfied Very satisfied

25. How often do you have negative feelings, such as blue mood, despair, anxiety, depression?

Never	Seldom	Quite often	Very often	always
1	2	3	4	5

ANTHROPOMETRIC MEASUREMENTS:

1) Height:……..…mts
2) Weight:…….……kg
3) BMI:…….……..Kg/m²

MINI NUTRITIONAL ASSESSMENT

A.Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?

0= severe decrease in food intake

1= moderate decrease in food intake

2= no decrease in food intake

B. Weight loss during the last 3 months

0= weight loss greater than 3kg

1= does not know

2=weight loss between 1 and 3 kg

3= no weight loss

C. Mobility

0= bed or chair bound

1=able to get out of bed/ chair but does not go out

2=goes out

D. Has suffered psychological stress or acute disease in the past 3 months?

0= yes 2= no

E. Neuropsychological problems

0= severe dementia

1= mild dementia

2=no psychological problems

F. Body mass index (BMI)=weight in kg/height in m2

0= BMI less than 19

1=BMI 19-less than 21

2=BMI 21 to less than 23

3=BMI 23 greater

Screening score (sub total max.14 points)

12-14 points- normal nutritional status

8-11 points- at risk of malnutrition

0-7 points-malnourished

G. Lives independently (not in nursing home or hospital)

1=yes 2=no

H. Takes more than 3 prescription drugs per day

0=yes 1=no

I.Pressure sores or skin ulcers

0=yes 1=no

J. How many full meals does the patient eat daily?

0= 1 meal

1= 2 meal

2= 3 meal

K. Selected consumption markers for protein intake

Atleast one serving of dairy products (milk, cheese, yogurt) per day- yes or no

Two or more servings of legumes or egg per week- yes or no

Meat, fish or poultry everyday- yes or no

0.0=If 0 or 1 yes

0.5= if 2 yes

1=if 3 yes

L. How much fluid (water, juice, coffee, tea) is consumed per day?

0=less than 3 cups

0.5= 3-5 cups

1=more than 5 cups

M. Consumes two or more servings of fruits and vegetables per day

0= no 1= yes

N. Mode of feeding

0= unable to eat without assistant

1= self-fed with some difficulty

2=self fed without any problem

O. Self view of nutritional status

0= views self as being malnourished

1= is uncertain of nutritional status

2=views self as having no nutritional problem

P. In comparison with other people of the same age, how does the patient consider his/her health statu

0.0=not as good

0.5= does not know

1.0=as good

2- better

Q. Mid arm circumference (MAC) in cm

0.0=MAC less than 21

0.5=MAC 21 to 22

1=MAC greater than 22

R. Calf circumference (CC) in cm

0= CC less than 31

1= CC 31 or greater

Assessment score (sub total max.16 points)

TOTAL ASSESSMENT= Max 30 points

MALNUTRITION INDICATION SCORE

24-30 points	Normal nutritional status
17-23.5	At risk of malnutrition
Less than 17	Malnourished

Source-Rubenstein et al, 2001.

HEALTH INFORMATION:

CLINICAL SIGNS AND SYMPTOMS

Signs and symptoms	Present	Absent
1. Iron Deficiency Anaemia		
a. Pallor- palm		
b. Pallor- tongue		
c. Pallor- conjunctiva		
d. Pallor- nails		
2. Vitamin A deficiency		
a. Bitot spots		
b. Night blindness		

1) How often do you fall sick?
   (a) Once in 2 weeks
   (b) Every 15 days
   (c) Once in a month
   (d) Occasionally
2) What kind of illness do you usually suffer from:
   (a) Major illnesses (GI problems, Resp. problems, etc.)
   (b) Minor illnesses (Diarrhea, fever, infections, etc.)
3) How frequently you visit the doctor:
   Weekly / fortnightly / monthly /annually

MENTAL HEALTH RELATED FACTORS:

Problems	Yes	No	Comments
Irritation due to noise			
Forgetting things(past/present)			
Depression			
Negative thoughts			
Lack of interest			
Loneliness			
Expressing feelings If yes, specify_____			
Lack of concentration			
Difficulty in adjustment			
Clarity in speech			
Clarity in vision			
Lack of confidence			
Mood swings			

MORBIDITY PROFILE

1) Major Health Problems:

or Health Problems	Yes/No
i) Problems of oral cavity:-	
Mouth ulcers	
Inflammation of tongue	
Excess salivation / Lack of salivation	
Missing / broken teeth	
Full / partial dentures	
Carries / toothache	

Swollen / sore gums	
ii) Problems of the gastrointestinal tract	
Gastritis	
Gastroenteritis	
Ulcerative / any other colitis	
Fullness / gaseous distention	
Abdominal pain	
Dysentery	
Altered stools	
Dyspepsia	
iii) Problems of the respiratory tract	
Recurrent cold / Spells of sneezing	
Running nose	
Tonsillitis / pharyngitis	
Laryngitis / cough	
Hoarse voice / pain in swallowing	
Bronchitis / irritating dry cough with pain & discomfort	
Pneumonia	
Lung cancer	
Asthma	
iv) Problems of hepatobiliary tract	
Jaundice	
Hepatitis	
Cholecystitis / cholelithiasis	
v) Problems of pancreas	

Pain following or during febrile illness or alcohol consumption	
Vomiting, diarrhea, abdominal pain, collapse	
Large, bulky, fatty, floating stools	
Weight loss, intolerance of fatty food & swelling in upper abdomen	
vi) Problems of cardiovascular system	
Rheumatic heart disease	
Hypertension	
Ischemic heart disease • Angina pectoris • Coronary insufficiency • Myocardial infarction and / or post infarct complications • Heart rhythm disorders – Tachycardia / Bradycardia	
vii) Problems of the endocrine system	
Hyperglycemia	
Hypoglycemia	
Diabetes mellitus	
Hypothyroidism / Hyperthyroidism	
viii) Problems of genitourinary system	
Upper or lower urinary tract infection	
High frequency of urination	
Upper or lower urinary tract calculi	
Nephrotic syndrome	
Acute / chronic renal failure	
Dialysis	
ix) Problems of locomotor system	

Weak bones (Frequent fractures)	
Osteoporosis / Osteomalacia	
Arthritis	
Muscle inflammation / pain	
x) Problems of central nervous system	
Tension	
Migraine	
Sudden / gradual onset of dimness of vision	
Double vision	
Dysphagia	
Drop attacks	
Convulsive attacks	
Difficulty in hearing	
Speech problem	

2) **Minor Health Problems**

Minor Health Problem	**Yes/No**
1. Malaria	
2. Infections	
a) throat	
b) skin	
c) eyes	
3. Vomiting	

4. Diarrhea	
5. Constipation	
6. Acidity	
7. Indigestion	
8. Gas/flatulence	
9. Chest pain	
10. Ulcers	
11. Body aches	
12. a) back pain	
13. b) head ache	
14. c) muscle pain	
15. Pain in joints	
16. Dizziness	
17. Dryness of skin	
18. Trembling of limbs	
19. Sleep disturbance	
20. Fluctuation in B.P	
21. Low mood	
22. Lethargy	
23. Lack of appetite	
24. Fluctuation in mood	
25. Pneumonia	
26. Itching	

3. General Health Profile

Health Profile	**Yes/No**
A. Sleep pattern	
Sound	
Disturbed	
Unable to Sleep	
B. Bowel Movement	
Regular	
Irregular	
Loose motion	
Constipation	
C. Condition of Eyes	
Normal	
Color blindness	
Wear spectacles	
Watery eyes	
D. Condition of ears	
Normal	
One abnormal	
Use aid	
Cant hear low voices	
E. Taste	
Normal as before	

Change in taste	
F. Smell	
Normal	
Poor	
G. Teeth	
Normal	
Wear dentures	
Partial dentures	
H. Walking	
Normal	
Walk with support	
Limping	
Unable to walk	
I. Condition Of Bones	
Difficulty in standing	
Pain in bones	
Decrease in height/ stooping	
J. Skin	
Normal	
Prone to allergy/infection	
Dry	
Redness/spots on skin	

K. Throat	
Difficulty in swallowing	
Dryness of throat	
Difficulty in chewing	
L. Condition of nails	
Brittle/no shine	
Shine & smooth	
M. Speech	
Clear speech	
Change in speech	
Stammering of words	
N. Memory loss (unable to recall)	
Recent events	
Past events	
Name/address of close friends	
Numbers	
O. Nervous system	
Tremors	
Irritability	
Poor reflex	
P. Less Sensitivity	
Loss of jerk sense	
Loss of intensity of Temperature	
Loss of taste sensation	

Q. Social behaviour	
Mixing with people as before	
More reserved than before	
More friendly than before	
Like to be in isolation	

MENTAL AND PHYSICAL HEALTH STATUS

1. Geriatric Depression Scale (GDI)

1. Are you basically satisfied with your life? Yes / No1

2. Have you dropped out of many of your interests & activities? Yes1 / No

3. Do you feel that your life is empty? Yes1 / No

4. Do you often get bored? Yes 1/ No

5. Are you hopeful about the future? Yes / No1

6. Are you bothered by thoughts you can't get out of your head? Yes1 / No

7. Are you in good spirits most of the time? Yes / No1

8. Are you afraid that something bad is going to happen to you? Yes1 / No

9. Do you feel happy most of the time? Yes / No1

10. Do you often feel helpless? Yes1 / No

11. Do you often get restless and fidgety? Yes1 / No

12. Do you prefer to stay home rather than going out & doing new things?

Yes1 /No

13. Do you frequently worry about the future? Yes1 / No

14. Do you feel you have more problems with memory than other people?

Yes1 / No

15. Do you think it is wonderful to be alive now? Yes / No1

16. Do you often feel downhearted and blue? Yes1 / No

17. Do you feel pretty worthless the way you are now? Yes1 / No

18. Do you worry a lot about the past? Yes1 / No

19. Do you find life very exciting? Yes / No1

20. Is it hard for you to get started on new projects? Yes1 / No

21. Do you feel full of energy? Yes / No1

22. Do you feel that your situation is hopeless? Yes1 / No

23. Do you think that most people are better off than you are? Yes1 / No

24. Do you frequently get upset over little things? Yes1 / No

25. Do you frequently feel like crying? Yes1 / No

26. Do you have trouble concentrating? Yes1 / No

27. Do you enjoy getting up in the morning? Yes / No1

28. Do you prefer to avoid social gatherings? Yes1 / No

29. Is it easy for you to make decisions? Yes / No1

30. Is your mind as clear as it used to be? Yes / No1

KEY:

Categories	**Score**
Normal	1-10
Mild	11-15
Moderate	16 – 20
Severe	≥ 21

Source: Yesavage et al, 1983

2. Mini Mental Status Examination (MMSE)

ORIENTATION (Score 1 if correct)

Name this society/building? ----------

Name the city you are in now? ----------

What year is this? ----------

What month is this? ----------

What season are we in now? ----------

What is the date today? ----------

Name the state you are in now? ----------

Name the country you are in now? ----------

Which floor of the building are you on? ----------

What day of the week is it? ----------

REGISTRATION

Name 3 objects: 1 second to say each. Then ask the patient all 3 after you have said them. (Give 1 point for each correct answer.)

Then repeat them until he/she learns all 3.

ATTENTION AND CALCULATION:

Subtract 7 from 100 in serial fashion to 65 (max. score 5)

RECALL

Do you recall the 3 objects named before? (score 3)

LANGUAGE TEST

Confrontation naming: watch, pen (score 2)

Repetition: "No Ifs , ands or Buts" (score 1)

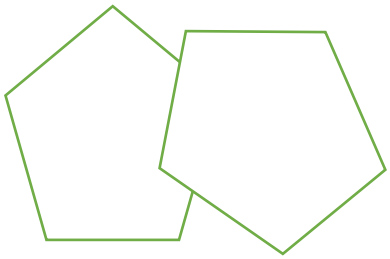
Comprehension: pick up the paper in your right hand, fold it in half and set it on the floor (score 3)

Read and perform the command: " Close your eyes" (score 1)

Write any sentence (subject, object, verb) (score 1)

CONSTRUCTION:

Copy the design below (score 1)



Total MMSE questionnaire score(Max=30)

Score	**Categories**
>26	Normal
21-26	Mild
11-20	Moderate
< 10	Severe

Source: Folstein M.F et al (1975)

3. Cognitive Impairment Test

ITEM	MAX ERROR	SCORE
1. What year is it now?	1	------x4=
2. What month is it now?	1	-------x3=
MEMORY PHASE-with 5 components Repeat this after me, Lendina,24, Dimapur, Nagaland,India		
3. What time is it? Within 1 hr	1	-------x3=
4. Count backwards 20 to 1	2	-------x2=
5. Say the months in reverse order	2	-------x2=
6. Repeat the memory phase	5	-------x2=
		Total=---------

KEY:

Categories	Scores
Normal	0-10
Abnormal	11-28

Source: Katzman et.al, 1983

PHYSICAL HEALTH STATUS:

Standing Balance

1. Side by side (10 sec) Able / Not able

2. Semi-tandem (10 sec), full tandem (≤ 2 sec) Able / Not able

3. Semi-tandem (10 sec), full tandem (≤ 9 sec) Able / Not able

4. Full tandem (10 sec) Able / Not able

Walking speed **Time Duration (seconds)**

1. Walking 2.4 meters

Rise from chair **Time Duration (seconds)**

1. Five rises from a chair

With arms across the Chest.

Grip strength

24 HOUR DIETARY HOUR RECALL:

MEAL&TIME	FOOD ITEM	INGREDIENT	COOKED (ml)	RAW (gm)

NUTRIENT CALCULATIONS:

Ingre.	Raw amt	Energy (kcal)	Prot. (gms)	Fat (gms)	Ca (mg)	Fe (mg)	Vit.C (mg)	Fibre

ANNEXURE II

CONSENT FORM

NOTE; The consent forms will be passed to President/Administrator of institutions' which will then pass it to the members. The consent form includes description of study, name, I agree to participate, Mail ID, phone number. After the members/participant will fill the consent form, then they will further get baseline questionnaires to further participate in study.

Informed consent form for adults participating in the research titled: "Assessment of Nutritional status, diet and disease profile of elderly living in Old Age Homes and Day Care Centres of Nagaland"

Research Guide – Prof. (Dr)Komal Chauhan

Research Student - Lendina T. Jamir

Name of Organization – Department of Foods & Nutrition, Faculty of Family & Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara Gujarat

Name of Project – ASSESSMENT OF NUTRITIONAL STATUS, DIET AND DISEASE PROFLE OF ELDERLY LIVING IN OLD AGE HOMES AND DAY CARE CENTRES OF NAGALAND

Part 1: Information Sheet

Purpose of the study:

Health and well-being of any individual depend on various factors like physical, social, psychological and nutritional factors. Nutrition plays an important role as a determinant in contributing to the well-being and quality of life of an individual. Ageing is a normal, physiological, biological and universal phenomenon that happens in all the living beings.

Poor nutrition has greater risk for chronic disease during ageing which can lead to weight loss, muscle wastage, lethargy, compromised immunity; poor wound healing, pressure sores along with symptoms of specific nutrient deficiencies causing malnutrition in older adults. Older people are vulnerable to malnutrition for many reasons including physiological and functional changes that occur with age, lack of financial support and inadequate access to food.

The permission has been obtained from the Institution Ethical Committee (Department of Foods And Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara).

Procedure:

The study focuses on the causes of nutritional status of institutional elderly. For the same in our first phase of study we will assess infrastructure, administration, meal pattern, facilities of the institute, health and medical facilities and if any religious and recreational activities are being conducted for the elderlies. For the second phase we will collect the database with respect to the elderlies in the institute and assess their:

1. Socio - Demographic characteristics using questionnaire.
2. Anthropometry Measurements (Height, Weight, Waist, Hip & Demispan) and MNA using standard tool.
3. Diet profile using 24-hr recall
4. Mental Health (MMSE, 6CIT, GDI) and Physical activity using standard tool.
5. Age above 60 years.
6. Should be ready to participate willingly and provide the information.

For the same I require consent from your institute, staff and residents. For your reference all the tools to be used for the study will be shared at the time of consent by the institute. We hope that outcome of the research data would definitely help in uplifting the care and status of the elderly. There is no cost on participant's side to participate in study.

Confidentiality:

The data collected through interview will be used for research purpose only. The name and personal information of the participant will be kept confidential. The data shared will be used for academic purpose only.

Part 2: Certificate of consent

Investigator's Statement

I certify that the elements including the nature and purpose of the study as described in this consent document have been fully explained to the subjects. In my judgement, the participant possesses the legal capacity to give informed consent to participate in this research and it's voluntarily and knowingly giving informed consent to the participant.

Participant's Statement I …….. , have read the information in this form. I am free to ask any questions and will answer as per required. I am above 60 years of age and stays in the old age home/visits the day care centre, hereby give consent to be included as a participant in assessment:

1. I have read and understood the consent form and information provided to me.
2. I have the consent document explained to me.
3. I have been explained the nature of the study
4. My rights and responsibilities have been explained to me by the investigator.
5. I have had a chance to ask questions about the study
6. I have had my questions answered to my satisfaction.
7. My identity will be kept confidential if my data is publicly presented.
8. I hereby give the permission to the investigator to release the information obtained from me as a result of participation in this study to the sponsors, regular authorities, government agencies and the ethics committee. I understand that they may inspect my personal records,
9. I have decided to be the part of research study.

For further information/questions,please contact:

Student-Lendina T. Jamir (MSc student)

PhNo- 9101448312

lendinajamir244@gmail.com

Guide- Prof(Dr) Komal Chauhan

PhNo- 9898790340

komal.chauhan-fn@msubaroda.ac.in

CONSENT FORM (local language)

NOTE: Etu consent form institutions laga President/ Administrator ke pass kuribo etu piche te members kaan ke dikhabo. Etu consent form te study laga description ase, naam, participate kuribole agree kura laga, mail ID aru phone number. Members/ Participants kaan consent form fillup kura piche te, taikan ke baseline questionnaire dibo study te participate kuribo karne.

Consent form lua kaan etu research title te participate kuribo: "Assessment of Nutritional status, diet and disease profile of elderly living in Old Age Homes and Day Care Centres of Nagaland"

Research Guide – Prof. (Dr)Komal Chauhan

Research Student - Lendina T. Jamir

Organization laga naam – Department of Foods & Nutrition, Faculty of Family & Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara Gujarat

Project laga naam – ASSESSMENT OF NUTRITIONAL STATUS, DIET AND DISEASE PROFLE OF ELDERLY LIVING IN OLD AGE HOMES AND DAY CARE CENTRES OF NAGALAND

Part 1: Information Sheet

Study laga purpose:

Ekta manu laga health bishi factors te depend kure, physical, psychological, social aru nutrition.Tate sob para nutrition sobse dangor role play kure kile maney nutrition para ekta manu laga life laga quality aru wellbeing te bishi contribute kure. Age dangor hoina jaa toh normal ase aru universal phenomenon ase etu sob manu ke hobo.

Kitya nutrition biya hobo age dangor hoina jaa time te bimaar bishi lagibo kintu para weight loss, muscle wastage, lethargy, compromised immunity aru wound bhalse bhal nahobo, pressure sores thakibo etu lokote alak nutrient komti hua laga bimar kaan lagibo. Age bishi manu kaan malnutrient hobole sobse easy wala ase kile maney taikan age bishi hua lokote physiological aru functional changes kaan hoi, komti support thaka karone nahoile bhal khabole napa karone. Etu karone nutiritonal status bhal nathaka kaan aru manutrient age bishi manu kaan ke sabole lage.

Etu permission Institution Ethical Committee (Department of Foods And Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara) para paishe.

Procedure:

Etu study institution te elderly thaka manu kaan la nutritional status te bishi focus kuribo. Etu study la tuita phase thakibo, first phase te apni kan laga institute laga infrastructure, admintration, meal pattern aru ki ki facilities health aru medical, religious aru recreational activities kaan elderlies karone ase na nai sabo.Second phase ami elderlies kaan laga data collect kuribo taikan laga:

1. Socio - Demographic characteristics using questionnaire.
2. Anthropometry Measurements (Height, Weight, Waist, Hip & Demispan) and MNA using standard tool.
3. Diet profile using 24-hr recall
4. Mental Health (MMSE, 6CIT, GDI) and Physical activity using standard tool.
5. Age 60 years laga upor.
6. Taila laga information aru Khushi para participate kuribole kobo lage.

Etu karone ami apni kaan la institute laga consent aru institute te thaka manu kaan laga consent lage.Apni kaan janibole karone ki ki samaan use kuribo etu consent lobo time te jonai dibo.Amikan babi ase etu research laga data outcome para elderlies kaan laga health bhal wala hobo dibo. Study te participate kuribo karone eku poisa nathakibo.

Confidentiality:

Ki ki data jama kuribo etu research study karone ekla hobo. Naam aru ki ki personal information ase etu sob confidential rakhibo. Aru ki ki data share kuribo sob research purpose karone hobo.

Part 2: Consent laga Certificate

Investigator laga Statement

Moi etu study laga purpose aru ki ki kuribole ase document te thaka sob subjects kaan ke bhalse explain kurishe. Amila judgement te, etu participant ke legal capacity di ase etu study te participate kuribole.

Participant laga Statement Moi……. Etu form laga information purishe. Moi questions kaan eku thakile hudibo paribo. Moi 60 years laga upor ase aru Old Age Home te thake/Day Care Centre visit kure etu assessment te participate kuribole consent di ase:

1. Moi etu consent form aru information purishe aru bujishe.
2. Etu consent form amike explain kurishe.
3. Etu study kineka kuribole ase ammike explain kurishe.
4. Ami laga rights aru responsibilities amike ami laga investigator para explain kurishe.
5. Etu study laga questions kaan hudibo parishe.
6. Ami laga questions kaan bhalse answer kuri dishe.
7. Ami laga identity confidential rakhibo if amil aga data public ke dikhaile.
8. Ami amil aga permission amil aga investigator ke di ase, amil aga information etu study te participate kura laga result release kuribole, sponsors, regular authority, government agencies aru ethics committee.Ami jani ase taikan amil aga personal records inspect kuribo.
9. Ami etu study te part lobole decide kurishe.

For further information/questions,please contact:

Student-Lendina T. Jamir (MSc student)

PhNo- 9101448312

lendinajamir244@gmail.com

Guide- Prof(Dr) Komal Chauhan

PhNo- 9898790340

komal.chauhan-fn@msubaroda.ac.in

ANNEXURE III

PERMISSION LETTER

To

The Administrator/President

Subject- Seeking permission to collect data from the elderlies of the Old Age Home for dissertation study.

Respected sir/madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Lendina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of the inmates living in old age homes.

Health and well-being of any individual depend on various factors like physical, social, psychological and nutritional factors. Nutrition plays an important role as a determinant in contributing to the well-being and quality of life of an individual. Ageing is a normal, physiological, biological and universal phenomenon that happens in all the living beings.

Poor nutritional status and malnutrition in the elderly population are important areas of concern especially in those living in institutions. Malnutrition and unintentional weight loss contribute to progressive decline in health, reduced physical and cognitive functional status, increased utilization of health care services, premature institutionalization, and increased mortality.

Therefore, it is need of an hour to assess the status of the elderly in old age home so that further steps can be taken to improve the nutritional status and quality of life if required.

This to request you to give us permission to collect data from the elderlies of your old age home for her dissertation study as part of her master's degree which is to be conducted from the month of December 2022 to February 2023.

I can ensure that the data collected will be purely confidential and the inputs concluded will be shared for the betterment of the quality of life of the elderlies living in the old age home.

Therefore, I kindly request you to give me permission to visit and collect my required datas for my study.

Dr. Komal Chauhan
Proferror
Dept of Foods and Nutrition
Faculty of Family and Community Science

Dr. Mini Sheth
I/c Head
Dept of Foods and Nutrition
Faculty of Family and Community Science

To

The Administrator/President

Subject- Seeking permission to collect data from the elderlies of the Day care centre for dissertation study.

Respected sir/madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Lendina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of the inmates living in day care centres

Health and well-being of any individual depend on various factors like physical, social, psychological and nutritional factors. Nutrition plays an important role as a determinant in contributing to the well-being and quality of life of an individual. Ageing is a normal, physiological, biological and universal phenomenon that happens in all the living beings.

Poor nutritional status and malnutrition in the elderly population are important areas of concern especially in those living in institutions. Malnutrition and unintentional weight loss contribute to progressive decline in health, reduced physical and cognitive functional status, increased utilization of health care services, premature institutionalization, and increased mortality.

Therefore, it is need of an hour to assess the status of the elderly in day care centre so that further steps can be taken to improve the nutritional status and quality of life if required.

This to request you to give us permission to collect data from the elderlies of your day care centre for her dissertation study as part of her master's degree which is to be conducted from the month of December 2022 to February 2023.

I can ensure that the data collected will be purely confidential and the inputs concluded will be shared for the betterment of the quality of life of the elderlies living in the old age home.

Therefore, I kindly request you to give me permission to visit and collect my required datas for my study.

Dr. Komal Chauhan
Professor
Dept of Foods and Nutrition
Faculty of Family and Community Science

Dr. Mini Sheth
I/c Head
Dept of Foods and Nutrition
Faculty of Family and
Community Science

To,
The Managing Director
Senior Citizen's Home
Merima, High Court
Kohima Nagaland

Subject- Seeking permission to collect data from the elderlies of the Old Age Home for dissertation study.

Respected sir/madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Leodina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of the inmates living in old age homes.

Health and well-being of any individual depend on various factors like physical, social, psychological and nutritional factors. Nutrition plays an important role as a determinant in contributing to the well-being and quality of life of an individual. Ageing is a normal, physiological, biological and universal phenomenon that happens in all the living beings.

Poor nutritional status and malnutrition in the elderly population are important areas of concern especially in those living in institutions. Malnutrition and unintentional weight loss contribute to progressive decline in health, reduced physical and cognitive functional status, increased utilization of health care services, premature institutionalization, and increased mortality.

Therefore, it is need of an hour to assess the status of the elderly in old age home so that further steps can be taken to improve the nutritional status and quality of life if required.

This to request you to give us permission to collect data from the elderlies of your old age home for her dissertation study as part of her master's degree which is to be conducted from the month of December 2022 to February 2023.

I can ensure that the data collected will be purely confidential and the inputs concluded will be shared for the betterment of the quality of life of the elderlies living in the old age home.

Therefore, I kindly request you to give me permission to visit and collect my required datas for my study.

Komal

Dr. Komal Chauhan
Proferror
Dept of Foods and Nutrition
Faculty of Family and Community Science

Dr. Mini Sheth
Hc Head
Dept of Foods and Nutrition
Faculty of Family and
Community Science

Received
20/10/2022

Permission granted

25/10/22

To

The Administrator/President

Aonglax Elderly Care Home, Sungratsu, Mokokchung

Subject- Seeking permission to collect data from the elderlies of the Old Age Home for dissertation study.

Respected sir/madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Lendina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of the inmates living in old age homes.

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Dr. Komal Chauhan
Proferror
Dept of Foods and Nutrition
Faculty of Family and Community Science

Dr. Mini Sheth
I/c Head
Dept of Foods and Nutrition
Faculty of Family and
Community Science

Received
9/01/23

To

The Administrator President

Open Doors Senior Citizen Day Care Centre,Dimapur

Subject- Seeking permission to collect data from the elderlies of the Day care centre for dissertation study.

Respected sir /madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Londina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of the inmates living in day care centres

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Therefore, it is need of an hour to assess the status of the elderly in day care centre so that further steps can be taken to improve the nutritional status and quality of life if required.

This to request you to give us permission to collect data from the elderlies of your day care centre for her dissertation study as part of her master's degree which is to be conducted from the month of December 2022 to February 2023.

I can ensure that the data collected will be purely confidential and the inputs concluded will be shared for the betterment of the quality of life of the elderlies living in the old age home.

Therefore, I kindly request you to give me permission to visit and collect my required datas for my study.

Komal

Dr. Komal Chauhan

Professor

Dept of Foods and Nutrition

Faculty of Family and Community Science

Dr. Mini Sheth

I/c Head

Dept of Foods and Nutrition

Faculty of Family and

Community Science

PERMISSION GRANTED

31/10/22

To,
The Administrator / President
Recreation Centre for Senior Citizen
Dilong Ward Mokokchung ; Nagaland.

Subject - Seeking permission to collect data from the elderlies of the Day care centre for dissertation study.

Respected sir/madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Lendina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of inmates living in day care centres.

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Komal

Dr. Komal Chauhan

Professor

Dept of Foods and Nutrition
Faculty of Family and Community Science

Dr. Mini Sheth

I/c Head

Dept of Foods and Nutrition
Faculty of Family and Community Science

Permitted to collect data as applied

2 Sept 2022
Dist. President Association
Mokokchung, Nagaland

To

The Administrator/President
House of Friendship, Old Age Home.
Dimapur, Nagaland.

Subject- Seeking permission to collect data from the elderlies of the Old Age Home for dissertation study.

Respected sir/madam

With utmost respect, I Dr. Komal Chauhan on behalf of my student Lendina T. Jamir, of Sr. MSc Dietetics in Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat. As a part of her dissertation work, wish to study diet, disease and nutritional status of the inmates living in old age homes.

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Therefore, I kindly request you to give me permission to visit and collect my required datas for my study.

Komal

Dr. Komal Chauhan
Proferror
Dept of Foods and Nutrition
Faculty of Family and Community Science

Dr. Mini Sheth
I/c Head
Dept of Foods and Nutrition
Faculty of Family and
Community Science

(Akokla. P. Lucy)
Chairman
House of Friendship Old Age Home.
Diphu Road Dimapur, Nagaland
Mob:- 9774041260/9436061260

ANNEXURE IV

ETHICAL COMPLIANCE CERTFICATE

सत्यं शिवं सुन्दरम्
Estd. 1949

Institutional Ethics Committee for Human Research (IECHR)

FACULTY OF FAMILY AND COMMUNITY SCIENCES
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA

Ethical Compliance Certificate 2022 – 2023

This is to certify that Ms. Lendina T. Jamir's study titled, "**Assessment of Nutritional status, diet and disease pattern of elderlies living in Old Age Homes and Day Care Centres of Nagaland**" from Department of Foods and Nutrition has been approved by the Institutional Ethics Committee for Human Research (IECHR), Faculty of Family and Community Science, The Maharaja Sayajirao University of Baroda. The study has been allotted the ethical approval number **IECHR/FCSc/MSc/2022/41.**

Prof Mini Sheth
Member Secretary
IECHR

Prof Shagufa Kapadia
Chairperson
IECHR

Chair Person
IECHR
Faculty of Family & Community Sciences
The Maharaja Sayajirao University of Baroda

Document Information

Analyzed document	MSc final thesis Lendina 2023.pdf (D163902999)
Submitted	4/14/2023 7:00:00 AM
Submitted by	Prof. Komal Chauhan
Submitter email	komal.chauhan-fn@msubaroda.ac.in
Similarity	1%
Analysis address	komal.chauhanfn.msub@analysis.urkund.com

Sources included in the report

W	URL: https://www.who.int/health-topics/ageing#tab=tab_1 Fetched: 4/14/2023 7:00:00 AM	2
W	URL: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1781361 Fetched: 4/14/2023 7:00:00 AM	1
W	URL: https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults Fetched: 4/14/2023 7:00:00 AM	5

Entire Document

ASSESSMENT OF NUTRITIONAL STATUS, DIET AND DISEASE PROFILE OF ELDERLY LIVING IN OLD AGE HOMES AND DAY CARE CENTRES OF NAGALAND APRIL 2023 LENDINA T. JAMIR B.Sc. (Hons.) Community Science

ASSESSMENT OF NUTRITIONAL STATUS, DIET AND DISEASE PROFILE OF ELDERLY LIVING IN OLD AGE HOMES AND DAY CARE CENTRES OF NAGALAND APRIL 2023 LENDINA T. JAMIR B.Sc. (Hons.) Community Science

ASSESSMENT OF NUTRITIONAL STATUS, DIET AND DISEASE PROFILE OF ELDERLY LIVING IN OLD AGE HOMES AND DAY CARE CENTRES OF NAGALAND A DISSERTATION SUBMITTED TO THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA IN PARTIAL FULLFILLMENT FOR THE DEGREE OF MASTERS OF SCIENCE IN FAMILY AND COMMUNITY SCIENCES FOODS AND NUTRITION (DIETETICS) BY LENDINA T. JAMIR DEPARTMENT OF FOODS AND NUTRITION FACULTY OF FAMILY AND COMMUNITY SCIENCES THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA, VADODARA - 390002 GUJARAT

CERTIFICATE This is to certify that the research work embodied in the result of this dissertation has been carried out independently by Miss Lendina T. Jamir under the guidance of Dr Komal Chauhan in pursuit of her degree of Master of Science in Family and Community Sciences (M.Sc.F.C.Sc.) with major in Foods and Nutrition (Dietetics), at The Maharaja Sayajirao University Of Baroda, Vadodara Dr Komal Chauhan Dr Mini Sheth Professor and Guide Professor and Head Dept. of Foods and Nutrition Dept. of Foods and Nutrition Faculty of Family and Faculty of Family and Community Sciences, Community Sciences, The Maharaja Sayajirao University The Maharaja Sayajirao Of Baroda, Vadodara University Of Baroda, Vadodara APRIL 2023