Review · IJGN

A community-based study to assess the nutritional status among the elderly population (above 60 years) in selected areas of district Pulwama

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Abstract

Background of the Study Malnutrition and morbidity create a vicious cycle. Malnutrition in older adults has been recognized as a challenging health concern associated with not only increased mortality and morbidity, but also with physical decline, which has wide ranging acute implications for activities of daily living and quality of life in general. Methodology Quantitative Research approach with descriptive design was used to conduct the study among 80 study subjects using purposive sampling technique. Assessment was done by Self -structured proforma to assess socio- demographic variables and Mini Nutritional Assessment (MNA) Questionnaire to assess the nutritional status among elderly population (above 60 years) in the selected area of district Pulwama. The data obtained, were analyzed using descriptive statistics for socio-demographic data. Chi-square test was also used to determine the association between the nutritional status of elderly population (above 60 years) with their selected socio-demographic variables. Results Majority of the study subjects (68%) belonged to the age group of (60-70) years, (64%) were males, (69%) of the study subjects were currently working and about 51% had middle income. As per screening scores: maximum number (47.5%) of study subjects were at risk of malnutrition, 33.8% had normal nutritional status and only 18.8% were malnourished. As per the assessment scores; majority (97.5%) of the study subjects were malnourished and only 2.5% were at risk of malnutrition and none of the study subjects had normal nutritional status. The result also showed significant association between nutritional status of elderly population (above 60 years) with socio-demographic variables like age (p=0.035) and occupation (p=0.035). CONCLUSION The findings of the study indicates that malnutrition is a significant concern among the elderly population (above 60 years) with a considerable portion of the study subjects either at risk of malnutrition or already malnourished. The assessment scores show, that the majority of participants are malnourished, with very few maintaining a normal nutritional status. Additionally, the results revealed a significant association between nutritional status with both age and occupation, suggesting that these factors play a key role in influencing the nutritional well-being of the elderly. Therefore, it can be concluded that there is an urgent need for targeted nutritional interventions to improve the health and quality of life of the elderly in this region and to prevent the adverse outcomes associated with malnutrition.

Keywords: Nutritional status, Elderly, Malnutrition, Mini Nutritional Assessment (MNA)

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BACKGROUND OF THE STUDY

Invariably, entropy prevails. There is a limit to how long each multicellular organism may grow and retain its identity when using solar energy. The organism then ages as degradation takes precedence over synthesis.1

Aging is a complicated process that includes physical, behavioral, and other changes in addition to a decline in biological functions.2

As we age, all cells undergo changes, growing bigger and losing their capacity to divide and proliferate. As we mature, pigments rise and important organs start to work somewhat. The body's tissues, organs, and cells all undergo aging-related changes that impact how well each system works.3

Aging is a physiological process that begins at birth continues throughout the life and culminates in death. Biology of aging is understood as the time related decline of the physiological functions leading to the changes in functional performance of different organ systems as well as with reduced resilience to physical cognitive and mental stressors, however there are great individual differences in these changes advanced age is associated with reduced adoptive and regenerative capacity which is leading to higher rates of morbidity.4

According to a report by WHO in 2022 People are living longer today most people can expect to live into their 60s and beyond every country in the world is experiencing growth in both sides and the proportion of older persons in the population.5

By 2030,1 in six people in the world will be aged sixty years or over .At this time the share of the population aged 60 years and over will increase from one 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 the person's aged 80 years or older is expected to triple between 2020 and 2050 to reach426 million.

While this shift in distribution of a country's population towards older ages known as population aging started in high-income countries for example in Japan 30% of the population is already over 60 years old), it is now low-and middle-income countries that are experiencing the greatest change. By 2050, two thirds of the world's population over 60 years will live in low-and middle-income countries.5

According to another report by Agarwalla in 2015 the percentage of the elderly is growing rapidly worldwide. The global number of the elderly is projected to rise from an estimated 524 million in 2010 to nearly 1500 million in 2050, with most of this increase in developing countries. According to another report by the National Institute on ageing and health, the United States 2011India's elderly population is also growing rapidly and accounted for 8.1% of total population .6

Such a rapid rise in the elderly population will definitely pose several changes. The lack of guaranteed sufficient income to support themselves, the absence of social security, loss of social status and recognition, unavailability of opportunities for creative use of time and persistent ill health are some of the daunting problems the elderly face un the country. This increases the demands on the care givers, the society and the health services of a country, 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 functional status of the elderly is their ability to carry out their day-to-day activities including preparation of food and intake, there by affecting nutritional status.6

In India, the problem of the health of the elderly is compounded by poor nutrition together with medical issues, including both communicable and non-communicable diseases. Malnutrition and morbidity create a vicious cycle. Malnutrition in older adults has been recognized as a challenging health concern associated with not only increased mortality and morbidity, but also with physical decline, which has wide ranging acute implications for activities of daily living and quality of life in general.7

The nutrition and health of the elderly is often neglected. Most nutritional intervention programs are directed towards infants, young children, adolescents, and pregnant and lactating mothers. How ever, nutritional interventions could play a part in the prevention of degenerative conditions of the elderly and an improvement of their quality of life. A timely intervention can stop weight loss in those at risk of malnutrition.

Malnutrition in older adults has been recognized as a challenging health concern Associated with not only increased mortality and morbidity but also with physical decline It has wide ranging accused implications for activities of daily living and quality of life in general.

Malnutrition is common and may also contribute to the development of the geriatric syndromes in older adults' malnutrition is known as one or more of the following factors: inadequate food intake; food choices that lead to the dietary deficiencies; and illness that causes increase in nutrient requirement, increased nutrient loss, poor nutrient absorption or a combination of these factors.

Nutritional inadequacy in the elderly can be the result of one or more factors-physiologic, pathologic, sociologic, and psychologic, physiologic decline in food intake has been seen in people as they age regardless of chronic illness and disease. Physiologic changes that decrease food intake-often referred to as the anorexia of aging-involve alterations in neurotransmitters and hormones that affect the central feeding drive and the peripheral satiation system. 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.8

Malnutrition in the old is reflected by either involuntary weight loss or low body mass index, but hidden deficiencies such as micronutrient deficiencies are more difficult to assess and therefore frequently overlooked in the community-dwelling old.7

According to report by WHO 2017 the prevalence of malnutrition in elderly persons in community ranges between 1.3% and 47.8%. The reported Prevalence is much higher in studies from low- and middle-income Countries than high-income countries.5

According to another report by the Ministry of Health and Family Welfare 2017-18, 27% of elderly people in India aged 60 and older are underweight, while 22% are overweight or obese. This indicates that the elderly in India are experiencing a dual burden of undernutrition and overnutrition. Other studies have found that the prevalence of malnutrition among the elderly in India ranges from 17.9% to 50%. The risk of malnutrition is also more than double the prevalence, and varies by geographical region. For example, the prevalence of malnutrition is highest in northern India, while the risk is highest in central India.9

Krishnamoorthy et. al in 2018, conducted a community based cross sectional study among 279 elderly population, to determine the prevalence of malnutrition and factors associated with it in rural Puducherry, India. The study results revealed that prevalence of malnutrition among elderly was found to be 17.9% (95% CI:13,7-2207) and about 58.8% (95% CI:52.9-64.4) were at risk of malnutrition which was assessed using Mini nutritional assessment (MNA) tool.10

According to another observational and cross -sectional study conducted in 2014 by Lahiri et. al among 235 elderly individuals through sample random sampling technique to estimate the prevalence of malnutrition and risk of malnutrition in Arkha village, West Bengal, India the study result revealed that 29.4% of the elderly Had Mall nutrition and 60.4% wreath risk of mall nutrition females (59.4%) were significantly more nourished than males (40.6%). 11

A community based cross -sectional study conducted by Joymati et al in 2017 among 245 elderly through convenience sampling technique to assess nutritional status in a rural area, Manipur. The study result revealed that 20.8% were malnourished &49.2% were at risk of malnourishment.12

According to another community based cross sectional study conducted by Gohar, et al in 2023, among 400 elderly partipants through simple random sampling technique to assess undernutrition among elderly in a rural area of district Gautam buddha Nagur, Utter Pradesh. The study result revealed that percentage of under nourishment we're 18%& 38%were at risk of undernutrition.13

Another community based cross sectional study conducted by Ayushree et al in 2023 among 60 participants through random sampling technique to assess malnutrition among elderly in Bolangir district, Odisha revealed that 33.3% of elderly males were normal, 43.3%underweight &23.33% were overweight similarly females 26.66% were normal, 50%were underweight & 23.33%overweight.14

The Mini Nutritional Assessment (MNA) tool has recently been designed and validated to provide a single, rapid assessment of nutritional status in elderly patients in outpatient clinics, hospitals, and nursing homes The Mini-Nutritional Assessment (MNA) is an 18-item screening tool used to identify

older adults (> 65 years) who are malnourished or at risk of malnutrition. The MNA test is composed of simple measurements and brief questions that can be completed in about 10 min. Interpretation of scores is done as follows: Score <17: Malnourished; Score 17-23.5: At risk of malnutrition; Score 23.5: Normal nutritional status.15

According to a cross -sectional community-based study by Khandhedia et al on the assessment of malnutritional status among 400 geriatric population in an urban area, Jamnagar city, Gujrat. The study result revealed that as per mini nutritional assessment (MNA) tool almost all people had normal nutrition while 30.25% were at risk of malnutrition and only 6.853% were malnourished. 15

Agarwalla in 2015 conducted a cross- sectional study among 360 elderly persons to assess nutritional status of elderly using the mini nutritional assessment (MNA) tool at Bongaon Block, Kamrup District, Assam, India. The study results revealed that 15 %were found to be malnourished and 55% were at risk of malnutrition. 6

Maintaining an adequate nutritional status as well as a sufficient nutrient intake is key to healthy ageing as defined by WHO. The treatment of malnutrition requires early identification and multimodal intervention, in hospitalized patients as well as community dwelling older adults.

Need of the study

Malnutrition is common among people aged over 60 years. As per WHO the prevalence of malnutrition in elderly persons in community ranges between 1.3% and 47.8%. In 2022 as per World health organization 2.5 billion adults were overweight while 390 million were underweight.5

Malnutrition in older adults has been recognized as a challenging health concern associated with not only increased mortality and morbidity, but also with physical decline, which has wide ranging acute implications for activities of daily living and quality of life in general. Malnutrition is common and may also contribute to the development of the geriatric syndromes in older adults. Malnutrition in the old is reflected by either involuntary weight loss or low body mass index, but hidden deficiencies such as micronutrient deficiencies are more difficult to assess and therefore frequently overlooked in the community-dwelling old.7

The health of elderly is an essential factor in determining a populations health condition. Malnutrition is especially frequent in elderly since daily food consumption declines with age. Furthermore, the food consumed is low in calories resulting to nutritional deficits and malnutrition.16

According to the 2011 census the geriatric population aged 60 years and over accounts for 8.6% of the total population in India. According to WHO in 2021 the number of elderly people in the world will increase from 1.0 billion to 1.4 billion in 2050 and there will be 2.0 billion elderly people, 80% of them will live in developing countries. The vast variety of the Reside in rural India5.

According to a study conducted by Ayushree et al, in 2023 in Odisha, reported that the risk of malnutrition among elderly was 50%14. According to another study conducted by Gohar et al in 2023 in Guatam Buddha Nagar revealed that the 38% elderly were at risk of malnutrition. 13

Acharya in 2020 conducted a study in Nepal reported that 40.4 % were at risk of malnutrition17. Another study by Shrivathsa in 2019 conducted a study in Mangaluru reported that 46.7% elderly were at risk of malnutrition.18

Mohammad, Ali, Abu Bakar, Mohamed in 2024 conducted a cross -sectional community-based study among 100 elderly patients at Minia university hospital, Egypt to assess malnutrition and to identify the main risk factors that associated with malnutrition among elderly patients with selected chronic disease. The study results revealed that more than half of the studied elderly patients with diabetes and/or HTN were at risk of malnutrition.19

Yadav, Dubey, Shukla, Sharua in 2023 conducted a community based cross sectional study among 287 elderly people in Jhalawar Rajasthan. The study results revealed that 25 .4% were found mall nourished, 41.4% were at risk of malnutrition and three 3.1% were well nourished.20

Sozer, Yagmur, Basar in 2022 conducted a community-based study among 100 elderly patients at Akdeniz University, to evaluate the malnutritional status & effective factors. The study results revealed that 21% of the elderly patients had malnutrition, 53% had a risk of malnutrition via MNA-SF scale. 21

The rising trend of declining nutritional status among the old age people should be looked as a matter of concern as very little interventions exist focusing on the elderly population, since many Stakeholders carrying out nutritional interventions have over time diverted attention to mothers and children hence ignoring the needs of the elderly.

An analysis of nutritional status is foremost for the creation of a database to assist with the initiation of important programs and formulation of policies and to take necessary intervention to improve the nutritional status of elderly population. This prompted the researchers to assess nutritional status among elderly population (above 60 years) in selected areas of district Pulwama.

Objectives

- To assess the nutritional status among elderly population (above 60 years) in the selected areas of district Pulwama.
- To find the association between the nutritional status of elderly population (above 60 years) with their selected demographic variables i.e. (age, gender, educational status, occupation, income).

Hypotheses

H_1: There is significant association between the nutritional status of elderly population (above 60 years) with their selected socio-demographic variables i.e. (age, gender, educational status, occupation, income) at 0.05 level of significance.

H_{01}:- There is no significant association between the nutritional status of elderly population (above 60 years) with their selected socio-demographic variables i.e. (age, gender, educational status, occupation) at 0.05 level of significance.

Delimitations

The study was limited to elderly population who:

- Were residents of Padgampora village.
- Comprised a sample size of 80.

Operational definitions:

- **Nutritional Status:** In this study, nutritional status is defined as the health condition of an individual as determined by the intake and utilization of nutrients, indicated by anthropometric measurements (e.g., BMI, weight, height), biochemical indicators, clinical signs, and dietary intake.
- **Malnutrition:** In this study, Malnutrition is defined as a condition where an imbalance specifically a deficiency or excess of energy, protein, and other essential nutrients adversely affects the body's shape, size, composition, and function potentially leading to clinical disease.
- **Elderly:** In this study "elderly" refers to individuals who are 60 years of age or older.

Review of literature

The review of literature has been presented in the following sections:

Section I: Studies related to prevalence of malnutrition among elderly.

Mohammad, Ali, Abu Bakar, Mohamed in 2024 conducted a cross-sectional descriptive study among 100 elderly people at Minia University Hospital, Egypt to assess nutritional status and identify the main risk factors associated with malnutrition. The study results revealed that majority (63%) of the elderly people were at risk of malnutrition, and 37% were malnourished.[19]

Sozer, Yagmur, Basar in 2022 conducted a descriptive study among 100 study subjects at Akdeniz University Medical Turkey to evaluate the nutritional status & its associated factors. The study results revealed that maximum no (53%) of the elderly people were at the risk of malnutrition as per MNA scale, and 21% of them were malnourished[21]

Section II: Studies related to association of socio- demographic variables with malnutrition among elderly.

Damyanthi, Moy, Abdullah, Dharmartne in 2015 conducted across sectional study among 999 elderly people in Kandy District, shrill Anka to determine the prevalence and associated factors of malnutrition among community dwelling older persons. The study revealed that there was statistically significant association between nutritional status and socio-demographic variable like age (p=0.008).[22]

Eldardery, Morwad, Fouadin 2018 conducted a descriptive correlational study among 189 elderly population in Egypt, to assess risk factors of malnutrition. The study revealed that there was a statistically significant association between nutritional status and socio-demographic variables such as age a (p=0.003) and educational status(p=0.026).[23]

Research Methodology

Research Approach:

In the view of the nature of the problem under study and to accomplish the objectives of the study, a quantitative research approach was found to be appropriate to assess nutritional status among elderly population (above 60 years) in Padgampora area of district Pulwama.

Research Design:

In this study non experimental research design was used for the overall research process. A subtype of this design, descriptive research design was selected from this broad area and was implemented to this study.

Variables under study:

Research Variable: In this study, the research variable is nutritional status.

Demographic variables: Socio-Demographic variables selected for this study were age, gender, educational status, occupation and income.

Research setting

The setting is the location where a study is conducted. The setting in the present study was Padgampora area of district Pulwama.

Target population

In the present study, the target population consisted of all the elderly population (above 60 years) of the Padgampora area of district Pulwama, during the period of data collection i.e. **4-7-2024 to 10-7-2024.**

Sample and sampling technique

Sample

For the present study, the sample consisted of 80 elderly individuals residing in the Padgampora area of district Pulwama, Kashmir, from 4th July 2024 to 10th July 2024, who met the inclusion criteria.

Sampling technique

In the present study, purposive sampling technique was adopted to collect data from the study subjects residing at Padgampora area of district Pulwama.

Criteria for selection of sample:

The researcher specifies the characteristics of the population by keeping inclusion and exclusion criteria in the study.

Inclusion criteria: The study included,

 Study subjects who:

- Were 60 years of age and above.
- Were permanent residents of the area.
- Were accessible at the time of data collection.
- Gave consent for the study.

Exclusion criteria: The study excluded,

Study Subjects who were:

- Under 60 years of age
- Not accessible due personal reasons.
- Critically ill.

Data collection tool and technique:

As the study aimed to assess the nutritional status among the elderly population (above 60 years) in Padgampora area of district Pulwama. Therefore, a self-structured proforma for socio-demographic variables was prepared and a standardized MNA questionnaire was used to assess nutritional status among elderly population (above 60 years).

Development of tool

The tool was developed on the basis of:

- Objectives of the study
- Consultation of guide/ co-guide
- Extensive review of literature-related literature reviews like books, journals, articles, periodicals, published and unpublished research studies were reviewed and used for development of tool.
- Discussion with experts
- Informed discussion with peer group
- Personal experience.

The following steps were involved in the development of the tool:

- Content validity of the tool
- Reliability testing of the tool

Description of tool: The tool used in the study was a self -structured proforma for socio-demographic variables and a standardized tool (Mini Nutritional Assessment) Questionnaire.

The data collection tool comprises of two parts:

Part I: Socio- demographic variables. It consisted of 5 items viz: age, gender, educational status, occupation and income.

Part II: Mini Nutritional Assessment (MNA) Questionnaire for assessing the   nutritional status.

The MNA was developed jointly by "Nestlé Research Centre and Toulouse University France" in 1991. The tool consists of 18 items that evaluates 4 different aspects viz:1. Anthropometric measurements: weight loss, weight, height, mid-arm circumference, calf circumference 2. General Assessment: lifestyle, medication, acute disease, mobility, neuropsychological problems, and skin lesions 3. Dietary assessment: number of meals, food and fluid intake, appetite, and feeding mode 4. Subjective assessment: self-perception of nutritional status and comparison of own health.

Table 1.1: DATA COLLECTION TOOL

Section	Items	No of items
1.Socio-demographic variables	Age	1
	Gender	1
	Educational status	1
	Occupation	1
	Income	1
	TOTAL	5
2.MNA Questionnaire	Screening part	6

	Assessment part	12
	TOTAL	18

Table 1.2: SCORING CRITERIA

CATEGORISATION	SCORE	PERCENTAGE SCORE
Normal nutritional status	24-30 points	80%-100%
At risk of malnutrition	17-23.5 points	56.67%-78.33%
Malnourished	Less than 17 points	Less than 56.67%
MAXIMUM SCORE=30 POINTS, MINIMUM SCORE=0 POINTS		

Reliability of tool:

The reliability was calculated by using **Karl persons coefficient of correlation. The** calculated reliability for screening and assessment indicators of malnutrition was **"r = 0.86"** and **"r = 0.82".** The tool was found to be reliable.

Ethical clearance:

- Prior to the study**,** permission was obtained from institute of Ethical Committee of IUST
- Informed consent was obtained from study subjects
- Anonymity and confidentiality of the study subjects who contribute to the study was maintained.
- Permission was taken from the head of the community.

Pilot Study:

- After obtaining formal administrative approval from The Block Development Officer Awantipora, the pilot study was conducted on 10% of sample (elderly people) by using purposive sampling on **1-07-2024** to estimate the feasibility of the study.

- The purpose of the study was explained and informed to the elderly people who were willing to participate in the study.
- The assessment of socio- demographic variables was done using self- structured proforma and Mini Nutritional Assessment (MNA) Questionnaire, which took about **15-20 minutes.**
- The study was found feasible and researchable
- The sample selected for pilot study was excluded in the actual study

Data Collection Procedure:

- The main study was conducted from **4-7-2024 to 10-7-2024** after getting written permission from BDO Awantipora.
- Non probability purposive sampling technique was used to select the accessible population for the study. Only those study subjects were selected who were full filling the inclusion criteria.
- Sample of 80 study subjects from Padgampora area of district Pulwama.
- The process and purpose of the data collection was explained to the subjects. Informed consent was obtained from each study subject.
- During the whole process, privacy and confidentiality of subjects was considered.

Steps used for data collection:

- The investigator introduced themselves to the head of the community, explained the purpose of the study to them and took permission from them to collect the data from the study subjects.
- The researchers then visited home to home to collect data from study subjects. The group divided into two subgroups to collect data.
- Both subgroups visited families and greeted family members, introduced ourselves and explained the purpose of the study to them.
- Information sheet was given to the study subjects and were explained the procedure of the study. They were informed that their privacy and confidentiality would be maintained, the collected information would be used only for the research purpose and anonymity would be maintained.

- Informed written consent was obtained from the study subjects to confirm their willingness to participate The data was collected individually from each study subject.

- The data was collected from **10-14 subjects** by both groups each day including Sundays and data was collected for 1 week.

- The socio-demographic data from the subjects was collected by using self- structured proforma which took 5 minutes individually for each subject.

- The nutritional assessment was done using standardized tool Mini Nutritional Assessment (MNA) questionnaire, which took on an average 10-15 minutes/subject.

- The results of the data collected were recorded on the master data sheet and analyzed using descriptive and inferential statistics.

Plan for data analysis

Data analysis was done on an MS Windows-based computer. The data were first keyed into a Microsoft Excel spreadsheet and cleaned for any inaccuracies. Statistical analysis was done using IBM SPSS Statistics for Windows from IBM Corp. (released 2020, Version 27.0. Armonk, NY, USA). Categorical variables were shown in the form of frequencies and percentages. The association was done using the chi-square test and $p<0.05$ was treated as significant. The data collected was organized, analyzed, and interpreted by using descriptive and inferential statistics.

Organization and presentation of data:

The data and findings have been organized and presented under the following sections

Section I: Frequency and percentage distribution of socio-demographic variables (age, gender, educational status, occupation, income).

Section II: i. Frequency and percentage distribution of Screening score.

ii. Descriptive statistics of Screening score.

iii. Frequency and percentage distribution of Assessment score.

iv. Descriptive statistics of Assessment score.

Section III: **i.** Association of socio demographic variables with Screening score

ii. Association of socio demographic variables with Assessment score

Section I: Frequency and percentage distribution of socio-demographic variables (age, gender, educational status, occupation, income).

This section deals with distribution of study subjects according to socio-demographic variables. The data obtained was in terms of age, gender, education status, occupation and income which provides background information of the study subjects and has been presented in the form of following tables and figures:

SOCIO-DEMOGRAPHIC VARAIBLE		PERCENTAGE (%)	FREQUENCY (F)
Age (in years)	60-70	68%	54
	71-80	33%	26
	>80	0%	0

Table 1.4: Frequency and percentage distribution of study subjects according to age.

This section deals with distribution of study subjects according to socio-demographic variables. The data obtained was in terms of age, gender, education status, occupation and income which provides background information of the study subjects and has been presented in the form of following tables and figures:
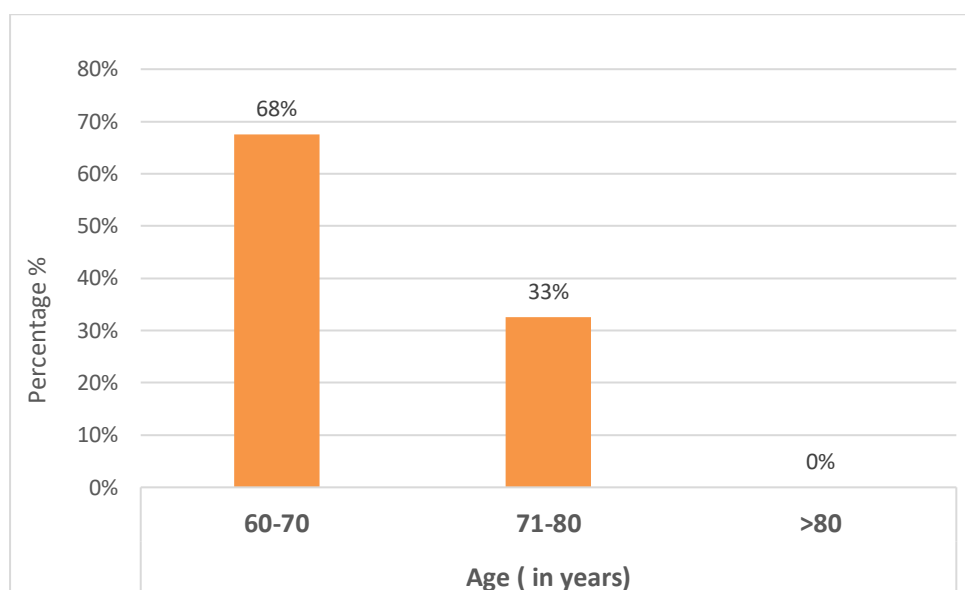

Figure 1.1: Frequency and percentage distribution of study subjects according to age.

Data presented in table 1.4 and figure 1.1 shows that the majority **(68%)** of study subjects belonged to age group 60-70 years, **33%** belonged to 71-80 years and none were over 80 years.

Table 1.5 : Frequency and percentage distribution of study subjects according to gender.

(N=80)

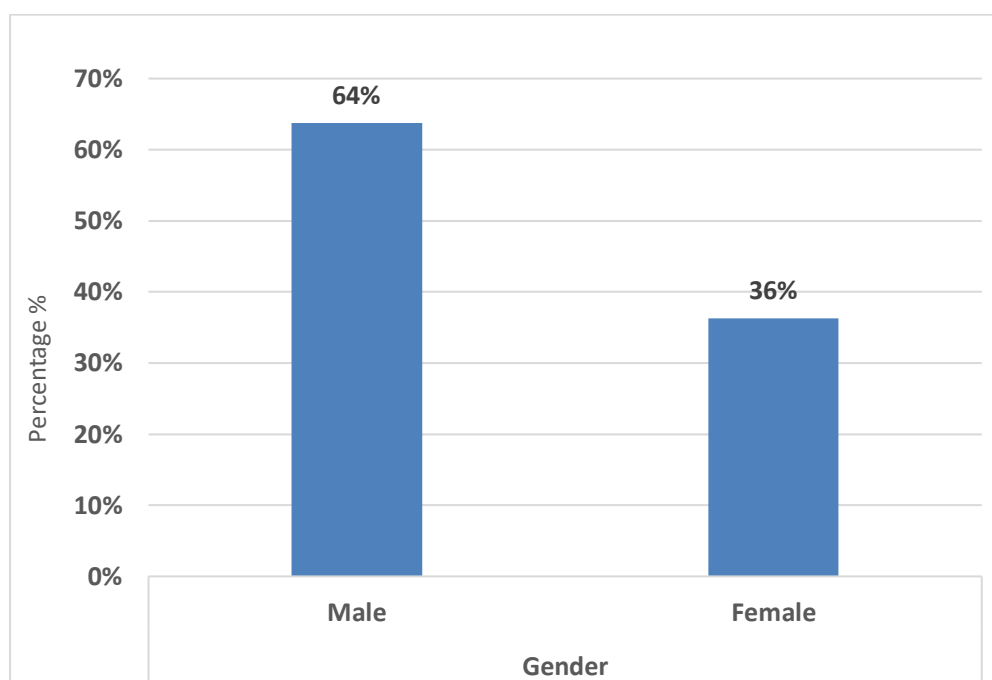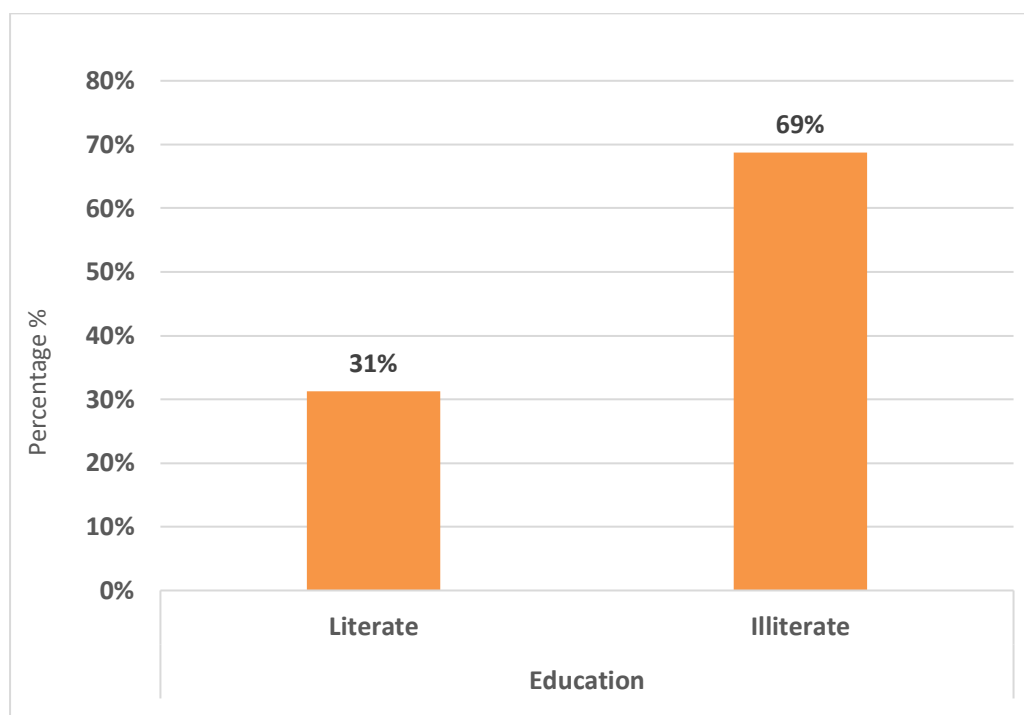| SOCIO- DEMOGRAPHIC VARIABLE		PERCENTAGE (%)	FREQUENCY (F)
Gender	Male	64%	51
	Female	36%	29

Figure 1.2: Frequency and percentage distribution of study subjects according to gender.

Data presented in table 1.5and figure 1.2 shows that majority **(64%),** of study subjects were male while **36%** were female.

Table 1.6: Frequency and percentage distribution of study subjects according to education.

(N=80)

SOCIO DEMOGRAPHIC VARIABLE		PERCENTAGE (%)	FREQUENCY (F)
Education status	Literate	31%	25
	Illiterate	69%	55

Figure 1.3: Frequency and percentage distribution of study subjects according to Education.

Data presented in table1.6 and figure 1.3 shows that majority **(69%)** of study subjects were illiterate, while **31%** were literate.

Table 1.7: Frequency and percentage distribution of study subjects according to Occupation.

N= 80

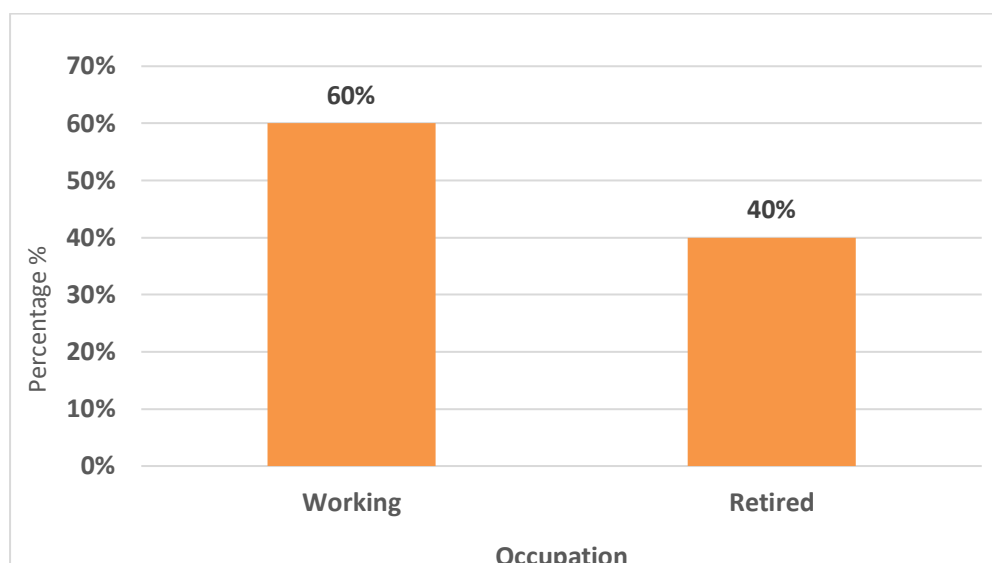| SOCIO -DEMOGRAPHIC VARIABLE		PERCENTAGE (%)	FREQUENCY (F)
Occupation	Working	60%	48
	Retired	40%	32

Figure 1.4: Frequency and percentage distribution of study subjects according to Occupation.

Data presented in table 1.7 and figure 1.4 shows that majority of study subjects **(60%)** were currently working, while **40%** were retired.

Table 1.8: Frequency and percentage distribution of study subjects according to Income.

N= 80

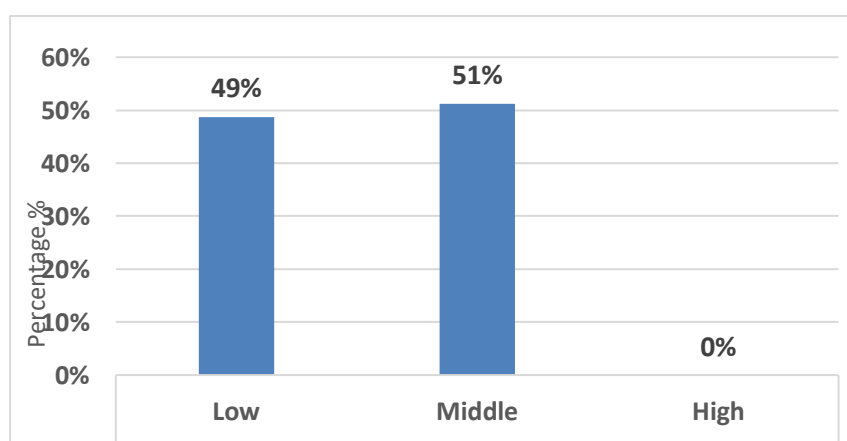| SOCIO -DEMOGRAPHIC VARAIBLE		PERCENTAGE (%)	FREQUENCY (F)
Income	Low	49%	39
	Middle	51%	41
	High	0%	0

Figure 1.5: Frequency and percentage distribution of study subjects according to Income.

The data presented in the table1.8 and figure1.5 show that the majority of study subjects **(51%)** had middle income, **49%** had low income, and none had high income.
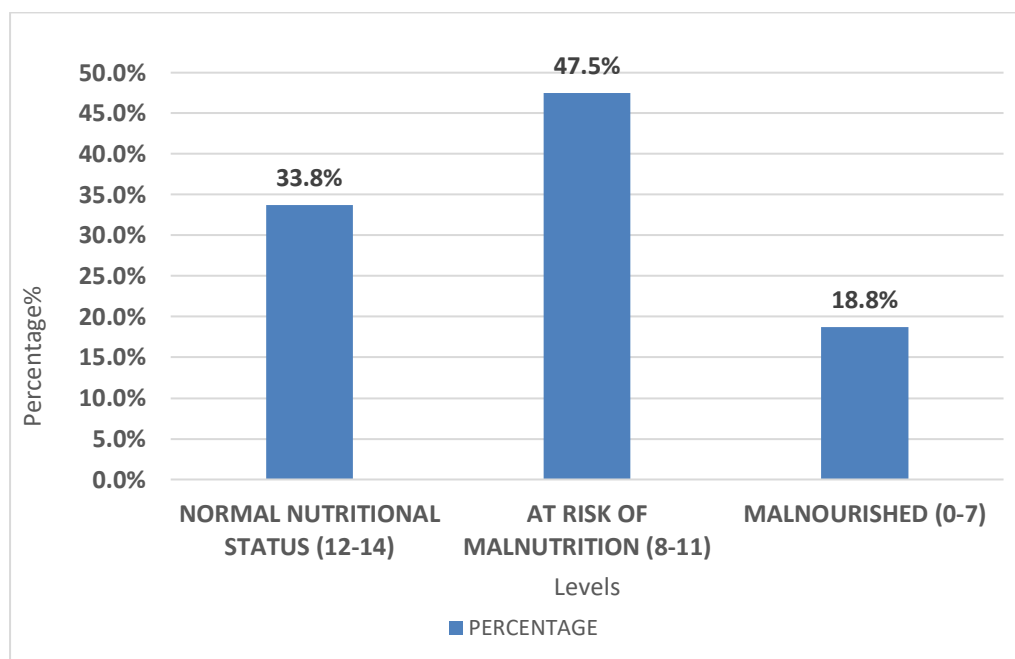
Section II

Table 1.9: Frequency and percentage distribution of Screening score.

N=80

CRITERIA MEASURE OF SCREENING SCORE		
CATEGORY SCORE	PERCENTAGE	FREQUENCY
NORMAL NUTRITIONAL STATUS (12-14)	33.8%	27
AT RISK OF MALNUTRITION (8-11)	47.5%	38
MALNOURISHED (0-7)	18.8%	15

Maximum Score=14 Minimum Score=0

Figure 1.6: Frequency and percentage distribution of Screening score.

The data presented in Table 1.9 and figure 1.6 shows that, maximum number of study subjects **(47.5%)** were at risk of malnutrition ,**33.8%** of the study subjects had normal nutritional status and **18.8%** were malnourished.

ii. Descriptive statistics of Screening score.

Table 2: Descriptive statistics of pre-test level of Screening Scores.

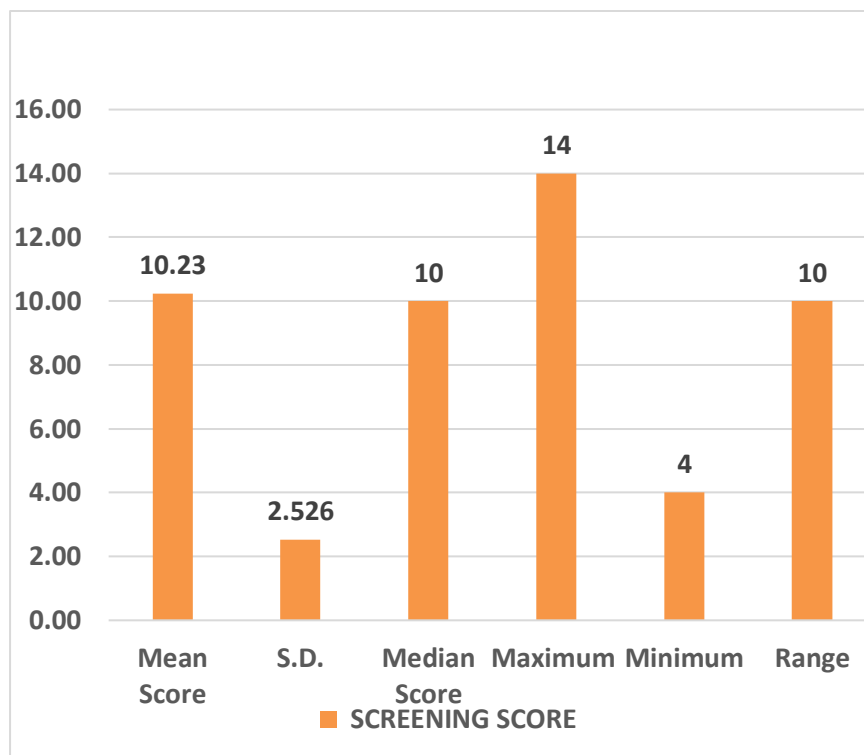| DESCRIPTIVE STATISTICS	Mean	SD	Median	Maximum	Minimum	Range	Mean %
SCREENING SCORE	10.23	2.53	10.00	14	4	10	73.0

Maximum= 14 Minimum= 0

Figure 1.7: Bar graph representing descriptive statistics of Screening Scores.

The data presented in the table 2 and figure1.7 shows that the average screening score was 10.23 with a standard deviation of 2.53, indicating moderate variability in scores. The median score was 10.00, showing that half of the participants scored above and half below this value. The scores ranged from a minimum of 4 to a maximum of 14, giving a range of 10. The mean percentage score was 73.0%, reflecting the overall performance of the participants in the screening.

iii. Frequency and percentage distribution of Assessment score.

Table 2.1: Frequency & Percentage distribution of Assessment Scores

CRITERIA MEASURE OF ASSESSMENT SCORE		
CATEGORY SCORE	**PERCENTAGE**	**FREQUENCY**
NORMAL NUTRITIONAL STATUS (24-30)	0.0%	0
AT RISK OF MALNUTRITION (17-23.5)	2.5%	2
MALNOURISHED (0-16)	97.5%	78

Maximum Score=30 Minimum Score=0

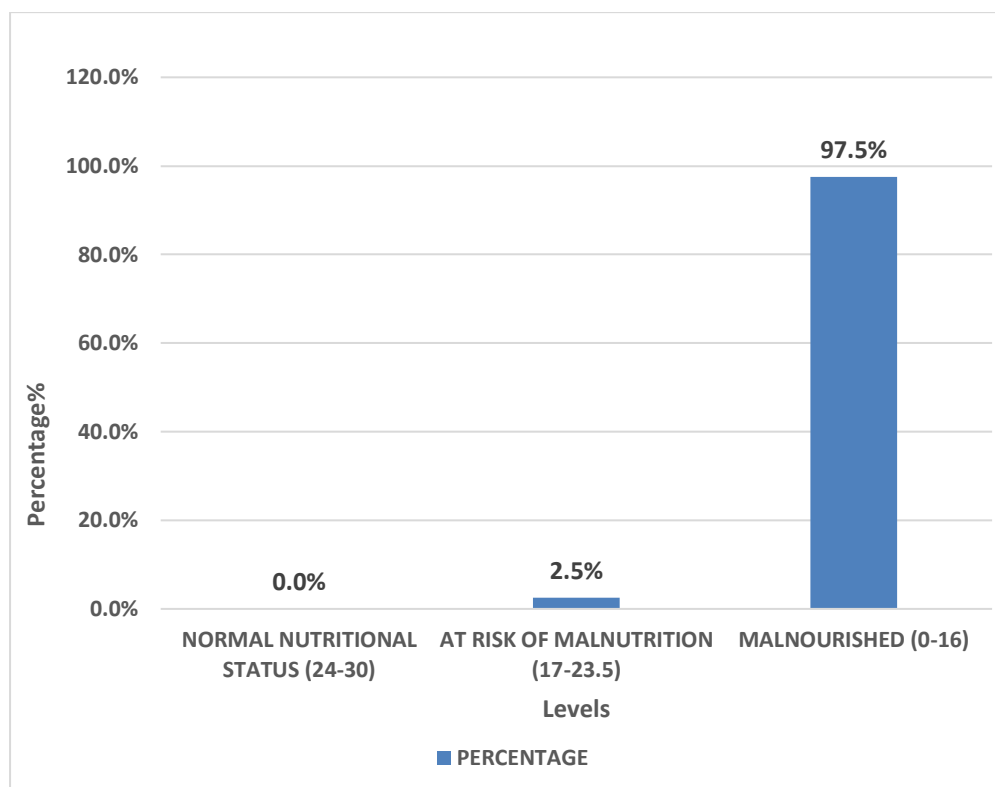**Figure 1.8: Percentage distribution of Assessment score.**

iv. Descriptive statistics of Assessment score.

Table 2.2: Descriptive statistics of pre-test level of Assessment Scores.

N =80

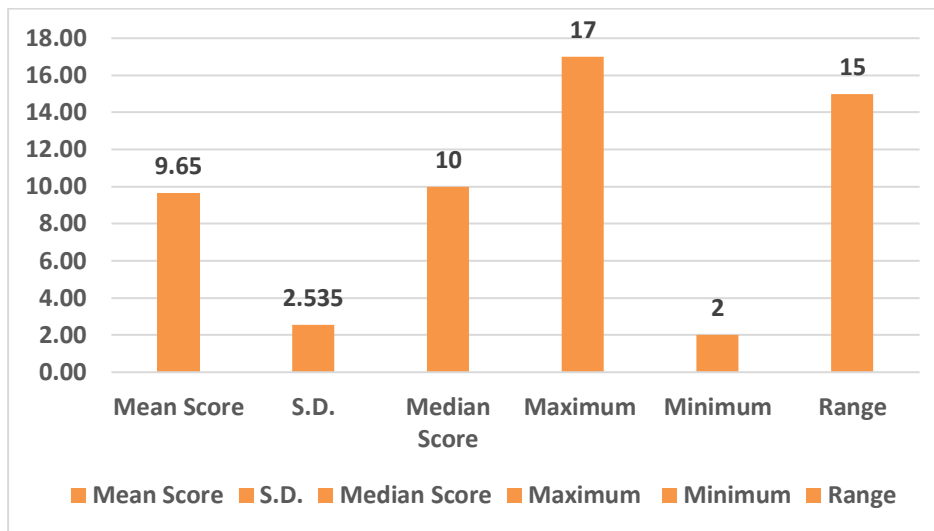| DESCRIPTIVE STATISTICS	Mean	SD	Median	Maximum	Minimum	Range	Mean %
ASSESSMENT SCORE	9.65	2.54	10.00	17	2	15	32.2

Maximum= 30 Minimum= 0

Figure 1.9: Diagram representing descriptive statistics of Assessment Score.

The data presented in the table 2.2 and figure 1.9 shows that the mean assessment score was 9.65 with a standard deviation of 2.54. The median score was 10.00. Scores range from a minimum of 2 to a maximum of 17, giving a range of 15. The mean percentage score was 32.2%.

Section III Association of socio demographic variables with Screening score.

Table 2.3 : Showing Association of Screening Scores and Socio Demographic Variables

N=80

SOCIO-DEMOGRAPHIC VARIABLES		NORMAL NUTRITIONAL STATUS	AT RISK OF MALNUTRITION	MALNOURISHED	Chi Test (χ^2)	df	P Value
		N= 80					
Age (in years)	60-70	21	27	6	6.690	2	0.035*
	71-80	6	11	9			
	>80	0	0	0			
Gender	Male	14	25	12	3.436	2	0.179
	Female	13	13	3			
Education	Literate	11	9	5	2.175	2	0.337
	Illiterate	16	29	10			
Occupation	Working	20	23	5	6.677	2	0.035*

		NORMAL	AT RISK	MALNOURISHED	Chi	df	P Value
	Retired	7	15	10			
Income	Low	14	16	9	1.535	2	0.464
	Middle	13	22	6			
	High	0	0	0			

* Significant at 0.05 level of significance.

The data presented in the table 2.3, depicts that, there was statistically significant association between nutritional status (screening scores) of elderly population with socio-demographic variables like ,age (p=0.035) and occupation (p=0.035) at 0.05 level of significance ,hence the researcher rejected the null hypotheses for these variables while no association was found with other socio-demographic variables like gender(p=0.179),educational status (p=0.337),and income(p=0.464),hence the researcher failed to reject the null hypothesis for these variables

Association of socio demographic variables with Assessment score.

Table 2.4: Association of Assessment Scores and Socio-demographic Variables

N=80

SOCIO-DEMOGRAPHIC VARIABLES		N= 80			Chi Test (χ^2)	df	P Value
		NORMAL NUTRITIONAL STATUS	AT RISK OF MALNUTRITION	MALNOURISHED			
Age (in years)	60-70	0	1	53	0.286	1	0.593[NS]
	71-80	0	1	25			
	>80	0	0	0			
Gender	Male	0	1	50	0.168	1	0.682[NS]
	Female	0	1	28			
Education	Literate	0	1	24	0.336	1	0.562[NS]
	Illiterate	0	1	54			
Occupation	Working	0	2	46	1.368	1	0.242[NS]
	Retired	0	0	32			
Income	Low	0	0	39	1.951	1	0.162[NS]

	Middle	0	2	39			
	High	0	0	0			

NS- non-significance

The data presented in the table 2.4, depicts that, no significant association was found between nutritional status (assessment score) of the elderly population (above 60 years) with socio-demographic variables like age (p=0.593), gender (p=0.682), educational status(p=0.562), occupation (p=0.242) and income (p=0.162), hence the researchers failed to reject the null hypothesis.

DISCUSSION

The study revealed that majority (68%) of subjects belonged to the age group 60-70 years, 33% belonged to 71-80 years and 0% were above 80 years of age. Most of participants were illiterate, while 31% were literate. Maximum number of the study subjects (60%) were currently working, while 40% were retired. Most of the study subjects (51%) had middle income, (49%) of the study subjects had low income, and, none had high income.

These findings of the study were consistent with the findings of the similar study, conducted by Krishnamoorthy et al in 2016 among 279 participants, to assess the prevalence of malnutrition and its associated factors among elderly in Puducherry, India. The results showed that (63.8%) of the study subjects were in the age group of 60–70 years, and (74.6%) had no formal education. 10

As per the screening score, the present study revealed that majority (47.5%) of the study subjects were at risk of malnutrition, (33.8%) had normal nutritional status while, (18.8%) were malnourished. The findings of the study were consistent with the finding of the similar study conducted by Joymatiet al in 2017 among 245 elderly people in Kong pal, Manipur to assess the prevalence of nutritional status among elderly. The study results revealed that that majority (49.2%) of the study subjects were at risk of malnutrition, (20.8%) were malnourished. 12

As per the Assessment Score, the findings revealed, that majority (97.5%) of the participants were malnourished, only 2.5% were at risk of malnutrition and none had normal nutritional status. These finding were consistent with the findings of a descriptive cross -sectional study conducted by Moly, Monisha, Biju, Shajan in 2022 among 170 elderly people, to determine the prevalence of malnutrition and its contributing factors in selected rural areas of Kerala. The study results revealed that, the maximum number of the study subjects (46.6%) were at risk of malnutrition,24.8% had normal nutritional status and 28.6% were malnourished. 26

The present study revealed that, there was a statistically significant association between nutritional status (screening scores) of elderly population with socio-demographic variables like, age (p=0.035) and occupation (p=0.035) at 0.05 level of significance, while no association was found with other socio-demographic variables like gender(p=0.179), educational status (p=0.337), and income(p=0.464).

The results were consistent with the findings of the similar study conducted by Damayanthi in 2015 among 999 participants in Kendy district Srilanka, to determine the prevalence and associated factors of malnutrition among Community- dwelling older persons. The study result revealed that in the multivariate analysis age was associated with malnutrition (p=0.008). 21

The findings of present study showed, no significant association was found between nutritional status (assessment score) with demographic variables that is age (p =0.593) gender (p= 0.682), education (p=0.562) income p =0.162).

These finding are in contrast with the study conducted by Olawami in 2020 conducted among 340 patients Family Medicine clinic of amino Kano Teaching Hospital, Northern Nigeria, to determine nutritional status and its association with socio-demographic variables. The study revealed that there was a significant association between nutritional status (assessment score) of the elderly population with socio-demographic variables age(p<0.001), Educational status (P=0.003) & Income (p<.001) with malnutritional.

CONCLUSIONS

In the present study it was concluded that malnutrition is widely prevalent in elderly people, about 18.8% and 97.5% of study participants were malnourished as per screening and assessment scores. Malnutrition in elderly is a serious health concern, yet very few interventions focus on this vulnerable population. Many stakeholders in nutritional programs have shifted their attention towards mothers and children, neglecting the needs of elderly. Hence the study concluded that more stress should be paid to the nutritional care of elderly to improve their quality of life and to them from the complications that malnutrition lead. Lower income group should receive particular attention to meet their special needs. The promotion and implementation of low cost, prevention-based initiatives such as health, nutrition, and physical education could significantly enhance the possibility of maintaining good nutritional status for the elderly.

Therefore, a multidisciplinary approach to improve nutritional status of elderly should be an essential aspect which is to be stressed upon. Further research is needed to develop appropriate interventional programs and guidelines for control and prevention of malnutrition among the elderly.

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