

PREVALENCE AND ASSOCIATED FACTORS OF MALNUTRITION AMONG ELDERLY AGED 60 YEARS AND ABOVE AT OPD KIBOGA GENERAL HOSPITAL IN KIBOGA DISTRICT. A CROSS-SECTIONAL STUDY.

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ABSTRACT

Background

Malnutrition refers to a state of either undernutrition or overnutrition. Undernutrition occurs when the diet a person consumes does not meet their body's requirements for growth and development while overnutrition occurs when they consume too many calories. Undernutrition may manifest as low body weight for age.

Methodology

A cross-sectional study was used to investigate factors influencing the nutritional status of the elderly aged 60 years and above in Kiboga General Hospital, Kiboga district. The researcher used this study design to collect both quantitative and qualitative data within a short period to explain the relationship between factors influencing the nutritional status of elderly patients, functional ability, and consequences of malnutrition in the elderly.

Results

The prevalence of undernourished was 47.9% based on mid-upper arm circumference (MUAC). There was a significant difference between the prevalence of malnutrition by sex; 71.9% of women were undernourished (average MUAC=20.0cm) compared to 28.1% of men. Those who had adequate knowledge regarding malnutrition had a higher education level. 80.7% of the malnourished elderly had a low-income level (poor) thus they were unable to have 3 meals or more meals each day or to buy food supplements.

Conclusion

This study found out that almost half of the elderly participants were malnourished, with females being highly malnourished than men, majority of the elderly had adequate knowledge about malnutrition due to continuous health education given in the hospital. Furthermore, the study revealed that most of the elderly were poor this in turn affected the frequency, quantity, and quality of food they fed on.

Recommendations

The elderly need to be incorporated into health programs and policies based at local government levels as is the case with pregnant and under five (5) children.

Keywords: Prevalence, Malnutrition, Elderly Aged 60 Years, Kiboga General Hospital.

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Background of the study.

Malnutrition refers to a state of either undernutrition or overnutrition. Undernutrition occurs when the diet a person consumes does not meet their body's requirements for growth and development whereas overnutrition occurs when a person consumes too many calories. (UNICEF 2016).

According to (Abate et al 2020) Globally, about 13–78% of older adults are suffering from malnutrition. Malnutrition in hospitalized adults and its subsequent health consequences are highly prevalent worldwide and have been described for decades (Santos et al., 2023). According to (Krishnamoorthy et al., 2018) Studies around the world showed the prevalence of malnutrition among the elderly ranging from 13% to 54% Contrary, another study reported that the prevalence of malnutrition among old age people varies between 1.1% and 72.2% in different settings (Ghimire et al., 2018). In Brazil,

malnutrition among the elderly was found to be 2.8%, whereas women presented a higher rate (31.5%). Women with a good overall health status showed a lower rate than men, 55% and 69%, respectively (Son & Kavak, 2018). A study done in India reported the prevalence of malnutrition among the elderly to be 17.9%. The prevalence of obesity was found to be 32.5% and 38.4% had inadequate fruit and vegetable intake. About 250 (89.6%) are living independently according to the ADL score (Krishnamoorthy et al., 2018).

In Africa, from a meta-analysis from all African countries the prevalence of malnutrition among the elderly was found to be ranging from 2.2 to 77.3% across Africa, the pooled prevalence of malnutrition was 18%. The prevalence is higher in Central Africa at 3.8% in the community at 3.1% and among advanced age at 3.5% (Seid & Fentahun, 2022). Contrary, another twenty studies' data was extracted as the malnutrition prevalence

was between 6 to 54% among older persons in Sub Sahara Africa. It was found that the prevalence of malnutrition varies and could be as high as 28.4% in a low socio-economic status area. Of these studies, twelve (12) provided data on undernutrition with prevalence ranging from 2.9 to 41%; ten (10) provided data on overweight 8.1–54.1% and 5 on obesity 2.7–44.7%. According to (Obeng et al., 2022) Seventeen of the studies evaluated factors associated with malnutrition; four (4) studies revealed the association between socioeconomic status and malnutrition, seven (7) studies reported a significant association between dietary habits and malnutrition (Obeng et al., 2022). According to (Obeng et al., 2022) Four studies showed an association between educational status and malnutrition.

According to (Ewunie et al., 2022) The pooled prevalence of under-nutrition in Africa was 17%. The prevalence of malnutrition among the elderly varied significantly across countries, ranging from 1.8% in South Africa to 39.47% in Kenya.

In East Africa, according to a study in Ethiopia, the overall prevalence of malnutrition in the Metu district was found to be 17.5%. The prevalence of malnutrition in urban and rural residences was 9.9% and 25.2% respectively (Ferede et al., 2022).

In Uganda, As the poverty levels remain high in sub-Saharan Africa 64% of Uganda's geriatric lives below the poverty line; which fosters a high risk of malnutrition. According to (Taremwa et al 2018) Socio-ecological and geographical aspects further amplify the situation, for example, 84.3% of the population of the Kween district depended on subsistence farming. As environmental factors have hindered agronomic yields, there has been a discernible poor quality of life. These combined with rapid population growth, cattle rustling practices among the Karamajong have exacerbated food insecurity. These complex factorial interplays fostered low standards of living, which prompted poor feeding and quality of life. These may portend the recently launched Sustainable Development Goals (SDGs) that seek to attain sustainable development in a balanced manner for all aspects of society, at all ages, with a particular focus on the most vulnerable, which includes older persons. The geriatric population cuts through a section of varied goals, namely: poverty eradication, good health, gender equality, economic growth, decent work, reduced inequalities, and sustainable cities (Alphas et al., 2018). The study aims to determine the prevalence of malnutrition among the elderly aged 60 years and above in Kiboga General Hospital in Kiboga District.

METHODOLOGY

Study design;

A cross-sectional study was used to investigate factors influencing the nutritional status of the elderly aged 60 years and above in Kiboga General Hospital, Kiboga district. The researcher used this study design to collect both quantitative and qualitative data within a short period to explain the relationship between factors influencing the nutritional status of elderly patients, functional ability, and consequences of malnutrition in the elderly.

Study area

The study was conducted in Kiboga General Hospital, Kiboga District in Central Uganda. Kiboga is bordered by Nakaseke District to the northeast and east, Mityana District to the south, Mubende District to the southeast, and Kyankwanzi District to the northwest. The district is located in a flat and rolling topographical zone. It is to be carried out between 2nd July and 28th July 2023.

Study population

The study focused on the elderly aged 60 years and above who consented to participate in the study including only those who were present at the time of data collection in the Kiboga General Hospital which was the study area.

Sample size determination

The sample size was determined using *Kish and Lishe's* 1967 formula.

$$N = \frac{X^2 pq}{y^2}$$

Where;

N=desired sample size

The standard normal deviation is usually set at 1.96 which corresponds to a 95% confidence level

P=proportion of survey population with particulars under investigation and where it is unknown, 50% is used.

q=probability that the researcher will get a certain amount of error. 50% has been considered to cater for that

y=degree of accuracy which ranges from 0.01-0.1

Therefore, it is; $(1.96)^2 \times 0.5 \times 0.5 / (0.09)^2 = 118.5$

Therefore, a sample size of 119 respondents will be used for convenience purposes.

Inclusion criteria.

All elderly patients aged 60 years and above in Kiboga General Hospital who are voluntarily willing to participate in the study.

Exclusion criteria

Unwilling patients.

Patients out of the age bracket that is below 60 years.

Mentally ill patient

Sampling technique

A non-probability convenience sampling technique was used to recruit the desired sample size because using this method respondents are easy to access, it was relatively cheaper and time-conscious.

Sampling procedure

Using a convenient sampling technique, elderly aged 60 years and above in Kiboga were conveniently recruited, specifically, those who were willing to participate in the study and present at the time of data collection.

Data collection method.

The researcher used the questionnaire method, and anthropometry measurement method to collect data from the respondents

Data collection tool

A self-administered questionnaire was designed to collect data from the elderly patients to assess the demographic

data, prevalence, knowledge, and socioeconomic data, Anthropometry measurement tools like weighing scales, and shaker's tape height boards were used to collect data to assess the nutritional status of the elderly. Other tools like pens MNA –SF, calculators, and papers were also used to record data from respondents.

Data collection procedure

The researcher introduced himself to the caretakers and the elderly patient, then explained the procedures, meaning of the study, level of confidentiality, and purpose of the study. The researcher sought consent by offering a consent form to voluntary participants who were to be administered the questionnaires thereafter. The researcher then requested the respondents to fill the gaps where necessary or tick in the box with appropriate answers (yes or no), those respondents who were unable to read and write were helped to read and interpret questions in Luganda and also guided when answering by research assistants.

Piloting the study

The study tools were initially tested on 5 elderly patients or caretakers of the patients at Kiboga General Hospital to check the effectiveness of the questionnaires and rectify any errors before actual data collection was done.

Dependent variable

Prevalence of the elderly aged 60 years and above in Kiboga General Hospital

Independent variables

Factors associated with malnutrition among the elderly aged 60 years and above.

Quality Control

The researcher ensured quality by having clear inclusion and exclusion criteria for the respondents. Patients of age 60 years and above were included in the study and those less than 60 years were excluded from the study.

For quality data collection, two research assistants were recruited and trained by the principal researcher. The

research assistants were required to have a minimum of Uganda Certificate of Education (UCE) with adequate knowledge in English and Luganda languages. The researcher assistants were trained in aspects of conducting interviews, how to translate the questions in the questionnaire form and the questionnaire form, how to handle respondents ethically, and how to record data in readable handwriting. More so quality control was enhanced by conducting a pilot study, pretesting of the questionnaire, and statistical analysis of the study findings.

Data Analysis and Presentation

Data was recorded, categorized, coded, and analyzed manually tallying using summarized data master-sheet and reviewed for accuracy, consistency, and completeness. Later data will be analyzed using SPSS (Statistical Package for Social Sciences) and results will be presented using graphs, pictures, and tables.

Ethical considerations;

A letter of introduction to the facility was obtained from Medicare Health Professional's College; Permission was sought from the DHO Kiboga district and medical superintendent to carry out a study in their areas of jurisdiction.

Individuals were enrolled in the study based on their informed consent. Local leaders and concerned authorities are to be informed about the significance of the study.

The ethical consideration of the study was maintained whereby the researcher avoided plagiarism in the study. *Wallace (2015)*, defined plagiarism as "the act of using another person's word or ideas without giving credit to that person.

Confidentiality was assured during the research process whereby acquired information is to be kept safe without disclosure to the third party and correct handling of the research materials that is to be used in data collection. (*Guraya 2014.*), broadly defines confidentiality as; Nondisclosure of certain information except to another authorized person.

Findings

Demographic data

Table 1: Socio-demographic characteristics of the respondents (n=119)

Characteristics	Alternative	Frequency	Percentage (%)
Age	60 – 69	47	39.5
	70 – 79	35	29.4
	80 – 89	20	16.8
	90 and above	17	14.3
Sex	Female	82	68.9
	Male	37	31.1
Religion	Catholics	23	19.3
	Anglican	19	16.0
	Moslems	20	16.8
	Born again	17	14.3
	Others	40	33.6
Tribe	Muganda	33	27.7
	Munyarwanda	17	14.3
	Munyankole	12	10.1
	Iteso	5	4.2
	Musoga	3	2.5
	Others	49	41.2
Education level	No formal education	69	58.0
	Primary	36	30.3
	Secondary	8	6.7
	Tertiary/Institution	6	5.0
Residence	Urban	32	26.9
	Rural	87	73.1
iPadmarital status	Single	45	37.8
	Married	27	22.7
	Others	Job/occupation	39.5
Job / occupation	Employed	17	14.3
	Unemployed	92	77.3
	Retired	10	8.4

According to the respondents in the table 1 the majority of the respondents were females 82(68.9) and the age group of the 47(39.5%) respondents was 60- 69 years. Most of the respondents who participate were belonging to other religions (40(33.6%)) rather than the commonly known religions. on the education level, 69(58.0%) did not go to school, 36(30.3%) attained primary level, 8(6.7%) attained secondary level and only 6(5.0%) attained tertiary/university level. On residence of the

respondents, the majority 87(73.1%) stayed in the rural areas while 32(26.9%) stayed in the urban areas. Following the marital status of the respondents, the majority 47(39.5%) were either divorced or widowed, 45(37.8%) were single, and 27(22.7%) were married. On the occupation of the respondents, 92(77.3%) were unemployed 17(14.3%) were employed and 10(8.4%) were retired.

Prevalence of malnutrition

Table 2: showing the prevalence of malnutrition among the elderly n=119.

Status	Frequency	Prevalence (%)
Malnourished	57	47.9
Nonmalnourished	62	52.1
Total	119	100

The majority 62(52.1%) of the respondents were nonmalnourished while 57(47.9%) were malnourished elderly.

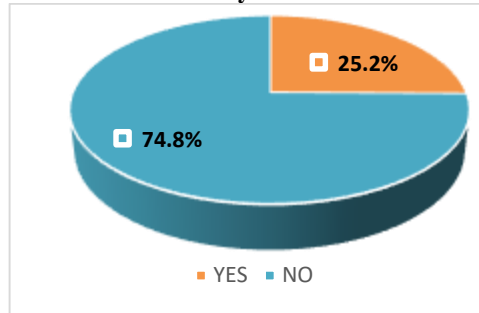
Table 3: showing the prevalence of malnutrition by sex n=57.

sex	Malnourished	Nonmalnourished
Males	16 (28.1%)	21 (33.9%)
Females	41 (71.9%)	41 (66.1%)
Total	57 (100%)	62 (100%)

The majority 41(71.9%) of the malnourished respondents were females and 16(28.1%) were males.

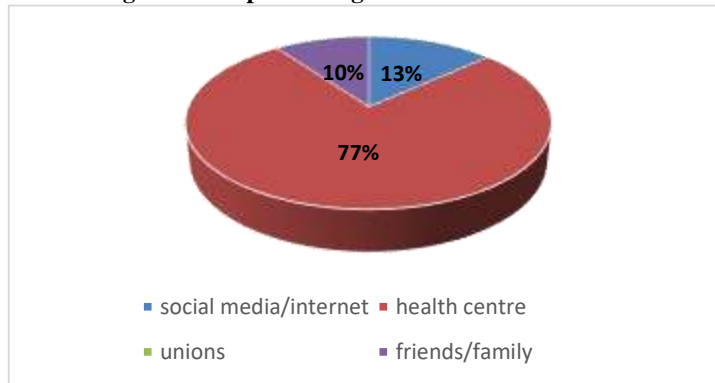
Knowledge of the elderly about malnutrition among the elderly aged 60 years and above.

Figure 1: showing respondents who heard and those who had never heard about malnutrition among the elderly n=119.



The majority 89(74.8%) of the respondents had never heard about malnutrition among the elderly, and 30(25.2%) had received information about malnutrition among the elderly.

Figure 2: showing where respondents got information about malnutrition, n=30



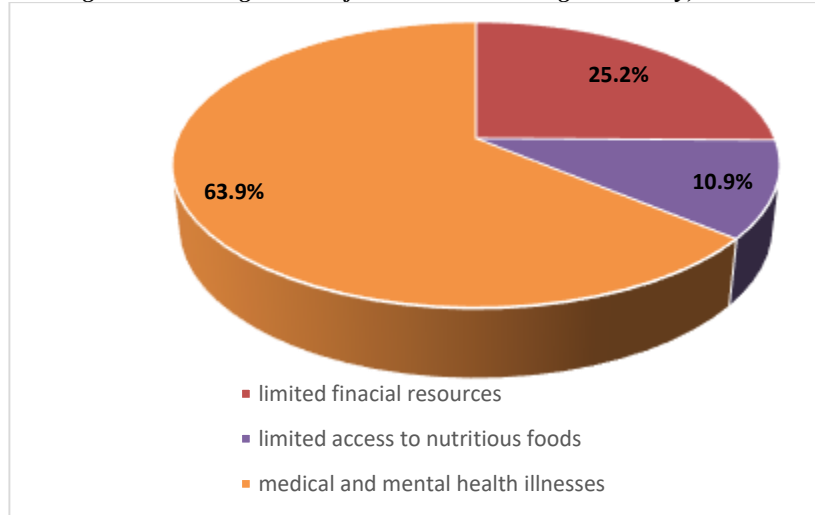
The majority of 23(77%) of the respondents heard information from health care centers, 4(13%) from social media, 3(10%) of the respondents heard information about malnutrition from friends/ family members, and 0(0%) from the unions.

Table 4: showing respondents how they understood malnutrition, n=119.

Meaning of malnutrition	Frequency	Percentage (%)
This means overnutrition or undernutrition	27	22.7
Lack of sufficient nutrients in the body	40	33.6
Means being big	10	8.4
This means eating small foods	42	35.3
Total	119	100

The majority 42(35.3%) knew malnutrition as eating small foods, 40 (33.6%) as lack of sufficient nutrients in the body, 27(22.7%) meant overnutrition or nutrition while a few 10(8.4%) as being big

Figure 3: showing causes of malnutrition among the elderly, n=119.



The majority of the respondents 76(63.9%) knew that medical and mental health illnesses predispose one to malnutrition, 30(25.2%) limited financial resources while

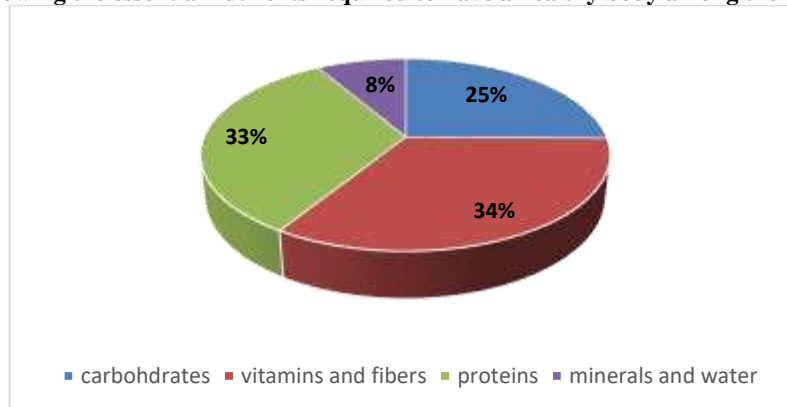
13(10.9%) responded that limited access to nutritious foods causes malnutrition among the elderly.

Table 5: showing respondents' preventive measures of malnutrition, n=119.

Prevention of malnutrition	Frequency	Percentage (%)
Eating balanced diet	119	100
Overeating	0	0
Total	119	100

All the respondents knew that eating a balanced diet could prevent malnutrition among the elderly.

Figure 4: showing the essential nutrients required to have a healthy body among the elderly n=119.



All the respondents knew at least one essential nutrient of a healthy body.30 (25%) knew carbohydrate, 40(34%) knew vitamins and fibers, 39(33%) knew proteins, 10(8%) knew minerals and water as essential food nutrients.

Table 6: Distribution of respondents by preventive knowledge of malnutrition by food supplements, n=119

Response	Frequency	Percentage (%)
Yes	96	80.7
No	23	19.3
Total	119	100

In regards to knowledge about the importance of food supplements, 96(80.7%) of the participants responded that food supplements prevent malnutrition while only 23 (19.3%) of the participants didn't know about food supplements and their importance in the prevention of malnutrition.

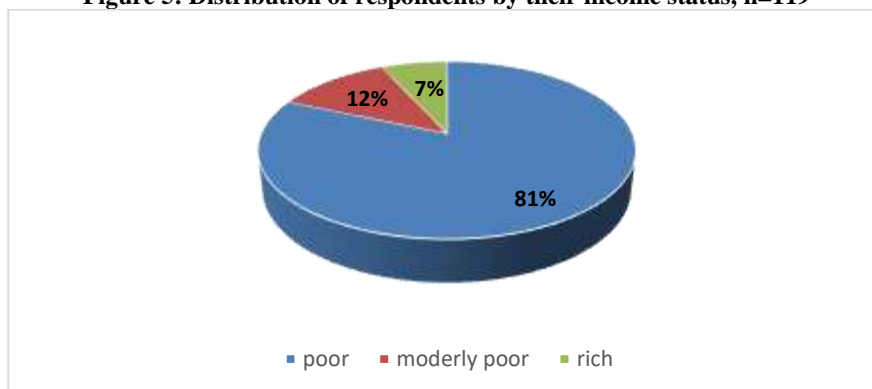
Table 6: showing when the respondents should see a health care provider about malnutrition. n=119

When should a respondent see a health worker?	Frequency	Percentage (%)
The recent loss of weight	27	22.7
The recent gain in weight	7	5.9
When having an eating disorder	85	71.4
Total	119	100

The majority of respondents, 85(71.4%) knew that having eating disorders is only when they could seek consultation from a health service provider, 27(22.7%) about the recent loss of weight while 7(5.9%) could go to a health provider when they have recently gained unnecessary weight.

Economic factors associated with malnutrition among the elderly aged 60 years and above

Figure 5: Distribution of respondents by their income status, n=119



The majority, 97(81%) of the respondents were poor, 14(12%) were moderately poor and a few 8 (7%) were rich.

Table 7: Distribution of respondents by whether they were able to buy food supplements n=119.

Response	Frequency	Percentage (%)
Yes	22	18.5
No	97	81.5
Total	119	100

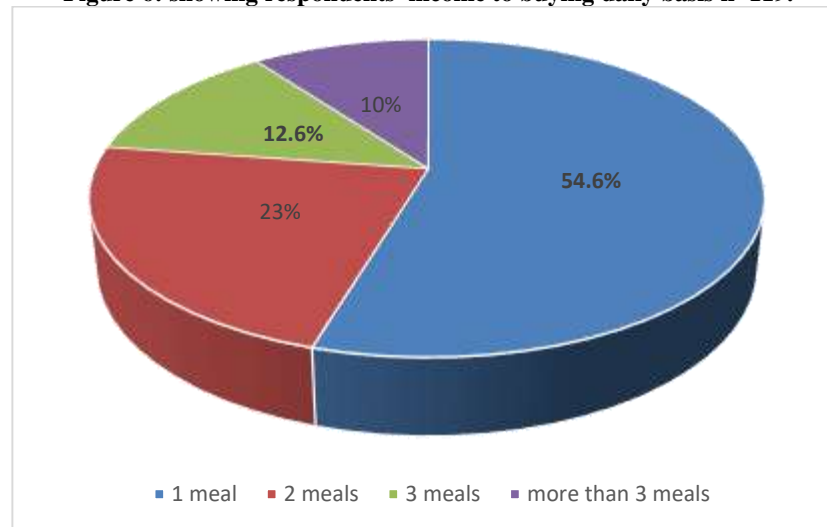
The majority 97(81.5%) were unable to buy food supplements and 22(18.5%) were able to buy food supplements from their income.

Table 8: Showing who decides on how to spend family income n=119.

Who decides?	Frequency	Percentage (%)
Husband	10	8.4
Wife	86	72.3
Children	18	15.1
Friends	5	4.2

The majority, of wives 86(72.3%) could decide on the expense of the family, 18(15.1%) children, 10(8.4%) husbands while 5(4.2%) friends, could decide how to spend the family income.

Figure 6: showing respondents' income to buying daily basis n=119.



Majority, 65(54.6%) had 1 meal, 27(22.7%) had 2 meals, 15(12.6%) had 3 meals and 12(10.1%) above 3 meals each day.

Discussions

Prevalence of malnutrition among the elderly aged 6 years and above.

The current study in Kiboga General Hospital showed that 57(47.9%) of the 119 respondents were malnourished and 62(52.1%) were nonmalnourished based on mid-upper arm circumference (MUAC) measurements on average 19.0cm and 20.0cm for males and females respectively. This was mainly due to low income that made the respondents unable to buy or grow nutritious foods. Increased malnutrition was also attributed to numerous comorbidities among the elderly. This finding is contrary to a study by Olawumi *et al.*, (2021) where the prevalence of malnutrition was found to be 25.3%.

In this study, malnutrition was more predominant among 41(71.9%) female individuals while a few 16(28.1%) were males, this was due to many of the respondents being widowed and having many children to care for yet they had a very low-income rate. This is in close relation to a study by El-Desouky & Abed, (2017). Where the majority (57%) of the malnourished older adults were female.

Knowledge of the health workers, and elderly about malnutrition among the elderly aged 60 years and above.

In this study conducted in Kiboga Hospital; malnutrition, the majority 89(74.8%) of the respondents had never heard about malnutrition among the elderly while 30(25.2%) had received information about malnutrition among the elderly. This would be due to less concern drawn to the nutrition status among the elderly. This finding is contrary to a study by Nasution *et al.*, (2021) where 43.3% of the respondents had heard about malnutrition in the elderly.

In this study, the major source of information was from health care centers 23(77%) and 3(10%) of the

respondents heard information about malnutrition from friends/ family members, this was due to frequent visits made by the elderly to the hospitals where they were counseled about malnutrition among the elderly. This finding is in agreement with a study by (Scalvedi *et al.*, 2021) where (76.7%) of respondents reported that their source of information about malnutrition was the health center.

In this study, the majority of the respondents 76(63.9%) knew that medical and mental health illnesses predispose one to malnutrition. 13 (10.9%) limited access to nutritious foods causes malnutrition among the elderly. This could be because they lost appetite and weight whenever they fell sick. This study finding is contrary to the findings reported by Agbozo *et al.*, (2018) where 47.6% of the respondents reported medical illnesses as a cause of malnutrition.

Findings from this study all of the respondents 119(100%) knew that eating a balanced diet prevents malnutrition. this was due to continuous health education to the elderly by the health workers and friends. This finding is higher than that reported by (Agbozo *et al.*, 2018) where 74% knew that a healthy diet that contained varied foods was necessary to prevent malnutrition.

In this study, the majority 96(80.7%) of the respondents knew that supplementing food prevents malnutrition thus a good knowledge about the prevention of malnutrition could be due to the health education given to the elderly regarding the prevention of malnutrition among the children, HIV patients and pregnant mothers, this finding is higher than that reported by (Agbozo *et al.*, 2018) in the study in Ga West municipality, where 55% knew that the elderly needed to take nutrient supplements routinely to complement their diets.

According to this study, at least every respondent knew one essential nutrient of a healthy body, as 34%, vitamins and fibers, 33% proteins, 25% carbohydrates, and 8%

minerals and water. This could be due to the availability of information about the essential nutrients and their sources. These findings are in line with the study by Fouad *et al.*, (2022) where 30% of the respondents knew about nutrients (elements) nutrition like vitamins, minerals, and other food elements which probably contributed to a generally adequate knowledge about malnutrition among the elderly.

Furthermore in this study, the majority of respondents 85(71.4%) knew that having eating disorders was only when they could seek consultation from a health service provider, 7(5.9%) could go to a health provider when they have recently gained unnecessary weight, this would be the time they sought for medical interventions from the health workers contrary to the study by Scalvedi *et al.*, (2021) where 25.9% of the respondents sought for health worker intervention early week pertaining their nutritional status.

Economic factors associated with malnutrition among the elderly aged 60 years and above.

From his study majority, 96(81%) of the respondents were poor, while a few 9(7%) were rich. This could be due to most of them being retired, unemployed, and having no savings. This highly contributed to malnutrition among the elderly by affecting the frequency, quantity, and quality of food intake. This finding is in line with the study by Alzahrani & Alamri,(2017) which reported that only 64.2% of the respondents with low income were malnourished which affects the frequency, quantity, and quality of food intake.

In this same study, the majority of 97(81.5%) were unable to buy food supplements this could be due to the low income of the participants such as the mushrooms. This is contrary to the study by Abate *et al.*, (2020) where (41.5%) were unable to afford food supplements.

Furthermore, in this study, the majority of wives 86(72.3%) could decide on the expenses of the family while 5(4.2%) friends, could decide how to spend the family income. This was because most of the wives were widowed and were the heads of the families after the deaths of their husbands. This is in agreement with a study done in Nepal by Tamang *et al.*, (2019) which found that 70.0% of participants decided on the expense of the family, this was because the majority of the housewives were the heads of the families since they were widows due to the deaths of their husbands.

Conclusion

This study found that almost half of the elderly participants were malnourished, with females being highly malnourished than men.

The study also revealed that the majority of the elderly had adequate knowledge about malnutrition due to continuous health education given in the hospital.

Furthermore, the study revealed that most of the elderly were poor this in turn affected the frequency, quantity, and quality of food they fed on.

Recommendations

1. The elderly need to be incorporated into health programs and policies based at local government

levels as is the case with pregnant and under five (5) children.

2. Education and awareness campaigns should be conducted to increase knowledge about malnutrition, its prevention, and its effects among the elderly.
3. Further research should be conducted to investigate the factors influencing the occurrence of malnutrition among older adults.

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List of Abbreviations And Acronyms

ADL	-	Activities of Daily Living.
DHO	-	District Health Officer.
MNA	-	Mini Nutritional Assessment.
MNA-SF	-	Mini Nutritional Assessment Short Form.
OPD	-	Outpatient Department.
SDGs	-	Sustainable Development Goals.
UNICEF	-	United International Children's' Emergency Fund.

Source of funding

No source of funding.

Conflict of interest

No conflict of interest.


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