



PREVALENCE AND FACTORS INFLUENCING MALNUTRITION AMONG OLDER PERSONS IN KAMPALA CAPITAL CITY AUTHORITY, UGANDA

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ABSTRACT

Background: Malnutrition among older persons is a growing public health concern globally and in Uganda. Despite the existence of national nutrition programs, urban poor settings such as Kawempe Division in Kampala remain under-researched. This study aimed at determining the prevalence and factors associated with malnutrition among older persons aged 60 years and above in Kawempe Division, Kampala Capital City Authority, Uganda.

Methods: A cross-sectional quantitative design was used, involving 327 older persons selected through stratified random sampling across five parishes. Data were collected using a structured questionnaire and the Mini Nutritional Assessment–Short Form (MNA-SF). Chi-square tests and binary logistic regression were performed to identify associations between malnutrition and individual, lifestyle, and dietary factors.

Results: Malnutrition prevalence was 15.0%. Multivariate analysis revealed that anorexia [AOR = 0.139, 95% CI: 0.046–0.421, $p < .001$], physical inactivity [AOR = 0.226, 95% CI: 0.056–0.917, $p = .037$], and infrequent carbohydrate intake [AOR = 3.27, 95% CI: 1.08–9.89, $p = .036$] were independently associated with malnutrition. Marital status, alcohol use, and plant protein intake were also linked at bivariate level but not statistically significant after adjustment. Although the malnutrition prevalence was lower than earlier local estimates, it remains a significant concern. Individual and behavioural factors, particularly appetite, physical activity, and dietary patterns, influence nutritional outcomes in older adults. Interventions should prioritise community-based screening, nutrition support, and age-friendly health promotion strategies in urban low-income settings.

KEY WORDS: *Malnutrition, older persons, urban elderly, anorexia, physical inactivity, dietary patterns, Uganda, MNA-SF, public health nutrition*

1. BACKGROUND

The global population of older persons expanded from 1 billion in 2019 to 1.4 billion in 2023, despite insufficient data regarding malnutrition. Malnutrition among older persons grew globally to 34.5% in 2022 from 24.6% in 2017 and currently in 2025 it stands at xx% (Ferede et al., 2022; WHO, 2017). These changes among older adults are a growing cause of public health concern especially in poor countries such as Uganda, and are connected with disabling effects including high morbidity and mortality rates (Ananthesh et al., 2016; FAO, IFAD UNICEF, WFP & WHO 2024, Obeng et al., 2022; Ramya et al.

2017; WHO, 2022).

These older persons are considered to be those who are 60 years and above according to the World Health Organisation (WHO, 2023) and this has been adopted in Uganda by the Ministry of Gender Labor and Social Development (MGLSD, 2020). This population is regarded vulnerable, thus effectively assessed for malnutrition, in developing countries, using a Mini-Nutritional Assessment-short form (MNA-short form) tool (Phillips et al., 2010). Besides, if debilitating health conditions of older persons are addressed diligently, considering their right to a long, well-nourished life, they can as well contribute valuably to society (Almohaisen et al., 2022; WHO, 2023).

In the developing economies in Asia for example, malnutrition among the older persons is depicted between 1.1% to 21.7%. However, the risk is as high as 28.1 to 59.4% in rural areas of several countries in Asia like Hong Kong, Malaysia, and Myanmar on top of other underlying illnesses (Razali, 2022). This suggests that older persons in Asia are very much likely to be malnourished due to age, underlying illness and living in rural setting. However prior research by, Wei et al., (2018), in China, a 12.6% malnutrition prevalence was reported.

But in developing economies of Africa, the prevalence of malnutrition among older persons varied from 2.2% to 77.3% with South Africa recording the lowest (1.8%) and South Sudan recording the highest (78%) (Ewunie et al., 2022; Seid & Faintahun, 2022). In the Eastern African sub region, the rate of malnutrition among the elderly has been reported to be over 50%. This has been recently recorded in Ethiopia (Nahom Girma Belete et al., 2025).

However, in Uganda there has been scarce information among the elderly. A study on malnutrition and functional ability among the older persons in Uganda revealed a prevalence of 33 to 52% (Kikafunda & Lukwago, 2005). More recently it has been reported that 66% of the older persons displayed malnutrition prevalence, with 23% at risk in Dokolo, Northern Uganda (Omia et al., 2019). This same study attributed this high rate of malnutrition to associated socio-demographic factors among older persons (Ahumuza, 2019; Ferede et al., 2022; Kamwana, 2021; Kikafunda & Lukwago, 2005).

Kampala the capital city of Uganda has a population of 57,629 elderly persons and Kawempe one of the five divisions of this city is estimated to have 950 elderly persons living there. Recent reports have estimated that 71% of the study participants suffered from malnutrition which rate is far above the global prevalence (UBOS 2024; Ahumuza, 2019; Ferede et al., 2022; Kamwana, 2021).

Of the 950 elderly persons living in Kawempe division, about



800 have been identified to be having non-communicable recurring and new illnesses according to the Uganda Bureau of Statistics census report of 2024 (UBOS 2024). This is despite the various interventions by government and non government actors. The interventions in place included Nutrition Action Plan 2016 to 2025, Social Assistance Grants for Empowerment (SAGE), and Uganda Home of Older Persons (UHOOP, 2023) which aim at reducing malnutrition of the older persons in Uganda (GoU, OPM, 2019;

MGLSD, 2020; UHOOP, 2023). The interventions include age specialized foods, reserve and nutrition programs focusing on nutritional health maintenance of this population. However the prevalence of malnutrition is high despite the interventions described above. This then exposed the need to establish what was contributing to this high malnutrition levels in this area.

The failure to manage malnutrition in this division could be related to the prevalence and factors associated with malnutrition. Several authors have listed some of these factors including age, sex, marital status, education level, income level, employment status, household size, anorexia, underlying illness, smoking, alcohol consumption, and physical exercise among others (Ananthesh et al., 2016; Krishnamoorthy et al., 2018; Mathew et al., 2016; Ramya et al., 2017).

Therefore this study's main objective was to establish which factors in Kawempe division, Kampala Capital City, were significant in causing persistent malnutrition among the elderly persons using the MNA-short form tool (Phillips et. al., 2010).

The specific objectives of the study were to:

- Establish the prevalence of malnutrition among older persons aged 60 years and above in Kawempe division.
- Identify the individual, lifestyle and dietary factors of the older persons in this division.
- Show the most significant factors associated with malnutrition among these older persons.

2. METHODS

Study Design and Approach

This study employed a cross-sectional design grounded in a quantitative research approach to explore the prevalence and associated factors of malnutrition among older persons aged 60 years and above in Kawempe Division, Kampala. A cross-sectional design is appropriate when assessing outcomes and exposures simultaneously within a defined population, and is widely recommended for public health studies examining prevalence and associated factors (Creswell & Creswell 2023; Setia, 2016; Levin, 2006). The quantitative paradigm was selected for its suitability in generating statistically measurable data, allowing for generalization and testing of relationships using inferential statistics (Creswell & Creswell, 2023).

The distribution of the study population across selected parishes, along with the corresponding sample sizes and sampling approach used in each parish, is presented (Table 1).

Table 1: Distribution of Target Population, Sample Sizes, and Sampling Approach Across Selected Parishes.

Target population in Parishes		Population (N)	Sample Size (n)/population size x parish	Sampling Approach
Parish 1	Bwaise I	329	60	Random
Parish 2	Bwaise II	495	90	Random
Parish 3	Bwaise III	278	51	Random
Parish 4	Kawempe I	263	48	Random
Parish 5	Kawempe II	425	78	Random
TOTAL		N=1,790	n=327	

Table 1 shows that the target population was distributed across five parishes, with Bwaise II having the largest population (495) and Kawempe I the smallest (263). The total population of 1,790 was proportionately allocated to a sample size of 327 respondents across the parishes using a random sampling approach, ensuring representation from each parish

Study Area and Population

To determine the appropriate sample size, Yamane's (1967) formula for known population sizes was applied. This method is widely used in quantitative research for its efficiency in generating statistically adequate sample sizes while maintaining a predefined level of precision. Given a total target population of 1,790 older persons and a 95% confidence level (with a 5% margin of error), the sample size was calculated to be 327. Using the target population for each selected parish, the sample from each parish was calculated as indicated in Table 1 above (Singh & Masaku, 2014).

Data Collection Instruments and Procedures

Data were collected using a researcher-administered structured questionnaire, which is considered appropriate for older populations, as it minimises misinterpretation of questions and reduces the risk of missing data (Bryman, 2016). The use of interviewer-administered tools also enhances response accuracy by allowing for clarification of concepts, particularly among respondents with limited literacy or cognitive impairments. The questionnaire was designed in English and administered in the local language where necessary, to ensure inclusivity and clarity.

The instrument comprised two major sections. The first section focused on socio-demographic and lifestyle characteristics, developed by the researcher based on a review of related empirical literature and WHO community-based health assessment guidelines (WHO, 2015). The purpose of this was to collect data on respondents' age, sex, marital status, educational attainment, employment status, income level, presence of chronic illnesses, smoking status, alcohol use, dietary behaviours, physical activity level, and patterns of



health-seeking behaviour. The variables were selected due to their known associations with the nutritional and general health status of older adults.

The second section constituted the Mini Nutritional Assessment – Short Form (MNA-SF), a standardised and validated screening tool designed to evaluate the nutritional status of older persons in community settings. The MNA-SF assesses six domains: recent food intake, unintentional weight loss, mobility, psychological stress or acute illness, neuropsychological problems, and either Body Mass Index (BMI) or calf circumference in cases where BMI is unobtainable. This tool has high sensitivity and specificity in identifying older adults at risk of malnutrition and is globally endorsed for use in both clinical and community settings (Guigoz, 2006; Kaiser et al., 2009).

Prior to data collection, a team of research assistants was recruited and trained in the content of the instrument, ethical principles, and standard interviewing techniques. The lead researcher supervised the data collection process to ensure procedural integrity. All completed questionnaires were reviewed on a daily basis for accuracy and completeness before being accepted for data entry.

Data Management and Analysis

Data were managed and analysed using SPSS Version 20.0 for Windows, with a double-entry method applied to enhance accuracy and minimise data entry errors, consistent with best practices in quantitative research (Van den Broeck et al., 2005). The data set was analysed at three levels: univariate, bivariate, and multivariate. Univariate analysis involved computing descriptive statistics, including frequencies and percentages for categorical variables and means with standard deviations for continuous variables. At the bivariate level, associations between independent variables (such as age, education, and lifestyle factors) and malnutrition status were examined using the Chi-square test of independence, a widely accepted method for analysing relationships between categorical variables in epidemiological research (McHugh, 2013).

Variables that showed significant associations ($p < 0.05$) at the bivariate level were subsequently included in a binary logistic regression model. This model was used to estimate Crude Odds Ratios (CORs), which quantify the strength of association between risk factors and malnutrition without adjusting for potential confounders. To control for confounding and determine the independent effects of each predictor, all significant variables were entered into a multivariate logistic regression analysis, yielding Adjusted Odds Ratios (AORs) with 95% Confidence Intervals. This technique is appropriate for binary outcome variables and is widely recommended for identifying predictors in cross-sectional health research (Hosmer et al., 2013). A p -value of less than 0.05 was considered statistically significant.

Ethical Considerations

This study adhered to ethical standards for research involving human subjects. Ethical approval was obtained from Bugema University Research Ethics Committee (BUREC) and its reference number is BU-REC-2003-001, which was in accordance with national and international guidelines.

Additionally, permission was granted by local administrative authorities in Kawempe Division to engage with community members and conduct fieldwork.

Before data collection, participants were provided with comprehensive information about the study objectives, their rights, and the voluntary nature of their participation. Written informed consent was obtained from each respondent before participation. Participants were assured of confidentiality, with personal identifiers removed or coded to protect their identity. The data collected were stored securely and were accessible only to the research team. Moreover, participants were informed of their right to withdraw from the study at any point without facing any form of disadvantage or penalty. These ethical safeguards ensured respect for participants' autonomy and the integrity of the research process. The protocol was reviewed and approved by the BU Research Ethics Committee and its reference number is.

3. RESULTS

The study presents the prevalence of malnutrition among older people aged 60 years and above in Kawempe Division, Kampala Capital City Authority, and describes their individual, lifestyle, and dietary characteristics, as well as the factors associated with malnutrition identified through bivariate and multivariate analyses. The results section is organised around four objectives: (i) the prevalence of malnutrition among older persons aged 60 years and above in Kawempe Division; (ii) the individual, lifestyle, and dietary characteristics of the study population; (iii) the bivariate associations between selected factors and malnutrition using chi-square analysis; and (iv) the multivariate analysis identifying independent predictors of malnutrition using logistic regression.

Prevalence of Malnutrition among Older Persons Aged 60 Years and Above in Kawempe Division

The first objective was to establish the level of prevalence of malnutrition among older persons aged 60 years and above in Kawempe Division, Kampala Capital City Authority, Uganda. This was established to be 15%, based on the Mini Nutritional Assessment–Short Form (MNA-SF).

These findings highlight that the majority of older persons in the area are currently not experiencing significant malnutrition based on the MNA-SF classification criteria.

Individual, Lifestyle and dietary factors of older persons 60 Years and Above in the study

The second objective identified the individual, lifestyle and dietary characteristics, including differences in marital status, education level, and health behaviours among these older persons. The results are given in Table 2 below.



Table 2: Individual, Lifestyle, and Dietary Profiles of Respondents Aged 60 Years and Above

Variable		Percent %
Age category	60 -70	69.4
	71+	30.6
Sex	Female	57.8
	Male	42.2
Marital	Married	37
	Unmarried	63
Education	At most Primary	64.7
	post-primary	35.3
Employment	Employed	54.3
	Not employed	45.7
Household Income (Ushs)	< 200,000	31.8
	201,000	68.2
Underlying Illness	Yes	62.4
	No	37.6
Household size (people)	1 -5	59.5
	6+	40.5
Anorexia	Yes	82.7
	No	17.3
Smoking	Yes	2.3
	No	97.7
Physical Exercise	Yes	37.6
	No	62.4
Alcohol Use	Yes	8.1
	No	91.9
Health Seeking	Good	89
	Poor	11
Fruit/Vegetable Intake	Poor	75.1
	Good	24.9
Dairy Protein Intake	Poor	75.1
	Good	24.9
Plant Protein Intake	Poor	19.1
	Good	80.9
Fish Intake	Poor	74.6
	Good	25.4
Plant Oil Intake	Poor	57.2
	Good	42.8
Carbohydrate Intake	Poor	32.9
	Good	67.1

The results in Table 2 above show that the majority of respondents (69.4%) were aged 60–70 years, and the females were more (57.8%) than the males. Most of the respondents (63.0%) were unmarried, and their education levels were generally low, with 64.7% having completed only primary

school or less. The results further show that employment in the informal or part-time sector was reported to be 54.3%, while the majority (68.2%) lived in households earning more than UGX 200,000 (about USD \$56) monthly. Also, the household size was identified to be generally small, with 59.5% of respondents living in households of 1–5 members.

On health-related issues, the results show that most (62.4%) of the respondents reported chronic illnesses, and a high percentage (82.7%) reported experiencing anorexia. Physical inactivity was common (62.4%) among the respondents, while smoking and alcohol use were very rare (2.3% and 8.1%), respectively. However, health-seeking behaviour was largely (89%) positive, indicating good utilisation of the health services. Dietary habits showed limited diversity, with high (75.1%) poor intake of fruits, vegetables, and dairy products by the respondents. However, most (74.6%) consumed little fish, and 57.2% used plant oils infrequently. In contrast, most (80.9%) respondents had adequate intake of plant-based proteins, while carbohydrates were more (67.1%) regularly consumed being taken at least twice a day.

Factors associated with Malnutrition among Older Persons 60 years and above in the study.

The third objective initially examined how individual, lifestyle, and dietary factors are significantly associated with malnutrition among older persons using chi-square tests. The results are given in Table 3 below

Table 3: Chi-square analysis of factors associated with Malnutrition among Older Persons

Variable	Description	Malnutrition Status		χ^2	d f	p
		Mal-nourished %	Normal %			
Age Category	60 – 70	12.5	87.5	1.96	1	0.16
	70 >	20.8	79.2	2	1	1
Marital status	Married	4.7	95.3	8.50	1	0.00
	Unmarried	21.1	78.9	7	1	4
Alcohol use	Yes	42.9	57.1	9.23	1	0.00
	No	12.6	87.4	7	1	2
Anorexia	Yes	8.4	91.6	28.4	1	0.00
	No	46.7	53.3	48	1	1
Physical exercise	Yes	4.6	95.4	8.84	1	0.00
	No	21.3	78.7	2	1	3
Carbohydrate intake	< 2 times/day	28.1	71.9	11.3	1	0.00
	2 times +/day	8.6	91.4	22	1	1
Plant protein intake	< 1 time/day	30.3	69.7	7.45	1	0.00
	1 time +/day	11.4	88.6			6

The above results in Table 3 show that unmarried individuals, alcohol use, Anorexia (loss of appetite), and physical inactivity were found to be strongly associated with increased

malnutrition ($\chi^2 = 8.507, p = .004$; $\chi^2 = 9.237, p = .002$; $\chi^2 = 28.448, p < .001$; and $\chi^2 = 8.842, p = .003$, respectively).

Dietary behaviours, in particular consuming carbohydrates less than twice daily and infrequent consumption of plant-based proteins, were found to be highly associated with higher malnutrition rates ($\chi^2 = 11.322, p = .001$; and $\chi^2 = 7.450, p = .006$, respectively). In contrast, however, variables such as age did not show a significant association with malnutrition.

To further establish factors which were statistically significantly related to malnutrition, a multiple logistic regression analysis was undertaken, and the results are given in Table 4 below.

Table 4: Factors Associated with Malnutrition among older Persons 60 years in the study

Variable	Description	Malnutrition Status		χ^2	d f	p
		Mal-nourished %	Normal %			
Age Category	60 - 70	12.5	87.5	1.962	1	0.16
	70 >	20.8	79.2			
Marital status	Married	4.7	95.3	8.507	1	0.004
	Unmarried	21.1	78.9			
Alcohol use	Yes	42.9	57.1	9.237	1	0.002
	No	12.6	87.4			
Anorexia	Yes	8.4	91.6	28.448	1	0.001
	No	46.7	53.3			
Physical exercise	Yes	4.6	95.4	8.842	1	0.003
	No	21.3	78.7			
Carbohydrate intake	< 2 times/day	28.1	71.9	11.322	1	0.001
	2 times +/day	8.6	91.4			
Plant protein intake	< 1 time/day	30.3	69.7	7.450	1	0.006
	1 time +/day	11.4	88.6			

Significance of 5%

In Table 4, the results of the multiple logistic regression analysis identified several key factors significantly associated with malnutrition among older persons aged 60 years and above in this study.

Older adults who reported anorexia (loss of appetite) were significantly more likely to be malnourished compared to those without anorexia, indicating that poor appetite is a strong predictor of malnutrition [COR = 0.105, 95% CI: 0.041–0.265, $p = .001$; AOR = 0.139, 95% CI: 0.046–0.421, $p < .001$]. Similarly, lack of physical activity was significantly associated with higher odds of malnutrition [COR = 0.179, 95% CI: 0.051–0.622, $p = .007$; AOR = 0.226, 95% CI: 0.056–0.917, $p = .037$], suggesting that engaging in regular exercise plays a protective role in maintaining nutritional well-being.

In terms of dietary practices, consuming carbohydrates fewer than two times per day was significantly associated with malnutrition. Those with low carbohydrate intake had higher odds of being malnourished [COR = 4.14, 95% CI: 1.736–9.86,

$p = .001$; AOR = 3.27, 95% CI: 1.08–9.89, $p = .036$], indicating the importance of regular consumption of staple energy foods among older persons.

Other variables such as alcohol use [COR = 5.22, 95% CI: 1.63–16.58, $p = .005$; AOR = 4.43, 95% CI: 0.954–20.58, $p = .057$] and marital status [COR = 0.184, 95% CI: 0.053–0.640, $p = .008$; AOR = 0.309, 95% CI: 0.076–1.249, $p = .099$] showed significant associations in the bivariate analysis but did not retain statistical significance at the multivariate level, though they remained borderline and potentially relevant. Likewise, plant protein intake was associated with malnutrition in the unadjusted model [COR = 3.37, 95% CI: 1.36–8.34, $p = .009$], but its adjusted effect was not statistically significant [AOR = 2.27, 95% CI: 0.697–7.411, $p = .174$].

Age category did not show a significant association with malnutrition in either model [COR = 0.545, 95% CI: 0.232–1.284, $p = .165$; AOR = 0.648, 95% CI: 0.203–2.070, $p = .465$], but it was retained in the model due to its theoretical importance in geriatric nutrition.

4. DISCUSSION

This study aimed to assess the prevalence of malnutrition among older persons aged 60 years and above in Kawempe Division and to determine the individual, lifestyle, and dietary factors associated with malnutrition using both bivariate and multivariate analyses. The discussion therefore interprets the findings in relation to existing literature, comparing them with similar studies locally, regionally, and globally, and explaining observed patterns using established theoretical and empirical evidence. It further explores how demographic characteristics, health behaviors, and dietary practices contribute to nutritional outcomes among older persons in urban low-income settings. Overall, the discussion unfolds around the prevalence of malnutrition, socio-demographic and lifestyle characteristics, dietary patterns, and the key determinants of malnutrition identified in the regression analysis.

Individual, Lifestyle, and Dietary Characteristics of Older Persons

The profile of older persons in Kawempe Division reflects demographic and lifestyle patterns commonly observed in an ageing population within developing economy settings. The predominance of individuals in the younger-old age group, along with a higher representation of women, is consistent with both local and global demographic trends. Similar patterns were reported earlier by Kikafunda & Lukwago (2021) in Central Uganda, Krishnamoorthy et al. (2018) in India, and MacLaughlin & Carrero (2019) in Australia, where older women tend to outlive men due to a combination of biological, behavioural, and social factors. The high proportion of unmarried respondents, many of whom were widowed or separated, reflects a broader social reality observed in these contexts, where older adults often face ageing in isolation, with limited spousal, family, and or household support.

Low educational attainment and engagement in informal or part-time employment further illustrate the socioeconomic vulnerability of older adults in this study. These trends are consistent with studies in sub-Saharan Africa that highlight how



lifetime poverty, limited access to formal education, and lack of structured retirement systems affect the well-being of the elderly (Wondiyie et al., 2019; Seid & Babbel, 2022). Although some respondents in this study reported incomes above the national poverty line, income stability and sufficiency remain questionable when household size and cost of living are considered. This reflects the economic fragility of older persons in urban informal settlements, where daily survival is often reliant on inconsistent earnings.

Health and lifestyle characteristics revealed critical vulnerabilities. A substantial proportion of respondents reported chronic illness and anorexia, both of which are known contributors to poor nutritional outcomes in older adults. These findings are aligned with previous research by Fluitman et al. (2021) and Churak et al. (2019), which showed strong links between appetite loss, chronic disease, and undernutrition among community-dwelling older persons. Physical inactivity, also widely reported in this study, mirrors patterns identified by Rees (2021) and Scholes (2021), who reported reduced physical engagement due to functional decline, environmental barriers, and safety concerns. However, despite these risks, the study found low levels of alcohol and tobacco use, a finding also noted in other African contexts. This may be reflecting cultural norms or health-driven behaviour changes in older age (Mezemir et al., 2020).

Finally, dietary patterns showed clear limitations in diversity. This insufficient intake of fruits, vegetables, dairy, and fish is similar to reports of Mulugeta et al. (2022) in Ethiopia and Krishnamoorthy et al. (2018) in India. They reported that micronutrient-poor diets were common among the elderly. On the other hand, the regular consumption of plant-based proteins and carbohydrates aligns with findings by Obeng et al. (2022) and Maila et al. (2021), who observed that legumes and starchy staples form the dietary backbone for older adults in low-income African settings. However, while these staples are accessible and energy-dense, they often lack the micronutrient profiles required for healthy ageing.

Prevalence of Malnutrition Among Older Persons

This study found a malnutrition prevalence of 15.0% among older persons aged 60 years and above in Kawempe Division, Kampala Capital City. While this prevalence appears relatively low, it remains a public health concern, particularly in light of national and global commitments to end all forms of malnutrition, including Uganda's Nutrition Action Plan (UNAP) 2016–2025 and the Sustainable Development Goals (SDGs) targeting 2030.

The finding contrasts sharply with previous studies in Uganda, such as Ahumuza (2019), who reported a malnutrition prevalence of 71%, and Kikafunda and Lukwago (2005), who found rates ranging from 33.3% (based on BMI) to 52% (using MUAC). Outside Uganda, Krishnamoorthy et al. (2018) reported a comparable prevalence of 17.9% in Puducherry, India, although 58.8% were additionally at risk. Similarly, Mulugeta et al. (2022) in Harar, Ethiopia, reported 16.6% malnutrition prevalence and 45.1% at risk. These differences underscore the variability in malnutrition across contexts, populations, and assessment tools.

Several factors may explain the relatively low malnutrition prevalence (15.0%) observed in this study. These may include the presence of better access to healthcare, nutrition services, and social support in a periurban environment. Additionally, the use of the Mini Nutritional Assessment–Short Form (MNA-SF) allowed for a more comprehensive evaluation of nutritional status, incorporating dietary patterns, mobility, recent illness, and psychological well-being, unlike conventional anthropometric tools. The findings may also reflect the impact of national and community-level nutrition programs, particularly the Uganda Nutrition Action Plan (UNAP) and localised efforts such as the Urban Health and Older Persons Outreach Program (UHOOP), which have targeted older persons in Kawempe Division. However, the presence of malnutrition in 15% of respondents remains concerning, given the associated risks of frailty, cognitive decline, and chronic illness. Notably, this estimate excludes individuals at risk of malnutrition, suggesting the true burden may be relatively underestimated.

Factors associated with Malnutrition among older people in the study

Marital Status and Malnutrition among Older Persons in the Study

This study observed a notable trend suggesting that unmarried older adults, whether widowed, divorced, or never married, were more likely to be malnourished compared to their married counterparts. These findings resonate with those from Besora-Moreno et al. (2020) and Wondiyie et al. (2019), who highlighted the nutritional vulnerabilities among non-married older individuals, often linked to diminished social support, reduced household food preparation, and emotional isolation. The above results align with this pattern, reinforcing the notion that marital status influences not only emotional well-being but also everyday behaviours such as meal planning and food consumption.

Other studies (Schramm et al., 2016) add complexity to this relationship when they observed that the effects of marital disruption may be more pronounced among men, due to gendered expectations around caregiving and food provision. Similarly, Mabiama et al. (2022) associated widowhood with reduced food intake and weakened capacity for self-care. While the adjusted results in this study did not reach statistical significance, the observed trend supports existing evidence and highlights the importance of marital companionship as a protective factor against malnutrition in later life. These findings also underscore the need for targeted nutritional and psychosocial interventions aimed at older persons living alone or without a spouse, particularly in low-income urban settings.

Alcohol Use and Malnutrition among Older Persons in the Study

A clear pattern emerged linking alcohol consumption to elevated malnutrition risk. Respondents who reported alcohol use were more likely to experience nutritional deficits, a finding that mirrors results from Mezemir et al. (2020) and Poda et al. (2019). These earlier studies identified alcohol as a contributor to poor dietary intake and nutrient malabsorption, particularly



in older adults who may already be facing health complications. Likewise, Khan (2022) found that alcohol and substance use among older populations in India was associated with both malnutrition and cognitive decline.

The current findings are supported by physiological mechanisms noted in the literature, whereby alcohol reduces appetite, interferes with digestion, and displaces nutrient-dense food intake. These outcomes are often compounded by social isolation or economic hardship; conditions commonly found in urban informal settlements. While statistical significance was not maintained in the adjusted model, the strength of association suggests a meaningful trend. This supports calls for integrated interventions that address both substance use and nutritional counselling, especially among older adults in low-income settings where access to services is limited.

Anorexia and Malnutrition among Older Persons in the study

Among all factors considered in this study, anorexia (loss of appetite) was the most strongly associated with malnutrition. Respondents who reported anorexia consistently demonstrated poorer nutritional outcomes, a pattern corroborated by several previous reports (Churak et al., 2019; Fluitman et al., 2021; Francesco et al., 2018). Loss of appetite directly reduces food intake, both in quantity and variety, thus compromising essential nutrient supply and leading to weight loss and muscle wasting.

Unfortunately, anorexia in older adults may not always be recognised as a medical concern, especially in local community settings. This study, by applying the MNA-SF tool, highlights the need for early screening and proactive dietary support for older individuals showing signs of reduced appetite. Practical community strategies, such as promoting appetite-boosting foods and caregiver education, could help mitigate the risk of malnutrition among this group.

Physical Inactivity and Malnutrition among Older Persons in the study

The relationship between physical inactivity and malnutrition was evident in this study, with active older adults showing better nutritional status. This is consistent with earlier reports (Al-Zeidaneen et al., 2017; Kramer et al., 2022), which showed that physical activity not only improves metabolic function and muscle retention but also stimulates appetite and enhances digestion. While other studies like Dorner et al. (2013) suggest some reverse causality where malnutrition leads to physical frailty and inactivity, this study observed that low engagement in even routine physical tasks was common among the malnourished, suggesting that inactivity may precede or exacerbate poor nutrition.

This study has also emphasised earlier that physical activity is not solely an individual choice but is shaped by environmental and social factors. Lack of supportive infrastructure, safety concerns, and poor mobility contribute to sedentary behaviours among older persons in urban low-income settings. These findings advocate for the inclusion of culturally appropriate physical activity promotion in public health programs targeting older populations.

Carbohydrate Intake and Malnutrition among Older Persons in the study

The study found that the frequency of carbohydrate intake was significantly associated with malnutrition, with higher intake linked to better nutritional status. This finding aligns with earlier research (Obeng et al., 2022; Rahman et al., 2022) which emphasised the importance of consistent food consumption, particularly of staple energy sources, in maintaining adequate nutrition in older age. Other studies (Olasunbo & Ayo, 2013) in Nigeria further underscored how irregular access to staple foods contributes to chronic undernutrition among older adults.

The current study highlights carbohydrate intake as a proxy for broader issues such as food security, meal regularity, and caregiver support. However, using the socio-ecological model, it is evident that factors such as market access, household income, and food knowledge influence carbohydrate availability and consumption frequency.

Plant Protein Intake and Malnutrition among Older Persons in the study

Plant protein intake showed a positive association with improved nutritional status, although this association weakened after adjusting for other factors. Similar trends have been noted in studies by Rahman et al. (2022) and Maila et al. (2021), which linked low dietary diversity, including limited protein sources, to elevated malnutrition rates among older persons. While protein from legumes and nuts is often more accessible in low-income settings, intake can be irregular due to economic or cultural constraints.

Although statistical significance was not retained in the adjusted model, the direction of association remains relevant. Within the socio-ecological framework, protein intake can be influenced by food preferences, household decision-making, and market prices. Interventions that promote affordable, high-protein plant foods supported by community nutrition education could play a crucial role in improving the dietary quality of older persons in informal urban environments.

5. CONCLUSION

This study established that malnutrition among older persons in Kawempe Division, Kampala City, remains a significant public health concern, with a prevalence of 15.0%. Although relatively lower compared to other studies in other parts of Uganda, this rate is worrisome given its association with increased risks of frailty, cognitive decline, and chronic disease. Key individual, lifestyle, and dietary factors—including anorexia, physical inactivity, alcohol consumption, marital status, and limited intake of carbohydrate plus plant-based protein—were identified as contributors to poor nutritional outcomes. The study underscores the importance of contextualising geriatric malnutrition within a socio-ecological framework that recognises the influence of socioeconomic and environmental determinants on older persons' nutritional health in low-income urban settings.



6. RECOMMENDATIONS

To address malnutrition among older persons in low-resource urban settings, this study recommends that a multi-sectoral and context-sensitive approach is essential. This prolonged multiple-organisation approach should include education and awareness, focusing on the elderly.

Older persons should be explicitly integrated into national policy frameworks such as the **National Development Plans** so that adequate funding, clear implementation plans, and robust monitoring systems can be established to cater for the elderly effectively.

Finally, several areas warrant further investigation, for example, longitudinal studies to explore temporal patterns and causal relationships between individual, lifestyle, and dietary factors and malnutrition outcomes among the elderly. Also,

some comparative studies between urban and rural populations would help assess how differing environmental and socioeconomic conditions influence nutritional status. Finally, future assessments should include individuals “at risk” of malnutrition using the full Mini Nutritional Assessment (MNA) tool to capture the broader spectrum of nutritional vulnerability in ageing populations.

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