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Nutritional Status among Elderly People of Biratnagar, Nepal

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Abstract

Introduction: Globally, the population of older adults is growing. According to the World Health Organization, there will be 1.2 billion older people worldwide by 2025; with 840 million of them living in low-income nations. Age-related health is significantly influenced by nutrition. However, nutrition is not considered as a high priority for older adults and many older adults are forced to live in care facilities.

Objective: The objective of this research was to evaluate nutritional status and the factors affecting to it among elderly individuals living in an aged care facility in Biratnagar, Nepal.

Method: A cross-sectional study was conducted at an aged care facility in Biratnagar from March to November 2021, involving 50 elderly residents selected through total enumeration. Data collection utilized Nestle's Mini Nutritional Assessment tool, a general assessment questionnaire, and doctor's prescriptions for outcome validation. Statistical analysis was performed using SPSS version 20, and ethical clearance was obtained from the Institutional Review Committee of Purbanchal University School of Health Sciences. Descriptive and inferential statistics were employed for data analysis.

Result: Nearly half (48%) of the participants fell within the 60–69 age group, while 36% were aged between 70–79 years. Females constituted the majority, accounting for 52% of the sample. Among the elderly, 20% exhibited normal nutritional status, while 70% were at risk of malnutrition, and 10% were identified as malnourished. Gender was significantly associated with nutritional status, with male participants showing increased susceptibility to malnutrition with advancing age.

Conclusion: The prevalence of malnutrition and risk of malnutrition among the elderly in aged care homes was found to be considerable. Interventional studies should be undertaken by government agencies, nutritional organizations, and aged care homes to enhance the nutritional status of elderly individuals.

Keywords: Aged; Humans; Nutritional status; Nepal

Introduction

The World Health Organization (WHO) forecasts a global elderly population exceeding 1.2 billion by 2025, with approximately 840 million residing in low-income countries.¹ In Nepal, the elderly population is growing, constituting about 8.1% of the total population, and highlighting the significance of their health for the nation's well-being.²

While Nepal, like other South Asian nations, has made strides in reducing mortality rates and increasing life expectancy, reaching 71.7 years in 2020, and nutritional health remains crucial in older age.^{2, 3} However, aging brings about various physiological, psychological, social, and economic changes, potentially exposing older individuals to malnutrition.^{4, 5}

Older adults are particularly susceptible to malnutrition,^{6, 7} with global prevalence ranging from 13% to 78%.^{3, 4} If left unaddressed, malnutrition can escalate morbidity and mortality rates, posing significant personal, familial, and societal health challenges.^{8, 9} This underscores the importance of improving the quality of life for elderly residents in care facilities, urging authorities to enhance services provided to them.

In Nepal and across South Asia, rapid urbanization, modernization, and outmigration of children have contributed to a growing number of elderly individuals residing in care facilities, often experiencing isolation and inadequate health care.^{3, 10} Despite this trend, research on the nutritional status of elderly individuals in care homes remains limited.

Assessing nutritional status is essential for establishing databases to inform policy formulation and program implementation. Thus, this study aims to evaluate nutritional status and its determinants among elderly residents in care homes, aiming to contribute to better understanding and addressing the nutritional needs of this vulnerable population.

Method

This study employed a cross-sectional quantitative approach and was conducted between March and November 2021 at the Birateshwar Briddha Ashram in Morang district. This facility serves as a community-based aged care home in Biratnagar, offering various services to the elderly population. A total of 50 elderly individuals were included in the study using the total enumeration sampling technique. Inclusion criteria encompassed individuals aged 60 years and above, residing in the area for more than six months, and

providing consent for participation. Exclusion criteria comprised individuals who were terminally ill or affected by severe mental disorders. To assess the nutritional status of the elderly participants, the Mini Nutritional Assessment (MNA) tool developed by the Nestle Nutrition Institute was employed.¹¹ This tool offers a practical and non-invasive method for swiftly evaluating the nutritional status of older individuals. The nutritional status was categorized based on the MNA scores as follows:^{11, 12, 13}

Normal nutritional status: MNA score \geq 12-14

At risk of malnutrition: MNA score 8–11

Malnourished: MNA score $<$ 7. The MNA tool has undergone thorough validation for assessing malnutrition in the elderly. Studies have demonstrated its accuracy, with a reported 92% concordance when compared with clinical evaluations by two nutrition specialists and 98% concordance when compared with comprehensive nutritional assessments.¹¹ Further more sensitivity was determined to be 96%, specificity 98%, and predictive value 97%, underscoring the tool's reliability in identifying malnutrition among the elderly population. The MNA tool exhibits high reliability, with a coefficient of 0.89, indicating excellent consistency and repeatability in its application. This demonstrates the tool's suitability for use in assessing the nutritional status of elderly individuals in research settings.^{12, 14} Following consent from institutional authorities and eligible elderly participants, data was gathered via face-to-face interviews. Each participant's weight was measured with a standard weighing machine, while height was recorded using a portable stadiometer. Ethical approval was obtained from the Institutional Review Committee of Purbanchal University School of Health Sciences (Reference No: 042-078/79). Data analysis was conducted using SPSS version 20, employing both descriptive and inferential statistical methods. A significance level of 5% was established for the analysis.

Result

The data was coded and analyzed in accordance with the protocols outlined by the MNA tool.

Table 1: Distribution of Elderly people according to their Age (n = 50)

Characteristics	Frequency(f)	Percentage(%)	
Age in years	60-69 years	24	48.0
	70-79 years	18	36.0
	80-89 years	6	12.0
	\geq 90 years	2	4.0
Gender	Male	24	48.0
	Female	26	52.0

Table 1 displays that nearly half (48%) of the participants fell within the age group of 60-69 years, with the subsequent largest group comprising 36% from the 70-79 years age range. Female participants constituted the majority at 52%, while males accounted for 48% of the total sample.

Table 2: Distribution of elderly people according to variables (n = 50)

Variables		Frequency(f)	Percentage(%)
Has food intake declined over the past 3 months?	Moderate Decrease	16	32.0
	No decrease	34	68.0
Reported weight loss during the last 3 months	Weight loss greater than 3 kg	5	10.0
	Does not know	5	10.0
	Weight loss between 1 and 3 kg	7	14.0
	No weight loss	33	66.0
Mobility	Bed/ Chair bound	4	8.0
	able to get out of bed/ chair but does not go out	13	26.0
	Goes out	33	66.0
Has suffered psychological stress/ acute disease in the past 3 months	Yes	22	44.0
	No	28	56.0
	Severe dementia and depression	2	4.0
Neuropsychological problems	Mild dementia	24	48.0
	No psychological problems	24	48.0

Table 2 demonstrates that 32% of the elderly reported a moderate reduction in their food intake over the preceding three months. A mere 10% experienced a weight loss of up to 3 kg during this period, with 14% shedding between 1 to 3 kg. Notably, 44% of the elderly encountered acute illness or psychological stress, while 8% were bedridden due to medical conditions. Small proportions (4%) were under doctor’s prescription medication for severe dementia or depression, whereas the majority (48%) exhibited mild dementia symptoms.

Table 3: Distribution of elderly according to MNA Variables (n-50)

Variables		Frequency(f)	Percentage(%)
Lives independently	No	15	30.0
	Yes	35	70.0
Takes more than three prescription drugs/day	Yes	6	12.0
	No	44	88.0
Pressure sore/ulcers	Yes	2	4.0
	No	48	96.0

Table 3 outlines that 70% of elderly individuals reside independently, while 30% require assistance

with daily activities. Additionally, 12% of them consume more than three prescription medications daily, and 4% have developed pressure sores due to prolonged bedridden conditions.

Table 4: Distribution of elderly according to MNA Classification of BMI (n=50)

Body Mass Index (BMI)	Frequency(f)	Percentage(%)
< 19	13	26.0
19 - <21	6	12.0
21 - < 23	15	30.0
23 and greater	16	32.0

Table 4 illustrates that 30% of elderly individuals had a BMI ranging from 21 to less than 23, while 26% exhibited a BMI of less than 19, suggesting that 13 elderly individuals were undernourished.

Table 5: Association between study variables and Malnutrition status determined with the MNA (n = 50)

Characteristics	Malnourished and at risk of malnutrition	Normal nutritional status	P-value	
Age in Years	60-79 years	32 (80%)	10 (20%)	0.123
	80-89 years	8(100%)	0	
Gender	Male	23 (95.8%)	1(4.2%)	0.007*
	Female	17 (65.4%)	9 (34.6%)	

*Chi-square test (significant at p <0.05)

Table 5 demonstrates a significant association between gender and nutritional status. Interestingly, as male elderly individuals advanced in age, they exhibited increased vulnerability to malnutrition.

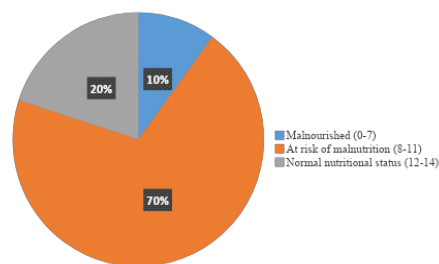


Fig 1: Distribution of Elderly Nutritional Status Based on MNA Tool (n=50)

Figure 1 illustrates that the majority (70%) of elderly individuals residing in Bridha Ashram were identified as being at risk of malnutrition, while 10% were already classified as malnourished, and the remaining 20% were deemed to have a normal nutritional status.

Discussion

The present study delved into the nutritional status of elderly individuals residing in an aged care facility, employing the MNA nutritional assessment

tool. Widely recognized, the MNA is a valuable instrument for identifying malnutrition risk among institutionalized elderly individuals.¹⁴ Its endorsement by the European Society for Clinical Nutrition and Metabolism (ESPEN) as a standard geriatric screening tool further underscores its utility.¹⁵

Utilizing the MNA tool, our investigation revealed that 20% of participants exhibited a normal nutritional status, while a staggering 70% were deemed at risk of malnutrition, with 10% already classified as malnourished.^{12, 16} This distribution echoes findings from similar studies conducted in old-age homes, highlighting a prevalent issue of malnutrition among older adults not only in Nepal but also in other regions.^{17, 18, 19, 20}

These results underscore the pressing need for targeted interventions and comprehensive nutritional support programs tailored to the specific needs of elderly individuals in institutional settings, both locally and globally.

Gender emerged as a significant factor associated with malnutrition status, as indicated by a p-value of less than 0.007. Intriguingly, in our study, malnutrition and risk of malnutrition were notably higher among males, constituting 95.8% of the affected individuals. This finding diverges from findings in some other studies conducted in regions such as Iran and Southwest Ethiopia, where malnutrition was found to be more prevalent among females. This discrepancy underscores the complex interplay of cultural, socio-economic, and demographic factors influencing nutritional status among elderly populations across different geographical contexts. Further research is warranted to elucidate the underlying mechanisms driving these variations and to tailor interventions accordingly.^{21, 22} However, there are some limitations of the study. Due to the cross-sectional design of the study, establishing causal relationships between elderly malnutrition and potential risk factors is challenging. Additionally, resource constraints precluded the assessment of biochemical parameters, such as hemoglobin levels, as part of the nutritional evaluation process.

Conclusion

Our findings suggest that elderly individuals, particularly males, are more susceptible to malnutrition or at risk of it. Enhancing the nutritional status of the elderly population requires intensified efforts aimed at addressing nutrition policies and catering to the dietary needs specific to this age demographic.

Recommendation

Based on the findings of this study, the following recommendations are proposed:

Training for Caregivers: Implement training programs to educate caregivers on the identification of elderly individuals at risk of malnutrition. Equipping caregivers with the necessary knowledge and skills will enable them to promptly recognize signs of malnutrition and intervene effectively.

Nutritional Counseling: Provide counseling sessions on nutritional support for elderly residents. These sessions should focus on promoting healthy eating habits, ensuring adequate nutrient intake, and addressing individual dietary needs.

Prompt Management of Malnourished Individuals: Establish protocols for the prompt management of malnourished individuals. This may involve coordinating with healthcare professionals for comprehensive assessments and implementing personalized care plans to address nutritional deficiencies.

Longitudinal Research: Conduct further longitudinal research with larger sample sizes to explore factors associated with malnutrition among the elderly population. This research should aim to identify underlying determinants of malnutrition and develop targeted interventions to prevent malnutrition at both regional and national levels. By implementing these recommendations, institutions can enhance their capacity to address the nutritional needs of elderly residents effectively, ultimately improving their overall health outcomes and quality of life.

Conflict of Interest

The authors declare that there are no potential conflicts of interest associated with this research.

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