International Journal of Community Medicine and Public Health
Begum N et al. Int J Community Med Public Health. 2025 Jun;12(6):2634-2638
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20251704

Original Research Article

Nutritional and cognitive health assessment among elderly at geriatric care facilities, Hyderabad: a cross sectional study

Nasreen Begum[1]*, Bandi S. L. Pranathi[2]

[1]Department of Nutrition, St. Ann's College for Women, Hyderabad, Telangana, India
[2]St. Ann's College for Women, Hyderabad, Telangana, India

Received: 03 February 2025
Revised: 22 April 2025
Accepted: 01 May 2025

***Correspondence:**
Dr. Nasreen Begum,
E-mail: nasreen.begum@stannscollegehyd.com

ABSTRACT

Background: With the global rise in the elderly population, ensuring their health and well-being has become critical. Nutrition plays a vital role in maintaining cognitive function, while cognitive health influences dietary habits. This study assessed nutritional status and cognitive function among elderly residents in geriatric care facilities.
Methods: A cross-sectional study was conducted from July 2024 to September 2024 at two geriatric care facilities in Hyderabad (Srimatha Old Age Home, Kukatpally and HCAH Old Age Home, Gachibowli). Sixty-seven elderly residents were assessed using the mini nutritional assessment (MNA) for nutritional status and mini-mental state examination (MMSE) for cognitive function. Anthropometric measurements were recorded.
Results: Among participants (47.8% male, 52.2% female), MNA revealed 46.3% had normal nutrition, 46.3% were at risk of malnutrition, and 7.4% were malnourished. MMSE scores showed 17.9% had no cognitive impairment, 34.3% had mild decline, and 47.8% had severe impairment.
Conclusions: Malnutrition risk and cognitive impairment are prevalent among elderly in care facilities. Regular assessments and holistic interventions addressing nutrition, cognitive stimulation, and social engagement are essential to improve their quality of life.

Keywords: Elderly residents, Geriatric care facilities, Nutritional status, Cognitive function, MNA, MMSE

INTRODUCTION

With the global rise in the aging population, the number of elderly individuals residing in nursing homes and long-term care facilities is increasing. This trend brings growing concerns about their overall health and well-being. Among the most common challenges faced by older adults in these settings are malnutrition and cognitive decline, both of which significantly impact their quality of life. These conditions not only impair daily functioning but also exacerbate chronic illnesses, leading to increased dependency and frailty. Understanding and addressing these issues are essential for enhancing the care and health outcomes of elderly individuals in geriatric facilities.[1,2]

Malnutrition is a prevalent concern in nursing homes, affecting many elderly residents due to multiple factors such as limited access to nutritious food, reduced appetite, and the presence of chronic diseases. It is closely linked to frailty, a condition marked by physical weakness, increased susceptibility to illness, and loss of functional independence. Frailty, in turn, has been associated with accelerated cognitive decline and a higher risk of conditions like dementia, further complicating the overall health and daily living abilities of older adults.[3,4]

Research indicates that elderly individuals in care facilities are particularly vulnerable to these challenges, underscoring the importance of regular assessment and monitoring of their nutritional and cognitive well-being.[5]

To effectively address these health concerns, various screening tools are utilized. The "mini nutritional assessment (MNA)" is a widely recognized tool for evaluating the nutritional status of older adults, helping healthcare professionals identify individuals at risk of malnutrition and implement timely interventions.[6] Similarly, cognitive health plays a crucial role in overall well-being, and the "mini-mental state examination (MMSE)" is commonly used to assess cognitive function, allowing for the early detection of cognitive decline or dementia.[7]

By integrating both assessments, healthcare providers can gain a comprehensive understanding of an elderly resident's health, ensuring that both nutritional and cognitive needs are effectively managed.[8] Recent research has established a strong connection between poor nutritional status and cognitive decline in older adults. Insufficient nutrition has been found to accelerate cognitive impairments and elevate the risk of neurodegenerative conditions like Alzheimer's disease. This underscores the importance of a holistic approach to elderly care that prioritizes both nutritional and cognitive well-being in nursing home residents. Studies indicate that malnourished individuals often experience faster deterioration in both physical and cognitive functions, reinforcing the need for regular monitoring and timely interventions to maintain their overall health.[9,10]

This study aims to assess the nutritional and cognitive status of elderly residents in nursing homes using the MNA and MMSE tools. By conducting this evaluation, the research seeks to explore the association between malnutrition and cognitive decline, offering valuable insights to improve elderly care in geriatric facilities. Early detection of malnutrition and cognitive impairment will enable the implementation of targeted interventions, helping to enhance quality of life, reduce frailty, and slow cognitive deterioration.

Ultimately, these efforts can contribute to better long-term health outcomes for elderly individuals in nursing homes.[11,12]

METHODS

Study site and period

The study was conducted from July 2024 to September 2024 at Srimatha Old Age Home, Kukatpally, and HCAH Old Age Home, Gachibowli.

This cross-sectional study aimed to evaluate the nutritional and cognitive well-being of elderly residents in two geriatric care facilities in Hyderabad.

Inclusion criteria

The study included 67 participants, both male and female, aged 40 to 110 years.

Exclusion criteria

Elderly individuals who were unavailable during data collection were excluded from the study.

Sample size calculation

The sample size was calculated using a standard formula by Daniel et al, considering an expected prevalence of 21%, a 95% confidence level, and a precision of 0.1. The initial calculation estimated a requirement of 64 participants; however, to accommodate a potential 5% non-participation rate, an additional three participants were included, resulting in a final sample size of 67.

Data collection

To evaluate both nutritional status and cognitive function, two standardized screening tools were utilized.

MNA

An 18-item structured questionnaire that assesses dietary intake, weight fluctuations, mobility, and overall nutritional status. Based on the scores, individuals are classified as malnourished, at risk of malnutrition, or well-nourished.

MMSE

A widely recognized tool for evaluating memory, attention, language abilities, and orientation. It helps detect mild to severe cognitive impairment, providing insights into cognitive health.

Study procedure

Each participant underwent a one-on-one interview in a comfortable setting to ensure they felt at ease while responding to the questions. The MNA was administered to evaluate dietary intake, weight changes, mobility, and nutritional risk factors, while the MMSE assessed memory recall, attention, problem-solving skills, and overall cognitive function.

Additionally, anthropometric measurements—including height, weight, mid-arm circumference, and calf circumference—were recorded using standardized techniques to provide further insight into the participants' nutritional status.

Prior to data collection, informed consent was obtained from all participants, ensuring they fully understood the study's purpose and procedures.

The research was conducted with utmost care and sensitivity, considering the specific challenges associated with aging. Strict adherence to ethical guidelines was maintained throughout the study.

Statistical evaluation

Descriptive analysis was carried out by frequency and proportion for categorical variables. Continuous variables were presented as mean±SD.

Data was analysed by using BDSS Corp. Released 2022. coGuide Statistics software, Version 2.0, India: BDSS corp (13).

RESULTS

Among the 67 elderly participants, 32 (47.8%) were male, and 35 (52.2%) were female. The nutritional assessment using the MNA revealed that 31 individuals (46.3%) had normal nutritional status, while an equal proportion (46.3%) were at risk of malnutrition. Additionally, 5 participants (7.4%) were found to be malnourished.

Regarding cognitive health, assessed through the MMSE, 12 participants (17.9%) showed no signs of cognitive impairment. However, 23 individuals (34.3%) exhibited mild cognitive decline, while 32 participants (47.8%) experienced severe cognitive impairment.

Malnutrition indicator scores of the participants (n=67)

The findings from the MNA present a diverse picture of the nutritional health of elderly residents in geriatric care facilities. While 31 participants (46.3%) maintained a normal nutritional status, an equal number (46.3%) were at risk of malnutrition, indicating the possibility of inadequate nutrition that could lead to health complications if left unaddressed. Additionally, 5 participants (7.4%) were identified as malnourished, emphasizing the urgent need for targeted dietary support and interventions to improve their nutritional well-being.

Table 1: Nutritional status of participants (n=67).

Category	Number (%)
Normal nutritional status	31 (46.3)
At risk of malnutrition	31 (46.3)
Malnourished	5 (7.4)

Cognitive impairment levels in the participants (n=67)

The MMSE results reveal considerable cognitive challenges among elderly residents. While 12 participants (17.9%) exhibited no cognitive impairment, 23 individuals (34.3%) displayed mild cognitive decline, suggesting early signs of memory and thinking difficulties that could worsen over time. More concerning, 32 participants (47.8%) were identified with severe cognitive impairment, indicating significant struggles with daily activities and decision-making. These findings highlight the importance of cognitive support programs, mental stimulation activities, and early interventions to help preserve and enhance cognitive health in elderly individuals.

Table 2: Cognitive impairment levels (n=67).

Category	Number (%)
No cognitive impairment	12 (17.9)
Mild cognitive decline	23 (34.3)
Severe cognitive impairment	32 (47.8)

DISCUSSION

This study examines the nutritional and cognitive health status of elderly residents in two geriatric care facilities in Hyderabad. A total of 67 participants were assessed using the MNA for nutritional status and the MMSE for cognitive function.

Strengths

One of the key strengths of this study is its comprehensive evaluation of both nutritional and cognitive health using validated tools (MNA and MMSE), ensuring reliable and standardized results. Additionally, the study provides valuable insights into an often-overlooked population—elderly individuals in institutional care settings—helping shape targeted interventions.

Key findings and comparison with existing research

The results indicate that 46.3% of participants had normal nutritional status, while an equal percentage (46.3%) were at risk of malnutrition, and 7.4% were malnourished. Additionally, cognitive impairment was highly prevalent, with 34.3% experiencing mild cognitive decline and 47.8% exhibiting severe cognitive impairment.

A similar study by Liu et al (with a larger sample of 226 elderly individuals, mean age 82.5 years) reported that 5.1% were malnourished and 55.6% were at risk of malnutrition. Unlike the current study, which focuses on cognitive decline in relation to malnutrition, Liu et al examined frailty and found that 60.3% of participants were frail, while 36.2% were prefrail. Their research demonstrated that elderly individuals at risk of malnutrition or already malnourished were 2.66 times more likely to be physically frail, after adjusting for variables like age, education, cognitive status, and depressive symptoms.[14]

While this study highlights the link between malnutrition and cognitive decline, Liu et al emphasized the association between malnutrition and physical frailty. Notably, they found no significant correlation between prefrailty and nutritional status, reinforcing the need for tailored nutritional interventions to address both cognitive and physical health risks in the elderly. This study highlights the critical role of early detection and intervention in addressing malnutrition among elderly individuals. Strategies such as personalized dietary plans, diverse meal options, and support for physical challenges like chewing and swallowing difficulties can significantly enhance both nutritional and cognitive health. These measures contribute

to an improved quality of life for elderly residents in geriatric care facilities.

Interestingly, the study found only a weak correlation between nutritional status and cognitive performance. Some participants maintained an adequate diet yet still experienced cognitive decline, indicating that good nutrition alone may not be sufficient for preserving brain function in older adults. Other influencing factors, such as social isolation, physical activity, and chronic health conditions, likely play a more significant role in cognitive health. These findings emphasize the need for a comprehensive approach to elderly care—one that extends beyond just meeting dietary needs.

Addressing physical, mental, and social well-being through regular assessments, engagement programs, and tailored interventions could help enhance the overall health of elderly residents. Additionally, routine monitoring of both nutrition and cognitive function can enable early detection of potential health risks, allowing for timely intervention and better long-term outcomes.

Limitations

The study's small sample size (67 participants) limits the generalizability of the findings to the broader geriatric population. Moreover, as the study was conducted in only two nursing homes, its findings may not fully represent elderly individuals living independently or in other care settings.

CONCLUSION

This study was conducted in two old age homes in Hyderabad, involving 67 elderly residents. The assessment utilized the MNA to evaluate nutritional status and the MMSE to assess cognitive function. Several factors contributed to nutritional deficiencies among participants, including limited dietary variety, lack of personalized meal plans, and age-related difficulties such as chewing and swallowing problems. However, the study did not establish a strong correlation between nutritional status and cognitive performance. This suggests that while adequate nutrition is essential for overall health, it may not directly impact cognitive function in older adults. Other significant influences, such as social isolation, physical activity levels, and chronic health conditions, likely play a greater role in cognitive health. These findings emphasize the need for a holistic approach to elderly care, integrating physical, psychological, and nutritional well-being. Regular monitoring of dietary intake and cognitive function in geriatric care settings is crucial for early detection and timely intervention to prevent further health decline.

ACKNOWLEDGEMENTS

The authors would like to thank the staff and residents of the geriatric care facilities in Hyderabad for their cooperation and participation. They would also like to thank Dr. Murali, Ms. Navya, Mr. Vignesh, and the co-guide team for their assistance in data collection and statistical analysis.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Liu W, Chen S, Jiang F, Zhou C, Tang S. Malnutrition and Physical Frailty Among Nursing Home Residents: A Cross-Sectional Study in China. J Nutr Health Aging. 2020;24(4):395-402.
2. Salminen KS, Suominen MH, Kautiainen H, Pitkälä KH. Associations Between Nutritional Status, Frailty and Health-Related Quality of Life Among Older Long-Term Care Residents in Helsinki. J Nutr Health Aging. 2020;24(3):319-24.
3. Bakhtiari A, Pourali M, Omidvar S. Nutrition assessment and geriatric associated conditions among community dwelling Iranian elderly people. BMC Geriatrics. 2020;20(1):1-8.
4. Boström AM, Cederholm T, Faxén-Irving G, Franzén E, Grönstedt H, Seiger Å, et al. Factors Associated with Health-Related Quality of Life in Older Persons Residing in Nursing Homes. J Multidiscip Healthc. 2022;15:2615-22.
5. Pidrafita-Páez N, Silveira J, Pinto E, Franco L, Romero-Rodríguez MÁ, Vázquez-Odériz ML, Nutriage Study Group. Dietary Adequacy in Older Adult Nursing Home Residents of the Northern Iberian Peninsula. Nutrients. 2024;16(6):798.
6. Woo J, McGhee SM, Lam TH. Nutrition and health among the elderly in Hong Kong: Implications for policy and care. Public Health Nutr. 2020;23(2):299-306.
7. Yu W, Yu W, Liu X, Wan T, Chen C, Xiong L, et al. Associations between malnutrition and cognitive impairment in an elderly Chinese population: an analysis based on a 7-year database. Psychogeriatrics. 2021;21(1):80-8.
8. Leirós M, Amenedo E, Rodríguez M, Pazo-Álvarez P, Franco L, Leis R, et al; Rest of NUTRIAGE Study Researchers. Cognitive Status and Nutritional Markers in a Sample of Institutionalized Elderly People. Front Aging Neurosci. 2022;14:880405.
9. Wojzischke J, van Wijngaarden J, van den Berg C, Cetinyurek-Yavuz A, Diekmann R, Luiking Y, et al. Nutritional status and functionality in geriatric rehabilitation patients: a systematic review and meta-analysis. Eur Geriatr Med. 2020;11(2):195-207.
10. Bhagwasia M, Rao AR, Banerjee J, Bajpai S, Raman AV, Talukdar A, et al. Association Between Cognitive Performance and Nutritional Status: Analysis From LASI-DAD. Gerontol Geriatr Med. 2023;9:23337214231194965.
11. Shuremu M, Belachew T, Hassen K. Nutritional status and its associated factors among elderly people

in Ilu Aba Bor Zone, Southwest Ethiopia: a community-based cross-sectional study. BMJ Open. 2023;13(1):e067787.
12. Pakai A, Havasi-Sántha E, Mák E, Máté O, Pusztai D, Fullér N, et al. Influence of cognitive function and nurse support on malnutrition risk in nursing home residents. Nurs Open. 2021;8(4):1805-11.
13. BDSS Corp. Released 2022. coGuide Statistics software, Version 2.0, India: BDSS corp. Available at: https://www.coguide.in/. Accessed on 20 March 2025.
14. Liu W, Chen S, Jiang F, Zhou C, Tang S. Malnutrition and Physical Frailty among Nursing Home Residents: A Cross-Sectional Study in China. J Nutr Health Aging. 2020;24(5):500-6.

Cite this article as: Begum N, Pranathi BSL. Nutritional and cognitive health assessment among elderly at geriatric care facilities, Hyderabad: a cross sectional study. Int J Community Med Public Health 2025;12:2634-8.