Screening for elderly people experiencing malnutrition based on the Mini Nutritional Assessment (MNA) at Batam City Nursing Homes in December 2022

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Article Info	Abstract
	Malnutrition refers to a condition when the body does not get enough of the necessary nutritional intake. Malnutrition in the elderly is a serious global health problem due to changes in the age pyramid throughout the world, especially the proportion of the number of elderly. The elderly are vulnerable to functional disorders, nutritional intake and economic problems. psychological and motoric As a result, it is very easy for elderly people to experience a decrease in nutritional intake which triggers nutritional problems and other disorders in the elderly. This research uses the Mini Nutritional Assessment (MNA) questionnaire to identify the nutritional status of the elderly and its relationship with elderly screening including food intake, as well as several disorders (mobility, psychological, neurological) in the elderly at Batam City Nursing Homes in December 2022. The research method used is descriptive analytic with a cross-sectional approach, the research sample consists of 65 respondents selected using total sampling techniques. The research results showed that based on the Mini Nutritional Assessment, 10 respondents (15.4%) had normal nutritional status, 30 people (46.2%) were at risk of experiencing malnutrition, and 25 people (38.5%) experienced malnutrition. The majority of elderly people experience a decrease in food intake, are still able to move (mobility), do not experience psychological disorders, but the majority have experienced neurological disorders (dementia). **Keywords:** Malnutrisi, Lansia, Dementia, Mini Nutritional Assessmen, skrinning.

1. Introduction

Malnutrition becomes an seriously global health problem due to changes in the age pyramid around the world. Low birth rates and higher life expectancy, the proportion of people aged 80 years will increase globally from 11.5% to 21.0% between 2010 and 2050, the nutritional status of the elderly needs more attention (Yu et al., 2020).

Regulation of the Republic of Indonesia Number 13 in year 1998 concerning Welfare defines the elderly people as someone who is 60 years or over. (Republik Indonesia, 1998). As Elderly, they are vulnerable to functional disorders, nutritional intake and economic problems (Yu et al., 2020)(Triningtyas et al., 2018). As a result, it is very easy for elderly people to experience a

decrease in nutritional intake, as well as weight loss which triggers nutritional problems and other disorders in the elderly (Yu et al., 2020).

Mostly Elderly people, macro and micro nutrient content is deficient and influence immune system. Improving the immune system response for the elderly can improve their quality of life and produce a healthier, independent and productive elderly population thereby reducing the burden on families and society, as well as on health services. (Silvyaningsih, 2022).

Research by Sasana Tresna Werdha Ciracas in December 2021 based on nutritional status showed that nutritional status of the elderly was poor, majority at risk of malnutrition (Silvyaningsih, 2022). The results of research which was also conducted at the Matsum City Health Center in April 2019 based on nutritional status showed that from the data on the nutritional status of the elderly at the Matsum City Health Center it was found that respondents had the highest risk of malnutrition (Silvyaningsih, 2022).

In line with the aging process, elderly people experience decline in physical, psychological and social interactions which will have an impact on intellectual abilities. Decreasing intellectual function is a serious problem when the aging process makes it difficult for elderly people to live independently, and increases the risk of dementia, behavioral disorders and decreased quality of life. Cognitive impairment is generally one aspect of the learning process that results in consistent development (Rini et al., 2018). Based on data above, researchers do screening for elderly people who experience malnutrition based on the Mini Nutritional Assessment in Nursing Homes in Batam City in December 2022.

2. Method

a. Population Studies

The research was conducted using descriptive analytical methods with a cross-sectional approach to screen nutritional status which describes the incidence of malnutrition in the elderly. The research was carried out at a nursing home in Batam City in December 2022. The data used was primary data obtained from filling out the Mini Nutritional Assessment (MNA) questionnaire and measuring weight and height to determine the body mass index of those willing to be respondents in the research to identify the nutritional status of the elderly in the Batam City Nursing Home at a specified time.

b. Mini Nutritional Assessment (MNA) Measurements

The MNA tool is used to measure nutritional status. Scores are interpreted in the manner described below: ≥ 17 indicates malnutrition, 17–23.5 indicates at-risk malnutrition, and ≤ 23.5 indicates good nutrition. Each elderly participant in this study completed the entire MNA evaluation which was divided into screening and assessing the condition of the elderly. Stadiometers are used to measure height, and standard weighing machines are used to assess body weight. Height and weight were recorded to the nearest 0.1 cm and 0.1 kg, respectively.

c. The screening carried out includes:

1. Reduced food intake over the past 3 months due to loss of appetite, disturbances
2. digestion, or difficulty chewing or swallowing (Score 0 to 2)
3. Weight loss during the last 3 months (Score 0 to 3)
4. Movement or Mobility (Score 0 to 2)
5. Psychological stress or acute illness in the last 3 months (0 and 2)
6. Neuropsychological disorders (Score 0 to 2)
7. Body Mass Index (BMI) = (body weight in kg)/(body height in m)2 (Score 0 to 3)

Rating result:
a. 12-14 points: Normal nutritional status
b. 8-11 points: At risk of experiencing malnutrition
c. 0-7 points: Malnutrition

For a more optimal assessment of malnutrition, it continues with assessing the elderly's independent abilities, but this is not the focus of this study.

3. Results and Discussion

Elderly Screening Results

Tabel 1. Reduced food intake over the last 3 months

Scoring Assessment elements		Frequency (n)	Percentage
0	Appetite is greatly reduced	9	13.8
1	Slightly reduced appetite	34	52.3
2	Average appetite	22	33.8
	Total	65	100.0

Tabel 2. Weight loss over the last 3 months

Scoring Elements Assessment		Frequency (n)	Percentage
0	Weight loss of more than 3kg	7	10.8
1	Don't know	25	38.5
2	Weight loss 1-3kg	11	16.9
3	No weight loss	22	33.8
	Total	65	100.0

Tabel 3. Movement or mobility

Scoring Elements Assessment		Frequency (n)	Percentage
0	Confined to bed/wheelchair	18	27.7
1	Can get out of bed/wheelchair, but cannot leave the house	14	21.5
2	Can leave the house	33	50.8
	Total	65	100.0

Tabel 4. Psychological distress or acute illness

Scoring Elements Assessment		Frequency (n)	Percentage
0	Yes	6	9.2
2	No	59	90.8
	Total	65	100.0

Tabel 5. Neurological Disorders

Scoring Elements Assessment		Frequency (n)	Percentage
0	Severe dementia / depression	15	23.1
1	Mild dementia	21	32.3
2	No psychological disorders	29	44.6
	Total	65	100.0

Tabel 6. Body Mass Index

Scoring Elements Assessment		Frequency (n)	Percentage
0	BMI < 19 (Underweight)	19	29.2
1-2	BMI 19 to less than 23 (Normal)	24	36.9
3	BMI 23 or greater (Overweight)	22	33.8
	Total	65	100.0

Based on the assessment data above, elderly people in general have started to experience a decrease in food intake (52.3%), most do not know changes in their body weight (38.5%), do not experience mobility problems/can leave the house (50.8%), do not experience psychological pressure (90.8%). %), has a Body Mass Index (BMI) range that varies between underweight, normal and overweight. The main problem found was that the majority (55.4%) of elderly people had started to experience symptoms of dementia (moderate and severe).

Data on Malnutrition Status

Tabel 7. Characteristics of respondents based on gender

Gender Frequency	Frequency (n)	Percentage (%)
Male	30	46,2
Female	35	53,8
Total	**65**	**100,0**

Tabel 1.2 Frequency distribution of respondents based on nutritional status according to MNA

Nutritional Status	Frequency (n)	Percentage (%)
Normal	10	15,4
Risk of Malnutrition	30	46,2
Malnutrition	25	38,5
Total	65	100,0

Tabel 2.2 Frequency Distribution of Respondents' Nutritional Status Based on Gender

Gender	Nutritional Status						Total	
	Normal		Risk of Malnutrition		Malnutrition			
	n	%	n	%	n	%	n	%
Male	3	4,6	13	20,0	14	21,5	30	46,2
Female	7	10,8	17	26,2	11	16,9	35	53,8

Based on malnutrition status data, it shows that the gender proportion of the 65 elderly is equal between men and women, most of them are experiencing malnutrition (38.5%) and are at risk of malnutrition (46.2%). Interestingly, elderly men have a higher risk of being malnourished (21.5%) than women.

The results of this study using The Mini nutritional assessment (MNA) show that elderly people are at risk of malnutrition, these findings are consistent with other community research conducted among elderly populations (Agarwalla et al., 2015). According to Christeson & Unosson (2002)(Guigoz, 2014) MNA is a practical tool and has been specifically used and developed to evaluate and identify early the nutritional status of the elderly to prevent the risk of malnutrition and to get early treatment before the risk occurs. malnutrition. Nutritional assessment for the elderly is very important because nutritional deficiencies in the elderly are often unknown or difficult to diagnose.

The Mini Nutritional Assessment (MNA) tool is a rapid questionnaire that is well validated for assessing the nutritional status of the elderly (Guigoz, 2014)(Jose et al., 2020). The MNA tool showed a sensitivity of 90.2% and a specificity of 96.4% in identifying good nutrition and poor nutrition in older people (Jose et al., 2020). Nutrition is a key factor in the aging process and makes a significant contribution to future health, helping to maintain health and reducing the risk of chronic disease. Malnutrition is a pathological condition resulting from nutritional deficiencies. This can occur due to inability to consume adequate nutrition, inability to digest nutrients, inability to absorb nutrients or increased nutritional requirements by the body, early identification of nutritional deficiencies or risk of nutritional deficiencies. As a result of the disease process in the elderly, it will affect the absorption of nutrients contained in food, thus affecting the nutritional status of the elderly (Bardon et al., 2021).

In line with the condition of malnutrition and the assessment of reduced food intake, weight loss in general begins to occur in the elderly without realizing it. Sensory function decreases with age, which significantly reduces the enjoyment of eating in the elderly. It is thought that the loss of taste may be caused by a decrease in the number of taste buds per papilla on the tongue, and a decrease in sensory function. The sense of smell may be associated with changes in the olfactory epithelium, receptors, and neural pathways. More than 60% of subjects aged 65-80 years, and 80% of subjects aged over 80 years, experienced a decrease in their ability to taste, sense of taste and smell. Reduced taste and smell significantly increase a person's risk of experiencing malnutrition, decreased appetite, interest in food, and reduced variety of food consumed. Decreased taste ability has been shown to increase the risk of malnutrition (Prasetya & Yoga, 2015).

Decreased appetite in the elderly is closely related to the amount of food intake in the elderly. This is caused by a decrease in opioid receptors and endogenous opioids in the brain, thereby reducing the working capacity of opioid receptor cells where the performance of these cells plays a role in a person's desire or desire for food. The condition of having no/few teeth and difficulty chewing causes malnutrition. Nutrient-dense foods (e.g. meat, fruit and vegetables) can be avoided with softer, higher-calorie but less nutrient-dense foods that may be easier to eat. The results of The Nutrition Diet And Nutrition Survey show that due to the aging process, seniors

aged 65 years or over experience a decrease in the number of teeth. Apart from that, a decrease in chewing ability was also found in this population. Both of these things contribute to the oral nutritional intake of elderly people which results in conditions of reduced micronutrients such as levels of calcium, iron, vitamins A, B, C, E (Bardon et al., 2021). The results of the research showed differences in nutritional status between male and female elderly people in Batam City Nursing Homes. The research results are in line with research conducted by Ghimire (Jose et al., 2020) which stated that the prevalence of overnutrition in elderly women was 32.1% and the prevalence of overnutrition in men was 22.9%. Nutritional status problems are more common in elderly women than in elderly men because women have more fat cells per kilogram of body weight than men and women have a lower BMR than men, so that excess energy consumed will be stored in the form of fat under the skin. (Prasetya & Yoga, 2015).

Regarding malnutrition, the majority of elderly life scoring assessments are characterized by a decline in neurological function (dementia). Increasing age, levels of sex steroid hormones, growth hormone and vitamin D, increased basal cortisol levels are also associated with cognitive impairment and decreased hippocampal volume in patients with Cushing's syndrome, Alzheimer's dementia and depression. Elevated cortisol levels have also been shown to be associated with cognitive impairment related to language, information processing speed, eye coordination, executive function, and verbal and visual memory. Dysregulation of the hypothalamic-somatic-adrenal axis (HPA axis) is one of the triggers for cognitive impairment in the elderly. Depression is also a risk factor for cognitive impairment in frail elderly people. Depression is often accompanied by feelings of social isolation and loneliness, which can affect cognitive function, cause weakness, and lead to cognitive impairment. The level of independence reflects the ability of the elderly in this study to independently carry out daily activities, including the ability to carry out basic daily activities such as bathing, urinating and dressing. The relationship between independence and cognitive function is very important, because research shows that elderly people who experience dependence are more likely to suffer from cognitive disorders, such as dementia syndrome. (Rini et al., 2018)(Sri Sunarti et al., 2023).

4. Conclusion

The conclusions that can be obtained show that screening of elderly people who experience malnutrition based on the Mini Nutritional Assessment (MNA) at Batam City Nursing Homes in December 2022 shows that the majority of malnutrition is in men and there is a decline in neurological function (dementia) which is stronger than other disorders such as Alzheimer.

5. Bibliography

Agarwalla, R., Saikia, A. M., & Baruah, R. (2015). Original Article Assessment of the nutritional status of the elderly and its correlates. *Journal of Family & Community Medicine*, *22*(1), 39–43. https://doi.org/10.4103/2230-8229.149588

Bardon, L. A., Corish, C. A., Lane, M., Bizzaro, M. G., Villarroel, K. L., Clarke, M., Power, L. C., Gibney, E. R., & Castro, P. D. (2021). Ageing rate of older adults affects the factors associated with , and the determinants of malnutrition in the community : a systematic review and narrative synthesis. *BMC Geriatrics*, 1–39. https://doi.org/10.1186/s12877-021-02583-2

Guigoz, Y. (2014). The Mini Nutritional Assessment (MNA ®) Review of the Literature-What Does It Tell Us ? *J Nutr Health Aging,* November, 10(6), 466-85. https://pubmed.ncbi.nlm.nih.gov/17183419/

Republik Indonesia. (1998). Undang-Undang Republik Indonesia Nomor 13 Tahun 1998 tentang Kesejahteraan. *www.bphn.go.id.*

Jose, S., Kumari, K. S., & Jose, S. (2020). Validity assessment of MNA among an elderly population in Kerala , South India. *International Journal of Advanced Research (IJAR),* 2(2), 214–221. https://www.journalijar.com/article/1332/validity-assessment-of-mna-among-an-elderly--population-in-kerala,south-india/

Prasetya, M. A., & Yoga, A. (2015). The association between intake of energy, protein and physical activity with nutritional status of elderly people. *Medical Journal of Lampung University*. 4, 52–59. https://juke.kedokteran.unila.ac.id/index.php/majority/article/view/526

Rini, S. S., Kuswardhani, T., & Aryana, S. (2018). Faktor – Faktor yang Berhubungan dengan Gangguan Kognitif pada Lansia di Panti Sosial Tresna Werdha Wana Seraya Denpasar. *Jurnal Penyakit Dalam Udayana*, 2(2), 1-6. https://jpdunud.org/index.php/JPD/article/view/35

Silvyaningsih, S. T. (2022). Prevalensi malnutrisi pada lansia berdasarkan mini nutritional assessment di sasana tresna werdha ciracas pada desember tahun 2021. *Skripsi Fakultas Kedokteran UKI*. http://repository.uki.ac.id/8077/

Sri Sunarti et al. (2023). Problem Malnutrisi Pada Orang Tua : Tinjauan Faktor Risiko, Konsekuensi , dan Pendekatan Terapi. Jurnal Klinik dan Riset Kesehatan, 2(3), 350–364. https://doi.org/10.11594/jk-risk.02.3.5.

Triningtyas, D. A., dan Muhayati, S. (2018). Konseling Lansia : Upaya Lanjut Usia dalam Membangun Kemandirian Hidup dan Penerimaan Diri Terhadap Kesiapan Memasuki Masa Pensiun (Studi Pada Lansia di Bina Keluarga Lansia Posyandu Cempaka Kabupaten Ngawi). *Jurnal Konseling Indonesia*, *4*(1), 16–21. https://ejournal.unikama.ac.id/index.php/JKI/article/view/2739

Yu, Z., Kong, D., Peng, J., Wang, Z., & Chen, Y. (2020). Association of malnutrition with all-cause mortality in the elderly population : A 6-year cohort study. *Nutrition, Metabolism and Cardiovascular Diseases*, *xxxx*, 4–11. https://doi.org/10.1016/j.numecd.2020.08.004