A Cross-Sectional Study on the Nutritional Status of the Elderly in Limau Manis Subdistrict, Padang

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Abstract. According to data from the Indonesian Health Survey in 2023, the prevalence of nutritional status in the elderly in Indonesia showed that 19.3% of the elderly were obese, while 8.6% were malnourished. This research method was conducted with a descriptive approach to see the description of anthropometric nutritional status according body mass index (BMI) in the community in Limau Manis Subdistrict, Padang. Anthropometric data was collected through measurements of height and weight, while demographic data included information on age and gender. This study aims to analyze anthropometric patterns in 32 elderly respondents in Limau Manis Subdistrict, Padang City. The results of the analysis showed that the average BMI of the population was 65.62%, with a prevalence of overweight of 9.37%, obesity of 18.75%, and thinnes (less) 6.25%. This study concludes that the nutritional status of the elderly in Limau Manis Subdistrict, Padang City, shows variations in the distribution pattern of Body Mass Index (BMI). This finding indicates that the problem of obesity and overweight is more dominant than malnutrition in the elderly. Demographic features such as age and gender, which provide important insights for designing health intervention programs to improve the quality of life of the elderly in Limau Manis District.

Keywords: Body Mass Index, Elderly, Malnutrition, Nutritional Status

Introductions

Nutritional status is a condition determined by the balance between nutritional intake from food and the body's nutritional requirements for metabolic processes. Each individual has different nutritional needs, depending on factors such as age, gender, daily activity level, weight, and other conditions (Par'i et al., 2017; Ginting et al., 2024). The Body Mass Index (BMI) is a simple method for assessing an individual's nutritional status based on height and weight. BMI is calculated by dividing body weight in kilograms by height in meters squared. This index is often used to identify underweight or overweight conditions in adults and is associated with various health risks, such as infectious diseases in individuals with low BMI, and degenerative diseases in individuals with high BMI (Anggreni et al., 2023). Changes in nutritional status among the elderly present a complex challenge. This is due to various factors, including changes in eating patterns, family economic conditions, and physical and mental changes. The decline in bodily functions with age affects the ability to consume and absorb nutrients, which can impact physical ability, immune system function, and the quality of life of the elderly (Wulandari and Arnisan, 2022).

According to data from the 2023 Survei Kesehatan Indonesia (SKI), the prevalence of nutritional status among the elderly in Indonesia shows that 20.7% of the elderly aged 60-65 years old and 14.1% of the elderly aged ≥65 years old are obese. On the other hand 8.6% of the elderly aged 60-65 years old and 14.1% of the elderly aged ≥65 years old are wasting (Tim Penyusun SKI 2023 dalam Angka, 2023). This data underscores the importance of addressing the need for balanced nutrition among the elderly to prevent various health risks.

Health issues such as malnutrition, obesity, hypertension, diabetes, dyslipidemia, osteoporosis, and sarcopenia are common among the elderly due to physiological changes, lifestyle, and reduced physical activity. These conditions not only affect physical health but also increase the risk of non-communicable diseases that can lower quality of life. Therefore, efforts to improve the health of the elderly must include a holistic approach, including adequate nutrition, increased physical activity, and emotional and social support (Dieny et al., 2019; Purba et al., 2024).

Maintaining health and fitness in the elderly is important so that they remain independent and do not become a burden to others. The decline in physical activity that commonly occurs in the elderly can lead to various problems, not only related to physical fitness but also to their nutritional status. One common issue is malnutrition due to a decreased appetite triggered by illness. Therefore, efforts to maintain the health and fitness of the elderly must be carried out holistically, including ensuring adequate nutritional intake, motivating the elderly to remain physically active, and providing adequate emotional and health support (Nurjannah et al., 2018).

This study aims to analyze the anthropometric patterns using the Body Mass Index (BMI) indicator among the elderly in Limau Manis Subdistrict, Padang City. The findings are expected to provide useful information for the health department of Padang City, particularly in efforts to prevent and address issues. The results of this study can serve as a reference in designing more effective and targeted health programs tailored to the local community's conditions (Marbun and Hutapea, 2022).

Method

This research method was conducted using a descriptive approach to examine the anthropometric nutritional status using the Bodys Mass Index (BMI) indicator among the community in Limau Manis Subdistrict, Padang. The study sample consisted of 32 elderly respondents. The research was conducted in Limau Manis Subdistrict, Padang City, from November 8–13, 2024, with a total of 32 respondents.

Data collection was conducted through anthropometric measurements, including height and weight. Anthropometric measurements were performed by trained personnel using calibrated instruments, such as digital scales and height measuring devices. Body Mass Index (BMI) was calculated using the formula BMI = weight (kg)/height (m²) to classify the nutritional status of respondents into the categories of underweight, normal, overweight, and obese. Additionally, BMI data was calculated using the formula weight (kg) divided by the square of height (m²). Respondents were then grouped into BMI categories based on WHO standards, namely underweight, normal, overweight, and obese. Data analysis was performed using software to calculate BMI distribution and anthropometric patterns in the study population. The research results will be interpreted to provide an overview of the nutritional status of the community in Limau Manis Subdistrict.

Results

1. Anthropometric Results
a. Distribution by age
The distribution by age among the elderly in Limau Manis can be seen in the table below.

Table 1.1 Age Distribution among The Elderly in Limau Manis

Age	n	%
51-55	1	3,125%
56-60	8	25%
61-65	4	12,5%
66-70	9	28,125%
71-75	7	21,875%
76-80	-	-
81-85	3	9,375%
Total	32	100%

Source: Primary Data (2024)

Based on Table 1.1, it can be seen that the majority of the elderly population in Limau Manis are aged 66–70 years (28.125%) or 9 people, aged 56–60 years (25%) or 8 people, aged 71–75 years (21.875%) or 7 people, 61-65 years old (12.5%) or 4 people, 81-85 years old (9.375%) or 3 people, and 51-55 years old (3.125%) or 1 person.

b.   Distribution by Gender
The distribution by gender among the elderly in Limau Manis can be seen in the table below.

Table 1.2 Gender Distribution Among the Elderly in Limau Manis

Gender	n	%
Female	17	53,125%
Male	15	46,875%
Total	32	100%

Source: Primary Data (2024)

Based on Table 1.2, it can be seen that out of 32 respondents, there were 17 women (53.125%) and 15 men (46.875%). Female elderly people were more dominant than male elderly people.

c.   Distribution Based on Nutritional Status (BMI)
The distribution based on nutritional status (BMI) among the elderly in Limau Manis can be seen in the table below.

Table 1.3 Distribution of Nutritional Status (BMI) among the Elderly in Limau Manis

BMI	n	%
Obesity	6	18,75%
Overweight	3	9,375%
Normal	21	65,625%
Underweight	2	6,25%
Total	32	100%

Source: Primary Data (2024)

Based on Table 1.3, it can be seen that out of 32 respondents, 21 people or 65.62% were classified as having a normal BMI, 6 people or 18.75% were obese, 3 people or 9.37% were overweight, and 2 people or 6.25% were underweight. According to the World Health Organization (WHO), BMI is classified into four categories: underweight, normal, overweight, and obese. An individual is classified as underweight if their BMI is between 15 and 19.9, normal weight if their BMI is between 20 and 24.9, overweight if their BMI is between 25 and 29.9, and obese if their BMI is between 30 and 35 (Sudibjo et al., 2018). Most older adults have a body mass index (BMI) below 18.5 kg/m², indicating malnutrition (Satyarsa and Putra, 2021).

Discussion

Malnutrition is often associated with low intake of certain nutrients, characterized by conditions such as anemia, chronic energy deficiency (CED), and low protein intake. These conditions can impair bodily functions, making the elderly weak and more susceptible to disease. Conversely, overnutrition and obesity are associated with chronic inflammation and an increased risk of disease in the elderly. These findings are supported by studies in Nigeria and Italy, which revealed that overnutrition and obesity can increase the risk of cardiovascular disease and musculoskeletal disorders in the elderly (Yusri and Bumi, 2023).

Overnutrition is a form of malnutrition (nutritional imbalance) caused by excessive nutrient intake, leading to the accumulation of body fat that disrupts health (e.g., overweight/obesity and hypertension). Obesity is the excessive accumulation of fat due to an imbalance between energy intake and energy expenditure over an extended period. This condition is the result of a combination of genetic and environmental factors (Maslakhah & Prameswari, 2022).

Obesity in the elderly is often caused by excessive consumption patterns, especially foods high in fat, protein, and carbohydrates that are not in line with the body's needs (Nasution et al., 2021). In addition, the decline in metabolic processes in the elderly causes excess calories to be converted into fat, which can lead to weight gain if not balanced with sufficient physical activity or dietary control. Meanwhile, malnutrition can occur in older adults who are either overweight or underweight. This condition is associated with vitamin and mineral deficiencies, and in some cases, protein and calorie deficiencies. Protein-calorie malnutrition is characterized by low levels of albumin in the body, so the elderly are advised to consume adequate amounts of protein. If malnutrition persists over a long period, it can lead to muscle weakness and reduced energy, increasing the risk of fatigue, falls, injuries, or pressure ulcers due to limited mobility (Roberts et al., 2021).

Diabetes mellitus is a chronic disease often associated with obesity and can lead to serious complications such as stroke, vision impairment, heart attack, kidney failure, amputation, and increased risk of premature death. In 2015, diabetes was the eighth leading cause of death worldwide, with approximately 1.6 million deaths. Data from the WHO shows that the highest percentage of deaths from diabetes occurs in the elderly, particularly in the 60-69, 50-59, and 70-79 age groups. In Indonesia, the prevalence of diabetes is also highest among elderly patients, particularly in the 55-64 age group at 6.3% and the 65-74 age group at 6% (Dhestina et al., 2020).

Hypertension, or high blood pressure, is a condition characterized by elevated arterial blood pressure with systolic pressure ≥140 mmHg or diastolic pressure ≥90 mmHg. This condition is a global health issue that can lead to death in both developed and developing countries. Hypertension is often referred to as the "silent killer" because it typically does not exhibit symptoms, necessitating serious attention to prevent complications (Kusuma et al., 2024).

According to the results of a study using the chi-square test, there is a significant association between several factors and the incidence of hypertension among the elderly at the Lampaseh Health Center in Banda Aceh City in 2022. Salt consumption habits (OR 2.49; p-value 0.016), physical activity levels (OR 2.42; p-value 0.017), and obesity (OR 2.35; p-value 0.031) were found to have a significant association with the occurrence of hypertension in the elderly. Based on this, it can be concluded that obese individuals are 2.35 times more likely to develop hypertension compared to non-obese individuals. However, gender (OR 1.38; p-value 0.545) did not show a significant association. These factors indicate that dietary patterns, physical activity, and nutritional status, particularly those related to obesity, play a crucial role in the risk of hypertension among the elderly. Improving nutritional status through salt intake regulation and increased physical activity can be preventive measures to reduce the risk (Maulita et al., 2023).

According to research Kusuma et al. (2024), excess body weight can lead to fat tissue accumulation, increasing vascular resistance, thereby causing higher blood pressure, particularly systolic blood pressure. Individuals with a high body mass index have higher systolic blood pressure compared to those with normal weight. Various studies have demonstrated a link between nutritional status and hypertension in the elderly, where weight gain plays a significant role in the mechanism of hypertension development. The larger the body mass, the more blood is required to supply oxygen and nutrients to body tissues, resulting in increased blood volume and greater pressure on arterial walls.

Families play a very important role in maintaining and improving the nutritional status of the elderly to keep them in optimal health. One step that can be taken is to ensure that the elderly have a regular and balanced diet. Elderly people who live with their families tend to receive better monitoring of their daily eating habits compared to those who live independently. Ensuring a nutritious diet is a key principle in supporting the immune system and health of the elderly (Brahtyaswari et al., 2022). The family's ability to manage family health is very important, in terms of the extent to which the family must have the ability to recognize health problems, make decisions, provide family health services, maintain a home environment that supports health, and maintain relationships that benefit the family and health facilities (Miranti et al., 2023; Nainggolan et al 2025). The health of

the elderly in family care can be seen from their physical, social, economic, psychological, and spiritual aspects. This aligns with the World Health Organization (WHO) statement that health is not merely the absence of disease or infirmity but also a state of balance between physical, mental, and social functions (Habil and Berlianti, 2023).

Conclusion

This study provides an overview of the nutritional status and distribution pattern of Body Mass Index (BMI) among the elderly in Limau Manis Subdistrict, Padang City. The results of the study show that the majority of elderly individuals in Limau Manis Subdistrict have a BMI within the normal range (65.625%), but there is a prevalence of obesity at 18.75% and overweight at 9.375%. Malnutrition was found in 6.25% of the elderly. Based on demographic factors such as age and gender, most elderly individuals are in the 66–70 age range, with women outnumbering men. Nutritional issues, whether deficiencies or excesses, can have serious impacts on the health of elderly individuals, such as an increased risk of hypertension, diabetes, and a decline in quality of life.

Recommendations

1. Increased Nutritional Awareness
   a. Socialization and education for the community, especially the elderly, on the importance of maintaining nutritional balance by consuming balanced, nutritious foods appropriate for their age.
   b. Counseling on the dangers of obesity and malnutrition and their prevention.
2. Health Program Interventions
   a. Development of holistic health programs to improve the quality of life for the elderly, such as regular health check-ups, weight management programs, and appropriate physical activities.
   b. Involvement of healthcare professionals to monitor the nutritional status of the elderly on a regular basis and provide diet recommendations tailored to individual needs.
3. Social and Economic Support
   a. Empowering families through education, such as improving their ability to care for and maintain the health of the elderly.
   b. Providing assistance or subsidies to the elderly in economically disadvantaged groups to ensure their nutritional needs are met.
   c. Establishing elderly communities that can provide social, emotional, and motivational support for healthy living.
4. Cross-Sector Collaboration
   a. Integrating elderly health programs with health department policies and related agencies to create an environment that supports healthy living.

The findings of this study are expected to serve as a reference for more effective health program planning, particularly in preventing and addressing nutritional issues among the elderly in Limau Manis Subdistrict, Padang City.

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