The influence of nutrition knowledge, Energy intake and family income level on the nutritional status of the elderly

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Article Info	Abstrak
	Status gizi yang buruk pada lansia dapat meningkatkan risiko penyakit kronis, menurunkan kualitas hidup, dan memperberat beban keluarga. Oleh karena itu, penting untuk memahami faktor-faktor yang memengaruhi status gizi pada lansia, khususnya di wilayah pedesaan. Penelitian ini bertujuan untuk menganalisis pengaruh pengetahuan gizi, konsumsi energi, dan tingkat pendapatan keluarga terhadap status gizi lanjut usia di Desa Pagongan. Penelitian menggunakan metode observasional dengan desain cross-sectional dan melibatkan 40 responden lansia yang dipilih secara purposive. Data pengetahuan gizi diperoleh melalui kuesioner, asupan energi dihitung berdasarkan recall 24 jam, dan status gizi diukur menggunakan indeks massa tubuh (IMT). Analisis bivariat dilakukan dengan uji Chi-Square untuk mengetahui hubungan antara variabel independen dengan status gizi lansia. Hasil penelitian menunjukkan bahwa terdapat hubungan signifikan antara pengetahuan gizi (p=0,043), konsumsi energi (p=0,012), dan pendapatan keluarga (p=0,001) dengan status gizi lansia. Penelitian ini menegaskan pentingnya edukasi gizi yang tepat serta dukungan ekonomi keluarga dalam menjaga dan meningkatkan status gizi lansia di masyarakat pedesaan.

Abstract

Poor nutritional status in the elderly can increase the risk of chronic diseases, reduce quality of life, and burden the family. Therefore, it is important to understand the factors that influence nutritional status in the elderly, especially in rural areas. This study aims to analyse the effect of nutritional knowledge, energy consumption, and family income level on the nutritional status of the elderly in Pagongan Village. The study used an observational method with a cross-sectional design and involved 40 elderly respondents who were purposively selected. Data on nutritional knowledge was obtained through a questionnaire, energy intake was calculated based on 24-hour recall, and nutritional status was measured using body mass index (BMI). Bivariate analysis was conducted using the Chi-Square test to determine the relationship between the independent variables and the nutritional status of the elderly. The results showed that there was a significant relationship between nutrition knowledge (p=0.043), energy consumption (p=0.012), and family income (p=0.001) with the nutritional status of the elderly. This study confirms the importance of proper nutrition education and family economic support in maintaining and improving the nutritional status of the elderly in rural communities.

INTRODUCTION

The elderly are an age group that is vulnerable to various health problems, including nutritional problems. As they age, they experience decreased physiological functions such as decreased appetite, ability to chew and digest food, and absorption of nutrients(Purtiantini, SGz 2023). This causes the elderly to be more at risk of nutritional disorders, both deficiencies and excesses, which have an impact on reducing quality of life, increasing the risk of infection, and the emergence of degenerative diseases such as diabetes, hypertension, and heart problems (Ramadhan 2023).

According to the (Sunaryo 2018) (Basic Health Research) data, the prevalence of chronic energy deficiency in the elderly in Indonesia reached 16.1%, with undernutrition and malnutrition in the ≥60 years age group showing an alarming trend. In addition, the prevalence of underweight in the elderly based on body mass index (BMI) was recorded at 19.6%, indicating that almost 16.11 out of 5 elderly people in Indonesia experience nutritional problems.

Factors that affect the nutritional status of the elderly include nutritional knowledge, energy intake or consumption, and family income level (Nuraeni et al. 2018). Elderly people with good nutritional knowledge tend to have a healthier and more balanced diet. Adequate energy intake and as needed can maintain optimal body function of the elderly (Andari 2023). Meanwhile, family income greatly influences access to nutritious food, health services, and overall quality of life (Nuraeni et al. 2018).

Pagongan Village, located in Dukuhturi Sub-district, Tegal Regency, is one of the areas with a high number of elderly residents. Based on data from the local community health centre in 2023, of the 425 elderly people recorded, around 23% were malnourished, while 5% were malnourished. This condition shows that nutrition problems in the elderly is still a serious challenge in Pagongan Village and needs special attention(Www.slawiayu.com 2023).

Given these conditions, this study was conducted to analyse the influence of nutritional knowledge, energy consumption, and family income level on the nutritional status of the elderly in the Pagongan Village area . It is hoped that the results of this study can be the basis for planning interventions and nutrition empowerment programmes for the elderly that are more targeted by the village government and local health officials (Wahyudi, Kuswati, and Sumedi 2022).

METHOD

This type of research is a quantitative study with a cross-sectional approach that aims to analyse the effect of nutritional knowledge, energy consumption, and family income level on the nutritional status of the elderly in Pagongan Village, Dukuhturi District, Tegal Regency. The research was conducted from January to March 2025.

The sample population in this study were all elderly people aged ≥60 years who lived in Pagongan Village. The sampling technique used purposive sampling method with inclusion criteria, namely the elderly who were able to communicate well, did not experience severe cognitive impairment, and were willing to become respondents.

The number of samples was determined using the Slovin formula with an error rate of 5%, so that 40 respondents were obtained.

The independent variables in this study include nutritional knowledge, energy consumption, and family income level (Indah and Aquarista 2018). The dependent variable was the nutritional status of the elderly. Nutritional knowledge was measured using a closed questionnaire that had been tested for validity and reliability. Energy consumption was obtained through the 24-hour recall method for two days (working days and holidays), then analysed using the Food Ingredients Composition List (DKBM) to calculate total energy. Family income data was collected through structured interviews. Nutritional status was measured based on Body Mass Index (BMI), which was obtained from measurements of body weight and height using digital scales and microtoise.

Data were analysed univariately, bivariately and multivariately using SPSS. Bivariate analysis used the Chi-Square test and correlation test, while multivariate analysis used logistic regression to determine the simultaneous effect of independent variables on the nutritional status of the elderly. The results were presented in the form of frequency distribution tables and statistical analyses with a significance level of $p<0.05$.

RESULT AND DISCUSSION

Berdasarkan data yang sudah dikumpulkan sebanyak 40 orang lansia yang memenuhi kriteria inklusi, yaitu berusia ≥60 tahun, mampu berkomunikasi dengan baik, tidak mengalami gangguan kognitif berat, dan bersedia menjadi responden

1. Analisis VAriad Karakteristik Responden

Table 1. Distribusi Karakteristik Responden Lansia di Desa Pagongan

Variable	Frekuensi	Persentase (%)
Usia		
60-69 Tahun	22	55,0
70-79 Tahun	14	35,0
≥80 tahun	4	10,0
Jenis Kelamin		
Laki-laki	16	40,0
Perempuan	24	60,0
Tingkat Pendidikan		
Tidak Sekolah	10	25,0
SD/Sederajat	20	50.0
SMP/SMA	10	25,0
Status Pekerjaan		
Masih Bekerja	12	30,0
Tidak Bekerja	28	70,0

Distribusi Variabel Penelitian

Based on the results of research on 40 elderly respondents in Pagongan Village, it is known that the majority of respondents have a sufficient level of nutritional knowledge, namely 25 respondents (62.5%), while the remaining 15 respondents (37.5%) have insufficient knowledge. In terms of daily energy consumption based on the nutritional adequacy rate (AKG), 18 respondents (45%) consumed energy in the sufficient category (≥100% AKG), while 22 respondents (55%) were classified in the insufficient category (<100% AKG). Based on the level of family income, the majority of the elderly came from families with low income, namely below IDR1,500,000 per month, as many as 26 respondents (65%), while the remaining 14 respondents (35%) came from families with medium to high income (≥ IDR1,500,000 per month). Meanwhile, the nutritional status of the elderly as measured by Body Mass Index (BMI) showed that 21 respondents (52.5%) were

in the good nutrition category, 15 respondents (37.5%) were undernourished, and 4 respondents (10%) were overnourished. This data provides a preliminary picture of the distribution of nutritional characteristics and associated factors in the elderly in rural areas, which can form the basis of future public health interventions.

Distribution of Respondents Based on Nutrition Knowledge

Nutritional knowledge is one of the important factors that influence a person's food consumption behaviour and nutritional status, including in the elderly. In this study, the level of nutritional knowledge of respondents was classified into two categories, namely 'Sufficient' and 'Deficient', based on the scores obtained from the nutritional knowledge questionnaire.

Table 2. Distribution of Respondens Based on Nutrition Knowledge Level

Nutrition Knowledge Level	Frequency	Percentage (%)
Suffcient less	25	62,5
Less	15	37,5
Total	40	100

2. Analisis Bivariat

a. Relationship between Nutrition Knowledge and Nutrition Status of the Elderly

Good nutritional knowledge tends to encourage the elderly to consume foods with a more balanced and nutritious composition. The results of bivariate analysis show that there is a relationship between the level of nutritional knowledge and the nutritional status of the elderly. Table 3. Relationsip between Nutritional Knowledge and Nutritional Status of the Elderly.

Nutrition Knowledge	Good Nutrition	Under/over Nutrition	Total
Suffcient less	16	9	25
Less	5	10	15
Total	21	19	40

The results of the Chi-Square test obtained a value of p = 0,043 (p < 0,05), which indicates that there is a significant relationship between nutritional knowledge and the nutritional status of the elderly. Elderly people who have sufficient nutritional knowledge tend to have better nutritional status.

b. Relationship between Energy Intake and Elderly Nutritional Status

Adequate energy intake is very important to maintain the metabolic balance of the elderly body. A mismatch in energy intake can cause malnutrition or overnutrition

Table 4. Relationship between Energy intake and Elderly Nutritional Status.

Energy Intake	Good Nutrition	Under/over Nutrition	Total
Suffcient less	14	4	18
Less	7	15	22
Total	21	19	40

The Chi-Square test results show a p value = 0,012 (p < 0,05), which means that there is a significant relationship between energy intae and the nutritional status of the elderly. Elderly people who consume energy as needed tend to have better nutritional status.

c. Relationship between Family Income and Elderly Nutritional Status

The level of family income is a determining factor in the ability to fulfil nutritious food needs.

Family Income	Good Nutrition	Under/over Nutrition	Total
≥ Rp1.500.000 /bulan	13	1	14
< Rp1.500.000 /bulan	8	18	26
	21	19	40

Family Income	Good Nutrition	Under/over Nutrition	Total
Total			

The Chi-Square test results show a p value = 0.001 (p < 0.05), which indicates that there is a very significant relationship between family income and the nutritional status of the elderly. Elderly people who come from families with higher incomes tend to have better nutritional status.

Discussion

The results of this study indicate that the nutritional status of the elderly in Pagongan Village is influenced by several factors, namely nutritional knowledge, energy consumption, and family income level. This is in line with the theory and findings of previous studies which state that nutritional status is influenced by cognitive aspects (knowledge), consumption behaviour, and socioeconomic factors(Purtiantini, SGz 2023).

a. Nutrition Knowledge and Nutrition Status of the Elderly

This study found a significant relationship between nutritional knowledge and the nutritional status of the elderly (p = 0.043). Most of the elderly with good nutritional status have a sufficient level of knowledge about nutrition. Knowledge is the result of knowing, which occurs after a person senses a certain object. Knowledge is a very important domain in shaping a person's actions, including in choosing, processing, and consuming nutritionally balanced food. Lack of nutritional knowledge can lead to inappropriate food choices, both in terms of quantity, type, and nutritional content.

This finding is in line with the results of research from (Nurhayati, Yuniarti, and Putri 2019) which shows that nutritional knowledge affects the eating habits of the elderly, and ultimately has an impact on their nutritional status. Therefore, increased education and promotion of nutritional health is needed, especially in the form of counselling that is easily understood by the elderly (Ramadhan 2023).

b. Energy Intake and Nutritional Status of the Elderly

There is a significant relationship between energy intake and nutritional status of the elderly (p = 0.012). Elderly with sufficient energy intake tend to have good nutritional status, while elderly with less energy intake are at risk of malnutrition. The energy needs of the elderly usually decrease due to decreased physical activity and basal metabolism, but adequate energy is still needed to support body function and prevent muscle mass loss or other health problems.

This research is in line with a study by (Boy 2019) which shows that the mismatch between energy intake and needs contributes to malnutrition in the elderly. So, it is important to educate the elderly and their families to adjust their diet to the daily energy needs adjusted for age and activity.

c. Family Income and Nutritional Status of the Elderly

Family income showed a highly significant relationship with the nutritional status of the elderly (p = 0.001). Most of the elderly with low family income were malnourished. Income plays a role in determining the family's ability to meet the needs of quality food, access to health services, and a living environment that supports health.

This study corroborates Maslow's theory that physiological needs such as food are influenced by a person's economic ability. This finding is also consistent with research by (Putri and Devi 2022)which states that low family income has an impact

on the low quality and quantity of food consumed by the elderly, thus affecting their nutritional status(Indah and Aquarista 2018).

CONCLUSION

Based on the results of research in Pagongan Village, it can be concluded that nutritional knowledge, energy consumption, and family income level have a significant influence on the nutritional status of the elderly. Elderly people who have sufficient nutritional knowledge tend to have better nutritional status than those who have less knowledge. In addition, appropriate energy intake also plays an important role in maintaining the nutritional status of the elderly, where insufficient energy consumption can increase the risk of malnutrition. Socioeconomic factors, especially family income, also strongly influence the nutritional status of the elderly; families with higher incomes are better able to fulfil the nutritional needs of elderly members.

As a suggestion, health workers and village governments need to increase nutrition counselling and education for the elderly and their families to improve their knowledge about nutrition and healthy consumption patterns. Families are expected to pay more attention to the adequacy of energy intake and the quality of the elderly's food, and try to increase family income to support the availability of nutritious food. For future research, it is recommended to conduct a study with a larger sample and a more comprehensive research design so that other factors that affect the nutritional status of the elderly can be revealed in more depth.

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