THE IMPACT OF STRESS LEVEL, ENERGY, PROTEIN INTAKE TOWARDS NUTRITIONAL STATUS IN CLASS II B LUMAJANG PRISON

Lulu' Luthfiya[1], Syani Indah Dian Nabila[1]*, Kartika Pibriyanti [1], Hafidhotun Nabawiyah [1], Erlik Sri Anjariyatun [2]

[1] Nutrition Department, Universitas Darussalam Gontor
[2] Class II B Lumajang Correctional Facility.
*syani.indah.dn@gmail.com

ABSTRACT

Background*: Nutritional status is a condition of the body that arises from the balance between food intake and nutrient utilization. Prisoners have the right to receive proper healthcare and food according to their needs. Several factors can influence nutritional status, including food intake and the level of stress experienced by an individual. Additionally, the adequacy of nutrients, especially carbohydrates, fats, and proteins as energy sources, also plays a role in determining nutritional status.* **Objective***: To analyze the relationship between stress level, energy intake, protein intake, and nutritional status among prisoners at the Class II B Lumajang Correctional Facility.* **Methods***: This study employed an analytical observational approach with a cross-sectional design. The study population consisted of male prisoners at the Class II B Lumajang prison, and the total sample size was 92 individuals. The sampling technique used the Slovin formula with the quota sampling method. Data collection involved administering the DASS 42 questionnaire, measuring body weight and height, and recording 3x24-hour food recalls. The data were then analyzed using the Spearman test.* **Results***: there was no significant relationship between stress level and nutritional status (p = 0.121), no correlation between energy intake and nutritional status (p = 0.508), and no association between protein intake and nutritional status (p = 0.645).* **Conclusion***: Based on the findings, it can be concluded that stress level, energy intake, and protein intake are not factors that significantly affect the nutritional status of prisoners at Class II B prison.*

Keywords : Stress level, energy intake, protein intake, nutritional status

INTRODUCTION

Prisoners have the right to receive adequate healthcare and nutrition tailored to their specific needs (Dewi, 2017; Kosendiak., *et al*, 2020). However, Permenkumham (2018) reported that the food provided to prisoners still falls short of meeting the recommended Recommended Daily Allowance (RDA), leading to a prevalence of undernutrition among prisoners reaching 14.3%. Moreover, Isjwara's study (2020) found that 32% of prisoners had poor nutritional status, while 10% had excessive nutritional intake. It is evident that individual nutrient intake can significantly impact their nutritional status.

Given this background, the researcher aimed to investigate the correlation between stress levels and protein-energy intake with the nutritional status of prisoners in Class II B Lumajang City. This study carries novelty compared to previous research as it focuses specifically on male respondents.

The objectives of this research were to identify the characteristics of prisoners, examine the relationship between stress levels and nutritional status, analyze energy intake in relation to nutritional status, and investigate protein intake concerning nutritional status in prisoners.

METHOD

This study was an analytical observational study with a cross-sectional approach. It was conducted between November 2022 and February 2023 at Class II B Lumajang prison. The sample for this study consisted of prisoners who met specific inclusion criteria: they were permanent prisoners, willing to participate as research respondents, aged between 20 to 60 years, and not currently suffering from any illnesses. Exclusion criteria were applied to those with severe illnesses or those who had been transferred to another prison.

Ethical clearance for this research was obtained with registration number 56/UN27.06.11/KEP/EC/2023 from research ethics committee, Faculty of Medicine, Universitas Sebelas Maret. The total number of respondents in the study was 92. To collect data, the researchers employed the DASS 42 questionnaire, along with weight and height measurements. Additionally, a 3x24-hour food recall questionnaire was used. The body height and weight measurements were taken only once, and prison staff members conducted these measurements in the morning.

Throughout the research, data collection involved surveys and interviews, with subsequent analysis performed using the Spearman test. By following these methods, the study aimed to explore various aspects of the relationship between stress levels, energy intake, protein intake, and the nutritional status of prisoners.

RESULTS AND DISCUSSION

Table 1. Respondents Characteristic

Respondent characteristic	Category	Total	
		n	%
Age	17-30	41	44,6%
	31-40	32	34,8%
	41-60	19	20,7%
Length of sentence	<1 years – 3 years	24	26,1%
	4 years- 9 years	51	55,4%
	10 years- 15 years	17	18,5%

Table 1 reveals the distribution of respondents' age groups, with 44.6% falling between the ages of 17 to 30 years, while only 20% were aged between 41 to 60 years. The second characteristic examined was the duration of sentences received by the respondents. The study found that the majority of prisoners (55.4%) had sentences ranging from 4 to 9 years.

This specific age range was chosen due to its significance in terms of developmental stages. According to Elizabeth (1980) as cited in Ajhuri (2019), early adulthood, spanning from the ages of 18 to 40 years, encompasses various changes in physical development, such as a reduced metabolic rate, decreased muscle strength, and alterations in the digestive system.

Table 2. Mean and Median Stress Level, Nutritional Status, Energy and Protein Intake

Variables	Minimum	Maximum	Mean	Median	±SD
Stress level	18	35	27,71	28	3,749
Nutritional status	18	28	23,31	23,70	1,710
Energy	1758	2042	1888,27	1883,50	65,630
Protein	57	75	64,73	64,30	4,189

Table 2 illustrates the levels of stress reported by the respondents. The minimum stress value was 18, with an average mean value of 27.71 and a median of 28. These findings suggest the presence of individuals who are not emotionally affected and do not alter their eating patterns during times of stress (non-emotional eaters). Stress can impact nutritional status in three ways: a) It may cause loss of appetite, leading to weight loss and unintentional slowing down; b) Stress can stimulate the thyroid gland, increasing calorie expenditure and preventing weight gain; c) The brain sends hormonal and neural signals throughout the body (Syarifuddin & Sinaga, 2022; Mckay., *et al*, 2020). During periods of stress, adrenaline hormone levels increase, leading to elevated blood pressure, heart rate, and energy levels. Consequently, blood pressure rises, breathing quickens, and digestion is affected (Adeniyi, 2015). This study aligns with Sukianto's research (2020), which revealed no significant relationship between stress levels and nutritional status.

Table 3 explains the energy intake observed in the respondents, showing considerable variation. The minimum energy intake recorded was 1758 kilocalories, while the maximum reached 2042 kilocalories. The mean value was 1888.27, and the median value was 1883.50. These results indicate that prisoners who currently have a normal nutritional status might be at risk of experiencing a decline in nutritional status if they do not pay attention to their intake (Almatsier, 2010). As for protein intake, the respondents' values ranged from a minimum of 57 grams to a maximum of 75 grams. The mean value for protein intake was 64.73, and the median value was 64.30. This finding further supports the likelihood that respondents with a protein intake below the standard, despite having normal nutritional status, may compensate with sufficient energy intake from carbohydrates and fats, balancing it with their daily physical activities (Siwi and Paskarini, 2018; Andari, 2017). The weakness in this study was that the data collectors were prison staff, whose time was very tight so training in equalizing perceptions in data collection could not be carried out.

CONCLUSIONS AND SUGGESTION

The conclusion of this research indicates the characteristics of the respondents concerning age, where the youngest participant was 18 years old, and the oldest was 63 years old. Regarding the length of sentences, the shortest sentence observed was 10 months, while the longest reached 15 years.

The study found no significant relationship between the level of stress and the nutritional status of prisoners at Class II B Lumajang prison, with a p-value of 0.121. Additionally, no significant correlation was observed between energy intake and the nutritional status of prisoners at Class II B Lumajang prison, with a p-value of 0.508. Furthermore, the research did not find any significant relationship between protein intake and the nutritional status of prisoners at Class II B Lumajang prison, with a p-value of 0.645.

For future researchers, it is recommended to explore other factors that might influence the nutritional status of prisoners. Additionally, it is suggested to use benchmark numbers for energy and protein intake, such as the Harris Benedict formula, especially for individuals in good health, to obtain more accurate and closer-to-actual figures.

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