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THE RELATIONSHIP OF ACADEMIC STRESS AND EATING DISORDERS WITH NUTRITIONAL STATUS AMONG FINAL-YEAR STUDENTS AT UNIVERSITAS PENDIDIKAN INDONESIA

Hubungan Stres Akademik dan Gangguan Makan dengan Status Gizi Mahasiswa Tingkat Akhir Universitas Pendidikan Indonesia

Salma Almira Kuswihandono[1*], Isti Kumalasari[1], Muchamad Rizki Sentani[1], Delita Septia Rosdiana[1]
[1]Program Studi Gizi, Fakultas Pendidikan Olahraga dan Kesehatan, Universitas Pendidikan Indonesia
Email: salma.almirak@upi.edu

ABSTRACT

Final-year students often face academic pressure that may increase stress, disturb sleep quality, and alter dietary patterns, which can ultimately affect nutritional status. This study aimed to examine the relationship between sleep quality, academic stress, food consumption levels, and eating disorder tendencies with the nutritional status of final-year students at Universitas Pendidikan Indonesia. This research employed a quantitative approach with a cross-sectional design and was analyzed using the Spearman correlation test. A total of 105 students were selected through proportionate stratified random sampling. Data were collected using the PSQI questionnaire, SLSI, EDDS, 1×24-hour dietary recall, and interviews. The results showed significant relationships between academic stress (p=0.032) and bulimia nervosa tendencies (p=0.016) with the nutritional status of final-year students. In contrast, no significant relationships were found between nutritional status and sleep quality, dietary intake, general eating disorder tendencies, or anorexia nervosa. In conclusion, this study demonstrated weak associations between academic stress and bulimia nervosa tendencies with the nutritional status of final-year students.

Keyword : *academic stress; eating disorders; final-year students; nutritional status; sleep quality*

ABSTRAK

Mahasiswa tingkat akhir sering menghadapi tekanan akademik yang dapat meningkatkan stres, mengganggu kualitas tidur, serta mengubah pola konsumsi makanan, yang pada akhirnya dapat memengaruhi status gizi. Penelitian ini bertujuan untuk mengetahui hubungan kualitas tidur, stres akademik, tingkat konsumsi, dan kecenderungan eating disorder dengan status gizi mahasiswa tingkat akhir Universitas Pendidikan Indonesia. Penelitian ini merupakan penelitian kuantitatif dengan desain cross-sectional dan dianalisis menggunakan uji Spearman. Jumlah responden sebanyak 105 mahasiswa yang dipilih melalui proportionate stratified random sampling. Pengumpulan data dilakukan menggunakan kuesioner PSQI, SLSI, EDDS, recall 1×24 jam, dan wawancara. Hasil penelitian menunjukkan terdapat hubungan signifikan antara stres akademik (p=0.032) dan kecenderungan bulimia nervosa (p=0.016) dengan status gizi mahasiswa tingkat akhir. Sebaliknya, tidak ditemukan hubungan signifikan antara kualitas tidur, tingkat konsumsi, kecenderungan eating disorder secara umum, maupun anoreksia nervosa dengan status gizi. Simpulan penelitian ini menunjukkan bahwa terdapat hubungan lemah antara stres akademik dan kecenderungan bulimia nervosa dengan

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status gizi mahasiswa tingkat akhir.

Kata Kunci : eating disorder; kualitas tidur; mahasiswa tingkat akhir; status gizi; stres akademik

INTRODUCTION

Good nutrition is essential for everyone, including students. Final-year students are Required to complete their final assignments and write a thesis, which can cause academic stress (Permata & Laili, 2025). The academic stress experienced by students can affect their academic performance, mental health, and reduce their motivation to complete their studies (Tanjungsari et al., 2024). Sleep quality problems and academic stress among students are quite common phenomena. Based on Riskesdas (2018), emotional mental disorders in individuals aged 15 years and above were found to be 9.8% and in the West Java region 12.1%. This has increased by 3.8% and 2.8% in the West Java region from the 2013 Riskesdas results.

Adequate and quality sleep plays an important role in maintaining physical and mental health. Good sleep quality is known to support focus and academic achievement (Caesarridha, 2021). Findings from a study conducted by Noveni et al (2022) state that the increase in poor sleep quality in Indonesia is significantly related to increased academic stress among students. Students who sleep less than 7 hours per night generally experience higher levels of stress than those who sleep longer, indicating that poor sleep quality can reduce students' ability to cope with academic pressure and have a negative impact on their overall well-being.

Stressful conditions can trigger the release of a number of hormones that play a role in regulating eating behavior and nutrient intake (Miliandani & Meilita, 2021). When a person experiences stress, the body releases corticotropin-releasing hormone (CRH), which helps suppress appetite. This response is known as acute appetite regulation. In such conditions, the body still needs energy to maintain normal physiological functions. Over time, glucocorticoid levels in the bloodstream will increase as part of a further stress response. Glucocorticoids stimulate increased lipoprotein lipase activity, which leads to increased mobilization of energy reserves in visceral fat tissue (Nikarli et al., 2024).

A preliminary study conducted in

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January 2025 among 30 final-year students at the Indonesia University of Education showed that 66% of respondents had poor sleep quality, 76% experienced academic stress, and 44% experienced a decrease in food intake, while 56% experienced an increase. Based on these findings, the researchers were interested in investigating the relationship between sleep quality, academic stress, consumption levels, and eating disorders with the nutritional status of final-year students at the Indonesia University of Education.

METHOD

This study used a quantitative approach with a correlational descriptive design through across-sectional survey method. Data collection was conducted from February to May 2025. The population in this study consisted of 13,236 final-year students from the 2021 cohort who had started working on their final projects from the 7th semester at the Indonesia University of Education. The inclusion criteria for this study were active students from the 2021 cohort who were working on their final projects, were willing to be respondents, signed an informed consent form, and followed the research procedures until completion. The exclusion criteria for this study were students suffering from infectious and chronic diseases, pregnant women, those diagnosed with mental health disorders, and those who were absent when the research was conducted.

Sampling was conducted using proportionate stratified random sampling with a total sample of 105 respondents. This study obtained ethical approval from the Respati Indonesia University Ethics Committee with number 48/SK.KEPK/UNR/I/202.

Sleep quality data consisted of two categories, namely good and poor. Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI) developed by Buysse et al. (1989). The instrument was translated into Indonesian and administered based on previously validated Indonesian versions of the PSQI (Setyowati & Chung, 2021). Academic stress data consisted of two categories, namely low and high, using the Student Life Stress Inventory (SLSI) developed by Gadzella (1991). The questionnaire was administered in Indonesia. Eating disorder data were divided into three

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parameters, namely eating disorder tendency, anorexia nervosa, and bulimia nervosa. Each parameter consisted of two categories, namely having a tendency and not having a tendency. Eating disorder data were measured using the Eating Disorders Diagnostic Scale (EDDS) developed by Stice et al. (2000). The questionnaire was administered in Indonesian. Consumption level data was obtained through offline interviews using the 1×24-hour recall method. Consumption levels were categorized into two categories, namely normal intake (100–<120% RDA) and deficient or excessive intake (<70%; 70–<100%; >120% RDA) based on the Indonesian Recommended Dietary Allowances (AKG) (Kementerian Kesehatan Republik Indonesia, 2019).

Nutritional status data were obtained by directly measuring the weight and height of each respondent. The univariate analysis method will describe the frequency distribution of the variables of sleep quality, academic stress, consumption level, and eating disorder, and bivariate analysis will be used to determine the relationship between each variable studied in final year students and nutritional status using the Spearman test.

RESULT AND DISCUSSION

An overview of the characteristics of final-year students based on gender, age, place of residence, sleep quality, academic stress, consumption level, and eating disorder tendencies at the Indonesia University of Education can be seen in Table 1.

Table 1. Characteristics of Final-Year Students at the Indonesia University of Education

Characteristics	n	%
Sex		
Male	56	53,3
Female	49	46,7
Age (years)		
19	6	5,7
20	15	14,3
21	54	51,4
22	21	20
23	9	8,6
Living Arrangement		
Boarding house/Rented	61	58,1
With parents or guardinas	44	41,9
Sleep Quality		

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Characteristics	n	%
Good	41	39
Poor	64	61
Academic Stress Level		
Low	35	33,3
High	70	66,7
Energy Adequacy		
Deficit or Excess	99	94,3
Normal	6	5,7
Protein Adequacy		
Deficit or Excess	84	80
Normal	21	20
Kecukupan Lemak		
Deficit or Excess	83	79
Normal	22	21
Carbohydrate Adequacy		
Deficit or Excess	97	92,4
Normal	8	7,6
Eating Disorder Tendency		
Present	83	79
Absent	22	21
***Anorexia* Tendency**		
Present	17	16,2
Absent	88	83,8
***Bulimia* Tendency**		
Present	9	8,6
Absent	96	91,4

Based on the data presented in the table above, it can be seen that most final year students are male, accounting for 53.3%. The majority of final year students are aged 21, with respondents ranging in age from 19 to 23 years old. More than half of final year students live in boarding houses or rented accommodation. A total of 61% of final year students showed poor sleep quality. In terms of academic stress levels, most final year students experienced high academic stress (66.7%). A total of 79% of final year students showed a tendency towards eating disorders. 16.2% of them showed a tendency towards anorexia nervosa and 8.6% showed a tendency towards bulimia nervosa. The majority of final-year students have abnormal nutritional adequacy, either deficient or excessive. The majority of respondents do not consume adequate macronutrients, with 92.4% deficient in carbohydrates, 80% deficient in protein, and 79% deficient in fat intake.

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Table 2 shows the results of the analysis of the relationship between sleep quality, academic stress, consumption level, and eating disorder with the nutritional status of final year students.

Table 2. Correlation between Sleep Quality, Academic Stress, Consumption Level, Eating Disorder Tendencies, and Nutritional Status of Final-Year Students

Variabel	n	r	p-value	Interpretasi
Sleep Quality	105	0,072	0,468	Weak correlation, not significant
Academic Stress	105	-0,209	**0,032***	**Weak correlation, significant**
Energy Intake	105	-0,019	0,844	Weak correlation, not significant
Eating disorder tendency	105	-0,040	0,684	Weak correlation, not significant
Anorexia tendency	105	-0,070	0,476	Weak correlation, not significant
Bulimia tendency	105	-0,235	**0,016***	**Weak correlation, significant**

The Relationship between Academic Stress and the Nutritional Status of Final Year Students

The results of this study indicate that there is a relationship between academic stress and the nutritional status of final year students with a weak correlation and a negative direction. This indicates that the higher the academic stress, the lower the nutritional status of students. The results of this study are in line with the findings of Said et al. (2025) that stress can affect the nutritional status of students. Stress causes two different changes in eating patterns. The majority of respondents in this study had high levels of academic stress accompanied by abnormal nutritional status. In this study, abnormal nutritional status refers to both under-nutrition and over-nutrition based on Body Mass Index (BMI) classification. Under-nutrition includes respondents classified as underweight, while over-nutrition includes those classified as overweight and obese.

The most commonly felt stress was frustration as a student due to having failed to achieve their goals. In addition, students also felt stressed when they had to find the right solution to the problems they were facing. Respondents also stated that stressful behavior had an impact on irregular eating patterns. When experiencing stress, the body's physiological balance can be disrupted (Miliandani & Meilita, 2021). Each individual has a different reaction to food when experiencing stress. When in a state of psychological stress, the hypothalamus signals the adrenal glands to release the

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hormones adrenaline and cortisol. The hormone cortisol plays a role in increasing a person's appetite. If someone is not good at adapting and is exposed to these factors, it will have a negative impact on their physiological and psychological well-being (Dodikrisno E Manery et al., 2024).

The Relationship between Eating Disorder Tendencies and the Nutritional Status of Final Year Students

This study examined eating disorder tendencies among respondents, which were divided into three parameters: eating disorder tendencies, anorexia nervosa, and bulimia nervosa. The results of this study indicate that there is no relationship between eating disorder tendencies and anorexia nervosa with the nutritional status of final-year students. However, bulimia nervosa shows a significant correlation with the nutritional status of final-year students. In this study, bulimia nervosa was identified at the tendency or early (subclinical) stage, as assessed using a self-report screening instrument, rather than a clinical diagnosis. This stage is characterized by recurrent concerns about body weight and shape, episodes of overeating, and a perceived loss of control over eating behavior, without formal medical diagnosis. This finding reinforces the research conducted by Said et al. (2024), which revealed that there was no significant relationship between eating disorders and the nutritional status of final-year students.

The results of this study reveal that both men and women who are obese are at risk of developing bulimia nervosa. Respondents who have a tendency toward bulimia nervosa feel that their weight and body shape affect how they see themselves, feel out of control, and therefore eat more than usual. Eating disorders can be a coping mechanism or a way of adjusting to trauma caused by constant weight stigma. Extreme dietary restrictions and other unhealthy behaviors are often reinforced or rewarded by the social environment. This can reinforce feelings of low self-esteem and failure, which ultimately worsens eating disorder behavior rather than improving the medical condition (Ralph et al., 2022).

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The Relationship between Sleep Quality and Nutritional Status of Final Year Students

This study shows that there is no relationship between sleep quality and the nutritional status of final year students. These findings are consistent with the study conducted by Saputri et al. (2025), which found no relationship between sleep quality and nutritional status. Similar findings were also shown by research at KSU University in Saudi Arabia by Alafif & Alruwaili (2023), which explained that shorter sleep duration tends to correlate with higher BMI, but this correlation is not statistically significant for specific food intake. Various factors affect sleep quality besides nutritional status, namely physical activity, lifestyle, and environmental conditions (Hidayat & Charissa, 2023).

Based on the findings in this study, most final-year students have poor sleep quality. However, half of the respondents with poor sleep quality have normal nutritional status. This may be explained by the fact that nutritional status, as measured by Body Mass Index (BMI), reflects long-term energy balance, whereas sleep quality can fluctuate over a shorter period. Despite experiencing poor sleep quality, respondents may still maintain adequate dietary intake, sufficient physical activity, and physiological adaptability, particularly as young adults, which helps maintain a normal nutritional status.

On average, respondents go to sleep between 11:00 p.m. and 12:00 a.m. and wake up at 5:00 a.m. Some respondents experience disturbances before sleep due to thinking about their final assignments, insomnia, and overthinking. Poor sleep quality in the long term, either directly or indirectly, affects the development of chronic diseases and nutritional status, which can have an impact on students' health in the long term. (Hagedorn et al., 2021; Kamila & Dainy, 2023; Saputri et al., 2025). An imbalance in the hormones leptin and ghrelin, which are hormones that inhibit and increase appetite, can cause an increase in Body Mass Index (BMI) in people with poor sleep quality.

The Relationship between Energy Intake and Nutritional Status of Final Year Students

The results of this study indicate that there is no relationship between energy intake and the nutritional status of final-year

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students. These findings are consistent with those of Abihail et al. (2023), who found that nutritional intake has no direct relationship with the nutritional status of students. The results found during the 1x24-hour recall interview were that the majority of respondents had inadequate energy intake accompanied by abnormal nutritional status. Most final-year students had eating habits that tended to skip breakfast or dinner and replace them with snacks. In addition, when consuming main meals, most respondents only consumed one type of side dish or one type of vegetable without fulfilling the principles of balanced nutrition, which includes carbohydrates, animal protein, vegetable protein, vegetables, and fruit.

The human body requires a certain amount of energy to support growth and carry out daily activities. This energy is produced through the metabolic process of carbohydrates, fats, and proteins obtained from food. Therefore, optimal energy fulfillment requires an adequate and balanced consumption pattern (Anisa et al., 2024). The metabolism of carbohydrates, fats, and proteins produces energy, which serves as a source of power, controls temperature, and regulates metabolism. If the energy intake into the body is insufficient, the energy reserves stored in the muscles will be used. Weight loss and a lack of other nutrients can lead to a decrease in daily productivity, resulting in malnutrition.

The Relationship between Protein Intake and the Nutritional Status of Final Year Students

These findings indicate that there is no relationship between protein intake and the nutritional status of final-year students. This is in line with a study conducted by Febytia & Dainy (2022) which found no relationship between protein intake and the nutritional status of students. Based on the results of a 24-hour recall, it was found that most final year students only consumed one type of protein during their main meals and consumed the same type of protein in two to three main meals, such as chicken alone or tofu and tempeh. Lack of variety in protein consumption can affect daily protein adequacy (Wati et al., 2024).

Adequate protein intake is very important for humans, because protein is needed by the body to build and maintain existing tissues (M et al., 2023). Consuming too much protein causes the body to obtain

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more energy, which will be converted into fat. If the amount of energy in the body is excessive, this will lead to overweight and obesity. Meanwhile, a long-term lack of protein will disrupt every process that occurs in the body and reduce the body's resistance to disease (Periselo & Anwar, 2024). The main functions of protein are to build and maintain body tissue and play a role in the formation of hormones, enzymes, antibodies, regulation of body fluid balance, and transport of nutrients (Periselo & Anwar, 2024).

The Relationship between Fat Intake and the Nutritional Status of Final Year Students

The results of this study reveal that there is no relationship between fat intake and the nutritional status of final year students. This is in line with the study conducted by Rani et al. (2021) which found that there is no relationship between fat intake and the nutritional status of students. This contrasts with the study by Febytia & Dainy (2022) which states that fat intake is related to the nutritional status of students. The difference in results may be due to the fact that this study used consecutive sampling.

Based on interviews with respondents, it was found that the majority of final year students' fat intake was inadequate, accompanied by abnormal nutritional status. This may be due to the fact that students' daily intake still does not meet their daily requirements. Respondents also often skip main meals and replace them with snacks. Most respondents consumed main meals containing fat, such as fried chicken and Padang rice.

Fat metabolism involves catabolism and anabolism processes, where enzymes and hormones help fats undergo metabolic processes. Fat in the body functions as the largest energy reserve in the form of adipose tissue (Nurlabibah et al., 2023). During fat metabolism, triglycerides do not immediately convert into glycerol but require the assistance of hormones and enzymes. Fat oxidation occurs when carbohydrate reserves in the form of glycogen are depleted. This process begins with the transport of fatty acids into the mitochondria, facilitated by carnitine as a carrier molecule. Upon reaching the mitochondria, fatty acids are released from carnitine and undergo degradation to produce energy (Salsabila et al., 2025).

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If the body experiences a prolonged fat deficiency, the body's fat reserves will be used continuously, causing weight loss (Periselo & Anwar, 2024). In addition, consuming excess fat is the beginning of overweight, which can lead to degenerative diseases (M et al., 2023).

The Relationship between Carbohydrate Intake and the Nutritional Status of Final Year Students

The results of this study reveal that there is no relationship between carbohydrate intake and the nutritional status of final-year students. This is in line with the study conducted by (Rani et al., 2021) that carbohydrate intake is not significantly related to the nutritional status of students. This contradicts the results of the study (Yitran et al., 2025) that carbohydrate intake is related to the nutritional status of students. The difference is due to the fact that in that study, recall was conducted over 2x24 hours and was only conducted in one faculty.

The results of the study show that most final year students have inadequate carbohydrate intake with abnormal nutritional status. This is because during the 1x24 hour recall interview, it was found that students on average only eat 1-2 main meals a day and snack more often, resulting in inadequate carbohydrate intake. The dominant types of carbohydrate sources consumed by the respondents were rice, noodles, and bread.

Carbohydrates are included in the macronutrient group, which is needed in large quantities as the main source of energy. This requirement is met by the staple foods that each individual eats every day (Fitriana et al., 2022). In addition, some carbohydrates are stored in muscle and liver tissue in the form of glycogen, while others are converted into fat and stored as the body's energy reserves (Periselo & Anwar, 2024).

Inadequate carbohydrate intake can lead to a decrease in energy production from glucose, causing the body to utilize fat reserves through the process of catabolism. This process produces ketone bodies as a byproduct. Insufficient carbohydrate intake has the potential to cause weight loss because the body's fat reserves are reduced. On the other hand, excess carbohydrates will push the body's metabolism towards fat biosynthesis. When nutritional needs are adequate to support the body's needs and daily metabolism, an individual will achieve

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optimal nutritional status (Nurhayati et al., 2024).

CONCLUSION

This study shows that the nutritional status of final-year students is influenced by psychological factors, particularly academic stress and bulimia nervosa tendencies, although the strength of the relationship is weak. Meanwhile, sleep quality, consumption patterns, and eating disorder tendencies in general are not proven to be related to nutritional status. These findings emphasize the importance of paying attention to psychological aspects in maintaining the nutritional health of students.

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