

## The Relationship Between Physical Activities, Consumption Pattern, Body Image and Nutritional Status of High School Students.

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### Abstract

In order for the body to perform biological activities including physical growth, development, exercise, maintaining health, and others, there must be a balance between the nutrients that are consumed and those that are needed by the body. Riskesdas reports an increase in the prevalence of obesity and wasting among teenagers between the ages of 16 and 18. In this study, it will be determined whether there is a connection between female students' nutritional status, eating habits, and physical activity. using the aid of a cross-sectional study strategy. There were 85 pupils in the research sample. Using the chi-square statistical test, univariate and bivariate analysis of the data was performed. According to the findings, 65.4% of female students used relatively little energy. The bivariate analysis revealed that body image ( $p = 0.037$ ), energy consumption ( $p = 0.001$ ), carbohydrate intake ( $p = 0.002$ ), protein intake ( $p = 0.000$ ), and fat intake ( $p = 0.000$ ) were the factors that were most strongly associated with the nutritional status of female students.

**Keywords:** Nutritional Status, Body Image, Young Women.

### Abstrak

Agar tubuh dapat melakukan aktivitas biologis yang meliputi pertumbuhan fisik, perkembangan, olahraga, menjaga kesehatan, dan lain-lain, harus ada keseimbangan antara zat gizi yang dikonsumsi dengan yang dibutuhkan tubuh. Riskesdas melaporkan peningkatan prevalensi obesitas dan wasting di kalangan remaja antara usia 16 dan 18 tahun. Pada penelitian ini akan ditentukan apakah ada hubungan antara status gizi siswi, kebiasaan makan, dan aktivitas fisik. Menggunakan bantuan strategi studi cross-sectional. Ada 85 siswa dalam sampel penelitian. Menggunakan uji statistik chi-square, analisis data univariat dan bivariat dilakukan. Menurut temuan, 65,4% siswi menggunakan energi yang relatif sedikit. Analisis bivariat mengungkapkan bahwa citra tubuh ( $p = 0,037$ ), konsumsi energi ( $p = 0,001$ ), asupan karbohidrat ( $p = 0,002$ ), asupan protein ( $p = 0,000$ ), dan asupan lemak ( $p = 0,000$ ) merupakan faktor-faktor yang menjadi penyebab berhubungan paling kuat dengan status gizi siswi.

**Kata Kunci:** Status Gizi, Body Image, Remaja Putri.

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## INTRODUCTION

Adolescence is a very important period in building their development in the first decade of life (UNICEF, 2010). As a child transitions into a young adult, there is a period of fast growth and change during this time. Biological changes that take place during adolescent puberty include changes in body composition, height and weight gain, bone mass accumulation, and sexual development (Almatsier, 2009). Adolescence is a time when people develop their sense of self, moral and ethical values, sense of self-worth, perceptions of their bodies, and awareness of sexuality and psychosocial concerns (Zainuddin et al., 2022). Teenagers frequently experience drastic changes in their body form and size, which can result in the development of eating disorders and a negative self-image (Brown,

2013). The quantity of food consumed and the amount of nutrients consumed are influenced by eating habits, thoughts about one's body, and physical activity, which in turn affect nutritional status (Arifin et al., 2023). Negative body image will encourage someone to restrict eating and vomit intentionally (Emilia, 2009). This can have an impact on an individual's ability to maintain and change their nutritional status. Problems that often arise in young women due to perceptions of body shape are eating behavior problems, such as anorexia nervosa and bulimia (Kalhan, 2009).

The physical growth and dramatic development experienced by adolescents significantly increase their need for nutrition (Zebua & Sunarti, 2020). To achieve optimal growth, one needs adequate nutritional intake. Inadequate nutritional intake will have an impact on nutritional problems (Zebua & Suhardini, 2021). Nutritional intake below requirements results in malnutrition, whereas if the body obtains excessive amounts of nutrition, it will result in overnutrition (Khomsan, 2004). Failure to achieve optimal nutritional status will have an impact on the current nutritional and health status and also have an impact on the nutritional status of the next generation (Wahab et al., 2022). Good nutritional status will contribute to health, while nutritional problems can cause several negative impacts (Dini, 2022). The nutritional status of obesity in adolescents is a serious problem because it can continue into adulthood and become a risk factor for degenerative diseases, such as cardiovascular disease, diabetes mellitus (DM), arthritis, gallbladder disease, cancer, impaired respiratory function, and various skin disorders. An unhealthy diet will raise your risk of getting sick, especially from infectious diseases (Luturmas et al., 2022).

Women are a group that is more vulnerable to the risk of morbidity and mortality, which can be seen in terms of their psychological, physical, emotional, and reproductive maturity aspects (Susiloningsih et al., 2023). In young women, puberty is marked by the first menstruation (Luturmas, 2022; Zebua, 2021)). If young women limit their calorie intake and experience poor nutritional status, it is possible to delay menarche (Alhamuddin & Zebua, 2021). This is because adolescents who are malnourished grow slower for a longer time; therefore, menarche is also delayed (Noorkasiani & Ismail, 2007). Adolescents are also said to be vulnerable because of the early marriages and pregnancies they will experience next (Salehan et al., 2022). A significant public health issue that causes stunted growth and nutritional anemia in teenage girls is malnutrition. If young women's nutritional needs are not satisfied, they will also give birth to undernourished children, which will cause malnutrition issues for future generations (Serly, 2015). Obese adolescent girls are likely to remain obese as adults and experience higher morbidity and mortality rates than the general population (Zebua, 2020).

## **METHOD**

This study has a cross-sectional study design and is an epidemiological investigation. All of the 370 participants in this study were students. For sampling in this investigation, a straightforward random sample strategy was applied utilizing probability sampling. Filling out a questionnaire is how

primary data is gathered. In this study, univariate and bivariate data analysis techniques were employed.

## **RESULT AND DISCUSSION**

The majority of female students (58.8%), according to the findings of the study done on a sample of 85 female students, had normal nutritional condition, but there were still many female students who experienced nutritional problems (undernutrition and overnutrition status). Based on the univariate results, it is known that there are more female students who have a negative body image, which is equal to 52.9%, compared to female students who have a positive body image. Based on the bivariate results, it is known that students who have a negative body image (20.0%) experience less nutritional status than students who have a positive body image. There are still many female students with normal nutritional status who have a negative body image, which is 46.7%. Based on the OR value, it can be concluded that female students who have a negative body image have a 0.500-fold greater risk of experiencing malnutrition than female students who have a positive body image. Meanwhile, female students who have a negative body image have a 0.241-fold greater risk of experiencing normal nutritional status than female students who have a positive body image. According to the OR findings, female students who have a poor body image typically have a lower nutritional status than average.

The results showed that most female students had sufficient energy intake (63.5%), but there were still female students who had insufficient energy intake, namely 36.5%. The bivariate results showed that female students who had less energy intake (38.7%) experienced less nutritional status than female students who had sufficient energy intake. Based on the OR value, it can be concluded that female students who have less energy intake have a 12,000-fold greater risk of experiencing malnutrition status than female students who have sufficient energy intake. Meanwhile, female students with lower energy intake are 1.167 times more likely to have normal nutritional status than female students with higher energy intake. According to the OR findings, female students likely to have a lower nutritional status when they consume fewer calories.

The univariate results showed that most female students had carbohydrate intake as recommended (57.6%), but there were still female students who had less carbohydrate intake than recommended (16.5%) and female students who had more carbohydrate intake than recommended (24.9%). Based on the interview results from the 1-day food recall sheet for the 3 days of the study, it is known that most of the respondents' carbohydrate intake came from rice consumption. Results of the statistical analysis:  $p$  value = 0.002. Research demonstrates that dietary carbohydrate intake and nutritional status are significantly correlated. Based on the OR value, it can be concluded that female students who have carbohydrate intake less than recommended have a 23.333-fold greater risk of experiencing malnutrition than female students who have carbohydrate intake according to the recommendations. Female students who consume the recommended amount of carbohydrates are

1.852 times more likely to be malnourished than female students who consume more carbohydrates than recommended. Students who have carbohydrate intake less than recommended have a risk of experiencing normal nutritional status 6.667 times greater than female students who have carbohydrate intake according to recommendations. Female students who have carbohydrate intake as recommended have a 4.321-fold greater risk of experiencing normal nutritional status than female students who have more carbohydrate intake than recommended. According to the OR findings, female students who consume fewer carbohydrates than is advised run the risk of having low nutritional status.

The univariate results showed that most female students had the recommended protein intake (68.2%), but there were still female students who had less than the recommended intake (15.3%) and female students who had more than the recommended intake (16.5%). Based on the bivariate results, it was found that female students who had less than the recommended protein intake (53.8%) had a lower nutritional status than female students who had the recommended protein intake (10.3%). It is known that based on univariate results the lowest protein intake is 5%, but the results of recall interviews show that the protein intake consumption of female students with malnutrition status is still small and not diverse. Results of the statistical analysis were:  $p$  value = 0.000. This demonstrates that protein intake and nutritional status are significantly correlated. According to the OR findings, female students who consume protein in accordance with the guidelines tend to have a normal nutritional condition.

The univariate results showed that more than half of the female students had the recommended fat intake (60.0%), but there were still female students who. Based on the bivariate results, it was known that more or less nutritional status was experienced by female students who had a fat intake less than the recommended (46.7%) compared to female students who had a fat intake as recommended (11.8%) and a fat intake more than recommended (10.5%). Results of the statistical analysis were:  $p$  value = 0.000. This demonstrates that dietary fat consumption and nutritional status are significantly correlated. According to the OR findings, female students who consume the recommended amount of fat likely to have a normal nutritional state.

The univariate results showed that out of 85 female students, almost half had light physical activity, namely 36 female students (42.4%), followed by 35.3% with moderate physical activity. According to the findings of the interviews, female students spend more time engaging in light and moderate physical activity than they do in strenuous activity. From the results of the interviews, it was also known that most of the female students used motorized vehicles. Based on bivariate results, it is known that on average, students with poor nutritional status have a high level of heavy physical activity (26.3%) compared to moderate physical activity and light physical activity. Then 66.7% of students with better nutrition had a mild level of physical activity. Using the outcomes of the statistical analysis, a  $p$  value of 0.677 was determined. This demonstrates that there is no causal connection between dietary status and physical activity. According to the OR findings, female

students who engage in high levels of physical activity typically have a worse nutritional state than those who have a normal nutritional condition.

## **CONCLUSION**

Based on female students' nutritional status, it was found that there were 17.6% undernutrition cases, 58.8% normal nutritional cases, and 23.5% overnutrition cases. Based on body image, it is known that there are 52.9% negative body images and 47.1% positive body images. Based on consumption patterns, it is known that energy intake is 36.5% less and 63.5% higher. Based on carbohydrate intake, it is known that there is 16.5% intake less than recommended, 57.6% intake as recommended, and 25.9% intake more than recommended. Based on protein intake, it is known that there is 15.3% intake less than recommended, 68.2% intake as recommended, and 16.5% intake more than recommended. Based on fat intake, it is known that there is 17.6% intake less than recommended, 60.0% intake as recommended, and 22.4% intake more than recommended. 42.4% of people engaged in light activity, 35.3% in moderate activity, and 22.4% in heavy activity, according to the data on physical activity. The nutritional status of female students and their body image are related. Consumption habits (energy intake, carbs, protein, and fat) and female students' nutritional status are related. There is no connection between female students' dietary status and physical exercise.

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