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The Relationship Between Physical Activity, Fat and Carbohydrate Intake and Nutritional Status of Undergraduate Nursing Study Program Students at STIKes RSPAD Gatot Soebroto

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Abstract

Nutritional status can be influenced by various factors including age, gender, and ethnicity. Nutritional status is also influenced by food intake and physical activity levels. Unbalanced nutritional intake can affect students' academic performance. Students who are malnourished tend to have low concentration, weak memory, and poor academic performance. This study aims to determine the relationship between Physical Activity, Fat and Carbohydrate Intake and Nutritional Status in Nursing S1 Students at STIKES RSPAD Gatot Soebroto. This study used an analytical observational research method using a cross-sectional design. Research Results: showed that there was no relationship between physical activity and the nutritional status of STIKes RSPAD Gatot Soebroto students known r = -0.179, there was no relationship between fat intake and student nutritional status known r = -648, and there was no relationship between carbohydrate intake and student nutritional status known r = 0.543.

Keywords: Nutrition, Students, Physical Activity, Fat Intake, Carbohydrates

Introduction

A student is someone who is in the process of studying or undergoing an education program at a university. Based on age category, students are in the early stages of adulthood, ranging from 18 to 26 years. Carrying out dense lecture activities can affect food intake or healthy eating patterns because they include limited rest time, piling up assignments, and economic limitations in buying food. Nutritional problems in students are often a concern because this phase of life is marked by significant changes in lifestyle and eating patterns.

The results of the 2018 Basic Health Research report, the 19-year age group showed a prevalence of malnutrition (20.7%) and overnutrition (15.5%) with). The prevalence of nutritional status of adults aged 20-24 years was 15.8% with undernutrition (thin) and 20.5% with overnutrition (fat) (Ministry of Health of the Republic of Indonesia, 2018). Important nutritional needs to be considered are macro and micro nutrient needs, where excess macro nutrients will have an impact on health, one of which is overweight and obesity and increases the risk of non-communicable diseases, while macro nutrient deficiencies can have an impact on underweight nutritional status and can easily be confused with infectious diseases due to low immunity. Micro nutrient deficiencies can cause reduced concentration and other disorders.

Nutritional status can be influenced by various factors including age, gender, and ethnicity. Nutritional status is also influenced by food intake and level of

physical activity. According to Wulan and Kurniawan (2020), excess intake of nutrients such as saturated fat and sugar can increase the risk of chronic diseases such as diabetes and heart disease later in life. Research by Lestari and Wijaya (2019) shows that unbalanced nutritional intake can affect students' academic performance. Students who are malnourished tend to have low concentration, weak memory, and poor academic performance. This condition increases the risk of overweight nutritional status. Common methods used to assess nutritional status are Body Mass Index (BMI) and Upper Arm Circumference (ALL). BMI is calculated by dividing body weight (in kilograms) by the square of height (in meters).

Method

The research design used is an analytical observational research type using a cross-sectional design.

Results and Discussion

The results showed that the highest percentage of physical activity was in the moderate category, which was 41.17%. It can be seen from the results of the questionnaire that most of the students studied only traveled moderate distances, doing activities (lifting light weights, helping with housework) almost all of which were done every day, so that the calculation of the respondents' MET was mostly in the moderate category with a total of 1541 MET.

Activities that are often done by students include helping with household chores, taking a leisurely walk. When viewed from gender, all respondents were male, most of whom had high physical activity. This is because men usually prefer to exercise, do heavy activities such as cycling, basketball, running and also have high mobility which causes quite a lot of energy expenditure.

This is in accordance with the results of a study by Iik Supriyatna, et al. in 2018 where out of 50 male respondents, most did high physical activity. Meanwhile, of the total female respondents, most had moderate physical activity. The results of the study showed that the percentage of high fat intake was in the good and less category, namely 44.5%. It can be seen from the results of the questionnaire that they included menus such as eggs, fried fish, and meat in their lunch menu. Students with good fat intake at each meal had an average protein intake of 70-85 grams at recall, making them 80-110%.

Sources of fat in the menu are eggs, fish, and meat. 100 grams of fish contains 3.5 grams of fat, 1 scrambled egg contains 7.45 grams of fat, and 100 grams of red meat contains 3.5 grams of fat23. The Indonesian Ministry of Health recommends that fat consumption be limited to no more than 25% of total energy. Too low fat intake also results in energy consumption not being sufficient because 1 gram of fat produces 9 calories. Restrictions on animal fat also result in low Fe and Zn intake.

The results of the study showed that the percentage of high carbohydrate intake was in the low category, which was 97.5%. It can be seen from the results of the questionnaire that almost all nutrition students consumed less than 100 grams of rice at each meal. If multiplied by 3 for breakfast, lunch, and dinner, the total rice consumed was around 300 grams. Students with low carbohydrate intake at each meal had an average carbohydrate intake of 300-400 grams in the recall, so it was included in the percentage <80%.

Physiological and psychological factors that influence food consumption include hunger which is often determined by habit, appetite which is considered unrelated to nutritional needs, preferences due to frequent contact with the food, emotions and personality12. If continued

for a long period of time, micronutrient deficiencies can affect increased morbidity and mortality rates, and affect serious disorders in children's growth and development.

The results of the study showed that the percentage of students' nutritional status was mostly normal, which was 66.39%. Normal nutritional status in students occurs because students have body proportions or comparisons that are normal when calculated, but in terms of obtaining the intake of nutrients needed by the body, students are categorized as lacking because the desire to eat, the speed of body metabolism, and the availability of food for each student are different and cannot be equated.

A person's nutritional status is determined based on nutritional consumption and the body's ability to use these nutrients. Normal nutritional status indicates that the quality and quantity of food have met the body's needs. A person with poor nutritional status or below normal body weight is at risk of infectious diseases, while someone who is above normal body weight is at risk of degenerative diseases.

Based on respondent data, most students have normal nutritional status. Some other students who do physical activity tend to be moderate 1541 MET or between 600-3000 MET, where the amount of fat and carbohydrate food intake of students does not have a significant impact. However, serious injuries are more common in vulnerable ages such as children, the elderly and weakness due to disease (Pan American Health Organization, 2003).

Respondents' Blood Pressure Overview

Based on the research results, from 12 respondents, the highest degree of hypertension was grade 2. According to Rahajeng and Tuminah (2009), high hypertension is in line with increasing age caused by changes in the structure of large blood vessels, so that blood vessels become narrower and blood vessel walls become stiff, as a result of which systolic blood pressure increases.

Fajar Apriyandi's research (2010) showed that there was a significant relationship between increasing age and the incidence of hypertension. Another theory also states that age is one of the risk factors for hypertension that cannot be changed. In general, the older you are, the greater the risk of hypertension. This is caused by changes in the structure of blood vessels such as; narrowing of the lumen, and blood vessel walls become stiff and their elasticity decreases, increasing blood pressure (Sari, 2017).

Blood Sugar Overview of Respondents

A description of random blood sugar levels in respondents includes one person with high blood sugar test results. Insulin hormone secretion works in response to increased blood glucose levels which causes a feedback mechanism to regulate blood glucose levels. The mechanism is that increased blood glucose will increase insulin secretion, and insulin then increases glucose transport into the liver, muscles, and other cells so that blood glucose levels return to normal values.

The World Health Organization (WHO) states that for every decade of age increase in someone who has passed the age of 30, fasting blood glucose levels will increase by around 1-2 mg/dL. The older a person is, the higher the risk of increased blood glucose levels and impaired glucose tolerance. This is caused by the weakening of all body organ functions including pancreatic cells that are responsible for producing insulin.

Pancreatic cells can experience degradation which causes too little insulin hormone to be produced so that blood glucose levels become high. Accumulation of fat, especially

abdominal fat, affects the reduced adiponectin protein. Adiponectin plays an important role in the metabolism of glucose and fatty acids, especially muscle cells and liver cells that become more sensitive to insulin action. Therefore, increased intra-abdominal central body fat in menopausal women is believed to have an important role in the development of insulin resistance after menopause which can increase blood glucose levels and eventually develop into DM.

The results of this study were weeks after the disaster, loss of property, loss of family, resulting in changes in daily glucose diet, lack of consumption of diabetes medication, emotional stress resulting in impaired glucose control that can lead to lack of glucose levels (hypoglycemia) or excess glucose levels (hyperglycemia) Several disasters in the world such as Hurricane Katrina in America, the Fukushima tsunami in Japan showed that natural disasters have a significant effect on increasing stress in disaster victims associated with decreased glucose control in the one-year period after the disaster. But there are also studies that do not find a significant effect of disasters on DM sufferers.

Respondents' Cholesterol Overview

Based on the results of the study from 61 respondents, the results showed that the most cholesterol levels were normal cholesterol levels and 6 people were abnormal. This can be caused by a history of hypertension which tends to experience more increased cholesterol levels. According to Susilo, et al, (2011) high blood cholesterol levels are experienced by many people with hypertension.

High cholesterol levels can form plaque that appears on the surface of the artery walls. This causes the diameter of blood vessels to shrink (atherosclerosis). Excessive cholesterol in the body will accumulate in the walls of blood vessels and cause a condition called atherosclerosis, which is narrowing or hardening of the blood vessels. This condition is the precursor to heart disease and stroke. As a person gets older and older, cholesterol levels are likely to increase (Sugiarti, 2018).

According to Shabela (2012), increasing age is also one of the causes of high cholesterol which is caused by decreased performance of body organs. said that high blood cholesterol levels can result in cholesterol deposits in the walls of blood vessels. Over time, if cholesterol deposits increase, they will clog the arteries and disrupt blood circulation, making the heart work harder and indirectly worsening hypertension (Lany, 2008). In addition to the direct impact of the disaster, this can be a picture of the high risk of respondents who have comorbid cardiovascular diseases in the midst of a disaster.

The impact of natural disasters can cause various general health problems in survivors which can be caused by various factors when a disaster occurs. Natural disasters such as earthquakes can cause social reactions, infectious diseases, population displacement, weather effects, food and nutrition, water supply and sanitation, mental health and damage to health infrastructure.

Acute health problems that cause injury or death can be caused by building materials, time of occurrence and population density. Rescue efforts are highly dependent on the age of the victim although all ages can be affected. However, serious injuries are more common in vulnerable ages such as children, the elderly and weakness due to disease (Pan American Health Organization, 2003).

Conclusion

The conclusion obtained from Based on the research that has been conducted, it

can be concluded that there is no relationship between physical activity and the nutritional status of STIKes RSPAD Gatot Soebroto students known r = -0.179, there is no relationship between fat intake and nutritional status of students known r = - 648, and there is no relationship between carbohydrate intake and nutritional status of students known r = 0.543.

References

1. Després, J. P., Lemieux, I., & Prud'homme, D. (2001). Treatment of obesity: need to focus on high risk abdominally obese patients. BMJ, 322(7288), 716-720.
2. Gallagher, D., Heymsfield, S. B., Heo, M., Jebb, S. A., Murgatroyd, P. R., & Sakamoto, Y. (2000). Healthy percentage body fat ranges: an approach for developing guidelines based on body mass index. The American Journal of Clinical Nutrition, 72(3), 694-701.
3. Grundy, S. M., Brewer Jr, H. B., Cleeman, J. I., Smith Jr, S. C., & Lenfant, C. (2004). Definition of metabolic syndrome: report of the National Heart, Lung, and Blood Institute/American Heart Association conference on scientific issues related to definition. Circulation, 109(3), 433-438.
4. Heymsfield, S. B., Lohman, T. G., Wang, Z., & Going, S. B. (2019). Human Body Composition. Human Kinetics.
5. Klein, S., Allison, D. B., Heymsfield, S. B., Kelley, D. E., Leibel, R. L., Nonas, C. I., & Kahn, R. (2007). Waist circumference and cardiometabolic risk: a consensus statement from Shaping America's Health: Association for Weight Management and Obesity Prevention; NAASO, The Obesity Society; the American Society for Nutrition; and the American Diabetes Association. Obesity, 15(5), 1061-1067.
6. Kyle, U. G., Bosaeus, I., De Lorenzo, A. D., Deurenberg, P., Elia, M., Gómez, J. M., ... & Pichard, C. (2004). Bioelectrical impedance analysis—part I: review of principles and methods. Clinical Nutrition, 23(5), 1226-1243.
7. Laughlin, G. A., Dominguez, C. E., & Yen, S. S. (2012). Nutritional and endocrine-metabolic aberrations in women with functional hypothalamic amenorrhea. The Journal of Clinical Endocrinology & Metabolism, 83(1), 25-32.
8. Lestari, M., & Wijaya, A. (2019). Asupan Gizi dan Performansi Akademik pada Mahasiswa. Jurnal Pendidikan dan Kesehatan, 17(1), 34-42.
9. Luppino, F. S., de Wit, L. M., Bouvy, P. F., Stijnen, T., Cuijpers, P., Penninx, B. W., & Zitman, F. G. (2010). Overweight, obesity, and depression: a systematic review and meta-analysis of longitudinal studies. Archives of General Psychiatry, 67(3), 220-229.
10. Nelson, M. C., Story, M., Larson, N. I., Neumark-Sztainer, D., & Lytle, L. A. (2008). Emerging adulthood and college-aged youth: an overlooked age for weight-related behavior change. Obesity, 16(10), 2205-2211.
11. Purwanti, N., & Widiastuti, H. (2017). Prevalensi Kelebihan Berat Badan pada Mahasiswa di Indonesia**.** *Jurnal Gizi dan Pangan*, 12(2), 98-105.
12. Sattar, Abdul et al. 2013. Factors Affecting BMI: Assesment of the Effect of Sosiodemographics Factors on BMI in the Population of Ghulam Mohammad Abad Faisalabad. Professional Medical Journal 2013;20(6):956-964.
13. Waloya, Tunggul et. al. 2013. Hubungan Antara Konsumsi Pangan dan Aktifitas Fisik dengan Kadar

Kolesterol Darah Pria dan Wanita Dewasa di Bogor. Jurnal Gizi dan Pangan Maret 2013, 8(1): 9-16.
14. World Health Organization. (2020). *Physical Activity Guidelines*. Retrieved from WHO.com
15. Wulan, R., & Kurniawan, A. (2020). _Dampak Kelebihan Asupan Zat Gizi terhadap Kesehatan_. Journal of Health and Nutrition, 12(3), 221-229.
16. Zainuddin, A., & Lestari, E. (2021). Pola Makan Mahasiswa dan Pengaruhnya Terhadap Kesehatan Mental. Jurnal Psikologi dan Kesehatan, 20(2), 123-135.