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Protein Intake in Medical Students, and Its Relationship to Gender and Physical Activity

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ABSTRACT

Introduction. Protein is a physically and functionally complex macromolecule that has a role in the body. Medical students have been expected to have more knowledge about healthy lifestyles: healthy diet and physical activity. Previous studies have stated many factors affect protein intake. This research was conducted to find out about protein intake and its relationship to gender and physical activity of medical students in the Faculty of Medicine, Universitas Sriwijaya. **Methods.** This was an analytic observational study with a cross-sectional design. Data were collected using questionnaires, food records, and food recall conducted from 8 September 2017 until 27 September 2017, against 279 respondents in the Faculty of Medicine, Universitas Sriwijaya. The data obtained were analyzed with the statistical test of Chi-square with SPSS Version 24. **Results.** Most of the respondents were female. In this study, the majority of respondents have low physical activity (49.8%). The mean protein intake of the respondents was low (81%). There was no significant relationship between gender and protein intake (p-value=0,135). There was no significant relationship between physical activity and protein intake (p-value=0.299). **Conclusion.** This study concluded that protein intake was not related to gender and physical activity of medical students.

1. Introduction

Protein is a macromolecule that has an important role as a main source of energy, along with carbohydrates and fats regulating the metabolic processes of enzymes and hormones in the body, as well as being used for the growth and maintenance of cells and tissues of the body. [1-2] Normal nutritional needs proportion in adults is 60-65% carbohydrate intake, 10-15% protein intake, and 15-25% fat intake from total energy.[3]

National Widyakarya of Food and Nutrition X (2012) said recommended dietary allowance (RDA) for Indonesian is 2,150 kcal of energy and 57 grams of protein with a recommended animal protein of 25%. Based on the energy adequacy level of the Indonesian population in 2014, the average energy adequacy was only 76.6% with 45.7% of the Indonesian population consuming ≤70% of the energy adequacy figure and 5.9% of the population consuming energy ≥130% of the recommended energy adequacy figure.[4]

To meet a balanced nutritional intake, food consumption must be adjusted to the RDA. Recommended dietary allowance is an average nutritional adequacy per day for each age group, gender, body size, and body activity to achieve optimal health.[5]

Previous studies have stated that many factors can affect protein intake. Medical students are expected to have greater knowledge about healthy lifestyles and eating habits compared to students from other faculties, but no studies have definitively explained how this knowledge is applied to everyday life. These studies aim to determine protein intake adequacy in Medical Students, Faculty of Medicine, Universitas Sriwijaya, and to find out factors related to this protein intake.

2. Methods

This study is an analytical observational study with a cross-sectional design. This research was conducted at the Faculty of Medicine from September 8-27, 2017. The population for this study is medical students, Faculty of Medicine, Universitas

Sriwijaya, class 2014-2017. The sample is 279 students who met the inclusion and exclusion criteria. Inclusion criteria are students who are willing to participate in this research and sign informed consent. Exclusion criteria are students who do not fill out the form completely and foreign students. Students who meet the inclusion criteria will fill out a questionnaire preceded by an explanation of how to fill out the questionnaire and a recall is made regarding the contents of the questionnaire that has been collected.

The collected data will be carried out by univariate analysis to determine the distribution of age, gender, regional origin, economic status, physical activity, and protein intake. Bivariate analysis with Chi-square test will be conducted to determine the relationship between gender and physical activity with protein intake.

3. Results

The total sample collected is 279 students out of 882 students, exceeding the number of subjects needed based on the minimum sample size formula calculation. Most of the subjects in this research were from South Sumatra province (57%). Table 1 shows the characteristics of respondents. Most subjects in these studies were aged 18 years (28,3%). Out of the 279 research subjects, 77 college students (27.6%) were male and 202 college students (72.4%) were female. There were 140 students (50.2%) with low physical activity and 139 students (49.8%) with sufficient activity. Most of the students with a protein intake less than recommended in the RDA were 226 students (81%) and as many as 53 students (19%) with adequate protein intake.

Table 1. Characteristics of Respondents (N=279)

Characteristics	n	%
Age		
16	1	0.4
17	29	10.4
18	79	28.3
19	62	22.2
20	59	21.1
21	47	16.8
22	2	0.7
Gender		
Male	77	27.6
Female	202	72.4
Physical Activity		
Low	139	49.8
Sufficient	140	50.2
Protein intake		
Low	226	81.0
Sufficient	53	19.0

Table 2. Relationship Between Gender with Protein Intake of Medical Students (N=279)

Gender	Protein Intake		PR	*p-value*
	Less	Sufficient		
	n (%)	n (%)		
Male	58 (20,78%)	19 (6,82%)		
Female	168 (60,22%)	34 (12,18%)	0,906	0,135
Total	226 (81%)	53 (19%)		

Table 3. Relationship Between Physical Activity with Protein Intake of Medical Students (N=279)

Physical Activity	Protein Intake		PR	*p-value*
	Insufficient	Sufficient		
	n (%)	n (%)		
Low	116 (41,57%)	23 (8,25%)		
Sufficient	110 (39,43%)	30 (10,75%)	1,076	0,299
Total	226 (81%)	53 (19%)		

Table 2 shows the relationship between gender and protein intake in medical students. From these studies, it was found that both male and female subjects have less protein intake. These results suggest that there is no statistically significant relationship between gender and protein intake (p=0.135). Table 3 shows the relationship between physical activity and protein intake. These results suggest that there is no statistically significant relationship between activity and protein intake (p=0,299).

4. Discussion

The characteristic of the subject in this study was grouped according to age, gender, origin, and household expenses. Respondents were taken from all batch students at the medical faculty, and the age range was 16-22 years. Based on research conducted by Yilmaz, et al. (2014) on medical students at the Faculty of Medicine of Cerrahpasa University Istanbul Turkey, the highest age distribution was 606 students (95.3%) in medical students, namely 17-22 years.[6]

In this study, 77 students (27.6%) were male and 202 students (72.4%) were female. Bogna, et al. (2016) studies on medical students of the University of Poznan', Poland showed that out of 151 students, there were 90 female students and 61 male students.[7] Saranya et al. (2017) show that the distribution of female students is more than men, which can be concluded that students in the medical faculty are dominated by women.[8] This is likely because the number of women is indeed more than men. Based on data from the Badan Pusat Statistik (2015), the percentage of the population who are still in school based on female gender is indeed more than men, with a ratio of 21.57% of men and 24.35% of women.

Most of the research subjects came from South Sumatra, this is because most students choose the main choice campus based on their place of origin which is Universitas Sriwijaya.

The results of this study show that there are more students have low physical activity. This result is in accordance with Yilmaz, et al. (2014) which showed 73% of medical students in Turkey did not do regular daily physical activity. As many as 32% of study subjects did not have a specific time for exercise, and 45.7% spent 1–3 hours per week exercising.[6] Student lecturing activities in this study not much different either. Compulsory lectures for 5 working days, sitting quietly in class, are suspected to be the cause of the lack of time for students to increase physical activity.

The average protein intake of the study subjects was mostly lacking. This is in line with the research of Sharma, et al. (2005) which states the average protein intake of 298 students is 44.09 grams. The average protein intake is less than 30% of that recommended by the Indian Council of Medical Research (ICMR).[9] According to research by Saranya et al. (2016) conducted on medical students in South India, 97% of 438 medical students are aware of the importance of a balanced diet but only 42.9% apply it.[8]

In this study, there was no significant relationship between gender and protein intake. This is in line with Amidu, et al. (2017) who found that there were no significant results between gender and protein intake. However, men had a higher total calorie intake compared to the females (p = 0.04).[10] According to ministry of health of the Republic of Indonesia (2013), nutritional adequacy rates are different in males and female.[4] Women are more likely than males to experience energy restriction, which increases their risk for both protein and energy insufficiency.[11] In this study, data on the amount of total protein based on meal times were not analyzed. Therefore, it is still in the form of speculation whether this trend is caused by the same and limited types of food sources on campus.

In this study, there was no significant relationship between physical activity and protein intake. The study from Trieyni (2014) on students of Bogor Agricultural University (IPB) stated that the average protein intake in subjects who like exercise is higher (33.7 g/day) compared to those who do not like to exercise (28.6 gr/day). Amidu, et al. (2017) show that female tend to have a greater risk for overweight and obesity which proved by the low consumption of energy and protein. Female also do less physical activity

compared to male, this can be seen from the high value of MET in male.[10]

5. Conclusion

The average total protein intake of medical students in Faculty of Medicine were less than the recommended dietary allowance. Most of respondents were female. The majority of respondents having low physical activity. There was no significant association between gender and physical activity with protein intake.

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