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Analysis Of Macro And Micro Nutrition On Leukocyte Profiles, Liver Profiles And Kidney Profiles In The Surabaya Plussize Community

Andreas Putro Ragil Santoso[1],*, Rizki Nurmalya Kardina[2], Devyana Dyah Wulandari[1], Arvian Nur Amalina[1], Nurul Ivada Layla Agustina[1], Alfian Daffa Saputra[1]

[1]Department of Medical Laboratory Technology, Faculty of Health, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

[2]Departement of Nutrition, Faculty of Health, Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia

Corresponding author: andreasprs87@unusa.ac.id

Abstract

Obesity is a nutritional problem that occurs throughout the world, including in Indonesia. These nutritional problems can cause more serious health problems even though they do not cause death directly. Diet can affect the presence of obesity. Obesity can cause disturbances in the body, including disturbances in leukocytes and liver and kidney function. The purpose of this study was to determine leukocytes, liver function and kidney function on the consumption of macro and micro nutrients. This research uses observational analytic method. The sampling technique in this study used random sampling. The instruments in this study used a 24-hour food recall and blood collection using venous blood. The study was conducted on 36 people in the pullsize community. Then an ANOVA analysis was performed with a sig of 0.05. Based on the results of the analysis, it showed that there was an effect of the liver profile on macro and micro nutrition with a sig of 0.041, while the profile of leukocytes and liver had no effect with a sig above 0.05.

Keywords: *Pullsize, Macro and Micro Nutrients, Leukocyte Profile, Liver Profile and Kidney Profile*

1.   Introduction

Obesity is a problem in various parts of the world where its prevalence is increasing rapidly, both in developed and developing countries. Obesity can occur due to an imbalance between the energy from food that enters greater than the energy used by the body. This study aims to look at the characteristics of obesity and central obesity in adults in urban areas of Indonesia (Septianti, 2020).

Obesity has reached global epidemic proportions. Obesity is a predisposition to disease and premature death from various diseases. Obesity in childhood has a high risk of becoming obese in adulthood and has the potential to experience various metabolic and degenerative

diseases in later life. Obesity is a predisposition to disease and premature death from various diseases. There are 65% of the world's population living in urban areas where overweight and obesity kill more people than those who are undernourished. Globally, 44% have diabetes, 23% ischemic heart disease, and 33% have obesity-related cancers. (Pasaribu, 2016).

In people who are obese (BMI > 30 kg/m2) there is a change in gene expression in adipocytes that affects the production of pro-inflammatory cytokines. 8 Pro-inflammatory cytokines induce macrophage infiltration and increase the production of tumor necrosis factor (TNFα) and Interleukin-6 (IL-6)). This causes an increase in the recruitment of pro-inflammatory cells, such as

neutrophils and lymphocytes. In previous studies, it was found that there was an increase in the number of leukocytes, neutrophils, and lymphocytes along with an increase in BMI (body mass index) and this increase was also found in young adults (<18 years). This increase in total leukocytes is thought to be related to the risk of metabolic syndrome and cardiovascular disease, while an increase in the number of lymphocytes is associated with the occurrence of insulin resistance (Ivoni, 2021)

It is known that obesity is a multifactorial disease and a risk factor for various diseases such as hypertension, coronary heart disease, diabetes mellitus, hypercholesterolemia, hypertriglyceridemia, hyperlipoproteinemia, obstructive sleep apnea syndrome, and psychosocial disorders, but the relationship between obesity and kidney disease has not been widely reported. organs that can be directly affected by obesity, hypertension, and diabetes, but kidney dysfunction in obesity can occur before there is hypertension or diabetes. Kidney disorders as a complication of obesity are called obesity-related kidney disorders or obesity-related renal injury. Various epidemiological studies have shown that obesity increases the risk of kidney disease, but most of the research on the relationship between obesity and kidney disease has been conducted in the adult population (Sudung, 2017).

Surabaya Plussize Community is a community consisting of obese women, this community is engaged in the social field by bringing together obese people in Surabaya

2. Materials and methods

2.1 Materials

The intake of macro and micro nutrients uses the 2x24 hour Food Recall instrument which is expressed in grams, based on the results of the list of exchange food ingredients. Leukocyte levels, liver function and kidney function, instruments used syringe, vacutainer tube, spectrophotometer, photometer, test tube, micropipet, blue tip and yellow tip.

2.2 Data collection procedures

Food recall data 24 hours

Food recall data is carried out in 2x24 hours for 1 week with 1 weekday and 1 weekend. Researchers determined days to fill in food intake data, namely Wednesday for weekdays and Sunday for weekends. The researcher explains what Food Recall is and explains how to fill in the Food Recall form and explains the size of the household that will be used in estimating food portions. The researcher asked respondents about all the food consumed inside and outside the home along with the estimated dose according to the food consumed in the last 24 hours on the Food Recall sheet. The researcher asked respondents about meal times, food ingredients consumed, how to process them, and other information such as food brands and prices. The

researcher helped to re-describe each type of food ingredient, the portion size that the respondent had consumed in detail including how to cook it and the brand from household size to weight (grams). The researcher cross-checked the food or drink that the respondent had consumed. After conducting 2 interviews, the data used is the average result of carbohydrate intake and zinc intake.

Leukocyte Profile Examination

The working principle of impedance is based on detecting and measuring changes in the electrical resistance generated by blood cells when they pass through a small hole (aperture). The size of the blood cells will be known from the vibration of the electrodes. The results of counting the number of leukocytes with a hematology analyzer will be displayed on the result sheet as WBC (jurastiwi, 2017).

Liver Profile Examination

Serum SGOT examination was prepared, then the determination was carried out using the enzymatic method with a photometer. Then 250µL of SGOT monoreagent was added with 25µL of serum, then incubated for 50 seconds. Then measured with a wavelength of 340 nm at 37 oC. then read the results of the SGOT reading that appears on the device monitor. Serum SGPT examination is prepared, then the determination is carried out using the enzymatic method with a photometer. Furthermore, 250µL of SGPT monoreagent was added with 25µL of serum, then incubated for 50 seconds. Then measured with a wavelength of 340 nm at 37°C. then read the results

Kidney Profile Examination

Serum creatinine measurement of rats was examined using the Jaffe Kinetic method with photometer readings. 50 µL serum added with working reagent (reagent 1 + reagent 2, 1: 1) as much as 500 µL. Then it is measured using a photometer with a wavelength of 490 nm, then the results are read on the device monitor.

Serum urea measurements were carried out by examining using the UV Test method with photometer readings. 10 µL serum added with working reagent Urea (reagent 1 + reagent 2, 4 : 1) as much as 1000 µL. Then it is measured using a photometer with a wavelength of 340 nm at a temperature of 37°C, then the absorbance results are calculated (absorbance result x 0.467 = BUN examination result)

Serum Uric Acid Measurement was examined using the Photometric Enzymatic method with photometer readings. 200 µL serum added with working reagent (reagent 1 + reagent 2, 1: 1) as much as 1000 µL. Then it is measured using a photometer with a wavelength of 550 nm, then the results are read on the device monitor

2.3   Data analysis

The data was analyzed using ANOVA analysis with a sig of 0.05

3.   Results and discussion

The study was conducted by analyzing macro and micro nutrition, especially the effect of protein on leukocyte levels, liver function and kidney function in the Surabaya pullsize group, it was found:

3.1   Macro and micro nutrition (protein) on leukocytes

		Sum of Squares	df	Mean Square	F	Sig.
Leukosit	Between Groups	136.219	27	5.045	3.027	.067
	Within Groups	11.667	7	1.667		
	Total	147.886	34			

The results showed that there was no effect on leukocytes with a sig result of 0.067 or more than 0.05. In previous studies, it was found that there was an increase the number of leukocytes, neutrophils, and lymphocytes along with the increase in BMI (body mass index) and this increase was also found in young adults (<18 years). This increase in total leukocytes is thought to be related to the risk of metabolic syndrome and cardiovascular disease, while an increase in the number of lymphocytes is associated with the occurrence of insulin resistance.

3.2   Macro and micro nutrition (protein) on liver function

		Sum of Squares	df	Mean Square	F	Sig.
Hati	Between Groups	2374.743	27	87.953	3.665	.041
	Within Groups	168.000	7	24.000		
	Total	2542.743	34			

The results showed that there was an effect on leukocytes with a sig result of 0.041 or less than 0.05. SGOT that is slightly above normal does not always show someone is sick. It is possible that the increase occurred not due to abnormalities in the heart, skeletal muscles, brain and kidneys. SGOT levels are also easy to go up and down. It is possible that when examined, the levels are high. But after that it was back to normal. In other people, maybe when examined, the levels are normal, even though they are usually high. Therefore, just one examination cannot actually be used as evidence for making conclusions. In addition, many factors can cause an increase in AST, such as certain medications, lack of sleep, fatigue caused by too much activity or fatigue. caused by sports

3.3   Macro and micro nutrition (protein) on kidney function

		Sum of Squares	df	Mean Square	F	Sig.
Ginjal	Between Groups	6.201	27	.230	1.823	.210
	Within Groups	.882	7	.126		
	Total	7.083	34			

The results showed that there was no effect on kidney function with a sig result of 0.210 or more than 0.05. It is known that obesity is a disease multifactorial and risk factors for various diseases such as hypertension, coronary heart disease, diabetes mellitus, hypercholesterolemia, hypertriglyceridemia, hyperlipoproteinemia, obstructive sleep apnea syndrome, and psychosocial disorders, but the relationship of obesity with kidney disease has not been widely reported is an organ that can be directly influenced by obesity, hypertension, or diabetes,

however Renal dysfunction in obesity can occur before have hypertension or diabetes. Kidney disorders as a complication of obesity is called renal impairment obesity-related or obesity-related renal injury.

4.   Conclusion

Based on the results of the analysis showed that the analysis of micro and macro nutrition on protein on leukocyte profile, kidney showed no effect with sig 0.210 on kidney profile and leukocyte profile. While on the liver profile there is an influence with sig 0.041. This shows that food is something good but can be bad if consumed in excess.

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Conflict of interest

There is no conflict of interest between all authors

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