



**ANALYSIS OF FACTORS CORRELATED WITH THE INCIDENCE OF OBESITY
IN WOMEN OF PRODUCTIVE AGE**

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ABSTRACT

Obesity is excessive accumulation of fat due to an imbalance between energy intake and energy expenditure. This study aims as a community diagnosis to determine the respondent's body mass index and to determine the risk factors that have a reciprocal effect on the nutritional status of the community. This study uses a cross sectional method with a descriptive approach and using a backward logistic regression method: Wald. Data collection is carried out to the population was 55 women who met the inclusion criteria aged 21-65 years and were willing to become respondents. The results of this study, obtained information that the age of the respondent has a significant influence on the obesity status of the community with a significant value of 0.043 with an opportunity of 1.072 times. Likewise, the respondent's work has a significant value of 0.015, this provides information that the more the respondent do the physical activity, can protect the body from obesity status by 1.940 times or almost 2 times for the better. Obesity has a chance of 0.065 times affecting the incidence of hypertension with p-value 0,011. Not only that, a person's stomach circumference is closely related to the incidence of obesity with a p-value of 0.019 and an odds ratio value of 5.019. Eating packaged food such as instant noodles which is often done by respondents has a significant effect on obesity status of 0.059. Instant food will have a negative effect of 3 times of obesity.

Keywords: body mass index; consumption patterns; nutritional status; obesity, physical activity; risk factors; women in productive age

First Received 08 April 2023	Revised 18 April 2023	Accepted 20 April 2023
Final Proof Received 30 April 2023		Published 02 May 2023

How to cite (in APA style)

Kinansi, R., Shaluhiah, Z., Kartasurya, M., Sutningsih, D., Adi, M., & Widjajanti, W. (2023). Analysis of Factors Correlated with the Incidence of Obesity In Women of Productive Age. *Indonesian Journal of Global Health Research*, 5(2), 265-278. <https://doi.org/10.37287/ijghr.v5i2.1597>.

INTRODUCTION

The COVID-19 pandemic has changed people's lifestyles around the world. One of them, we become less physically active because we do more activities at home and maybe also snack or eat more snacks than before the pandemic. This situation will become a "time bomb" that will affect our health after the pandemic era. Even though they are diligent in exercising, many people like to consume fried foods, high in fat and salt, accompanied by sweet and fizzy drinks. This type of food and drink group has a high calorie content and is generally consumed in large portions to create a feeling of fullness. This unhealthy eating habit is very easy to increase fat levels in the body. This triggers the increasing number of obesity in the world (World Health Organization., 2022)

Based on WHO (WHO, 2011), Obesity is excessive accumulation of fat due to an imbalance between energy intake and energy expenditure or a condition of abnormal or excessive accumulation of fat in adipose tissue to such a degree that it can damage health. A person is said to be overweight if his body weight is 10% to 20% of normal body weight, while someone is called obese if he is overweight by more than 20% of normal weight. Obesity is associated with amount of fat in the body. Accumulation of fat in fat cells causing enlargement and increased volume of fat cells / adiposity, changes in preadipocyte tissue to adipocytes and increases adipose tissue cells causing obesity. The causes of overweight in children are the same as in adults, namely behavioral factors and a person's genetics. Behaviors that affect excess weight gain such as consuming high-calorie foods and drinks, lack of physical activity, watching television or other screen devices for a long time, using drugs, and sleeping routines (Centers for Disease Control and Prevention (CDC), 2017).

Based on Riskesdas data in 2018 the proportion of overweight and obesity in adults >18 years has increased from 2007-2018, in 2007 the nutritional status of obesity was 10.5%, then in 2013 it was 14.8% and in 2018 it became 21.8%. This situation is directly proportional to the increase in the occurrence of hypertension, in 2018 the prevalence of hypertension was 34.1%, which percentage has increased from 2013 which was only 25.8% (Kementerian Kesehatan Badan Penelitian dan Pengembangan Kesehatan 1, 2018). Obesity has harmful effects on the body in many ways. People who are obese tend to have high blood pressure and high cholesterol, which are risk factors for cardiovascular disease. Obesity can also increase the risk of impaired glucose tolerance, insulin resistance, and type 2 diabetes mellitus. In addition, obesity also has an impact on breathing, such as asthma and sleep apnea, joint problems and musculoskeletal discomfort, psychological problems such as anxiety and depression, low self-esteem and low quality of life, and social problems such as bullying and stigma. If children are obese, the risk factors for obesity and their disease in adulthood are likely to be more severe (Bass & Eneli, 2014). Obesity is clearly a factor that can increase female fertility disorders, especially disturbances in the menstrual cycle, infertility, complications in pregnancy, and various other health problems (Fontana & Torre, 2016).

Obesity among women of productive age can cause various reproductive health problems such as difficulties in getting pregnant, poor health during pregnancy and postpartum (Dag & Dilbaz, 2015). Another impact of obesity on women of productive age is the emergence of cardiovascular diseases such as high blood pressure, stroke and diabetes mellitus (Flegal, Carroll, Ogden, & Curtin, 2010). For this reason, researchers argue that special attention is needed for women of productive age in dealing with health problems, one of which is obesity. Women have hormones that increase their risk of obesity. The hormones in question, such as estrogen for example, which if the amount is too excessive can cause cellulite, fluid retention, excess weight in the waist and thighs, and enlarged breast size. Another example of a hormone is cortisol, which is produced to regulate the body's response to stressful situations. Sometimes, when the body overproduces the hormone cortisol, the body stores visceral fat around the internal organs. This often leads to excessive belly fat. Based on the description above, the researcher wanted to analyze the factors associated with the incidence of obesity in women of productive age.

METHOD

This study used a cross-sectional design with a descriptive analytic approach. Analysis in testing the hypothesis is needed to test bivariate or two-way to find out whether there is a significant influence of the independent variables which in this case are the respondent's age, occupation, income, educational history, history of degenerative diseases of the respondent,

respondent's consumption patterns, knowledge about the dangers of obesity and the respondent's physical activity habits to the dependent variable in the form of obesity status which is known through the level of the respondent's body mass index (BMI). The respondent's history of degenerative diseases included diabetes mellitus, hypertension, stroke, heart disease and cancer. Respondents' consumption patterns included snack consumption patterns, sweet drink consumption patterns and packaged food consumption patterns as well as respondents' habits of dieting or fasting. The habit of doing physical activity includes the habit of moving and the habit of exercising every day. Data collection was carried out by way of community diagnosis through interviews with the community and measurement of body weight and abdominal circumference using a structured questionnaire measuring waist circumference. The place for carrying out this obesity diagnosis community activity is in the houses of the residents of Dukuh Gamol, Kecandran Village RT.06, RW.06, Sidomukti District, Salatiga City which will be held for one month in June 2022.

Before collecting field data, a preliminary test was carried out as many as 30 research samples, then analyzed for validity and reliability. To test this validity using the SPSS program. The testing technique that is often used by researchers to test validity is using Bivariate Pearson correlation (Pearson Moment Product). This analysis is done by correlating each item's score with the total score. After testing the validity of the 30 preliminary samples, it was found that the value of $r_{count} > r_{table}$ was based on a significant test of 0.05, meaning that each question in the questionnaire was valid. After that, the reliability test was carried out on the questionnaire. Reliability is not the same as validity. This means that a reliable measure will measure consistently, but not necessarily measure what it is supposed to measure. High and low reliability, empirically indicated by a number called the value of the reliability coefficient. Testing the reliability of the questionnaire instrument using the Alpha Cronbach formula because this research instrument is in the form of a questionnaire and a multilevel scale. High reliability is indicated by an r_{xx} value close to 1. Generally agreed that reliability is considered satisfactory if ≥ 0.700 . In the preliminary test, an alpha value of > 0.7 means sufficient reliability, while an alpha > 0.80 provides information that all items are reliable and all questions from the questionnaire consistently have strong reliability.

The bivariate analysis method used is backward:Wald Logistic Regression. Backward method: Wald is very helpful because it directly eliminates insignificant variables through the iteration process. The study population consisted of 55 women who met the inclusion criteria aged 21-65 years and were willing to be respondents. The dependent variable in this study is obesity status, while the independent variables in this study include age, occupation, income, education, abdominal circumference, history of degenerative diseases, consumption patterns and habits of doing physical activity.

RESULTS

Based on the results of measuring the height and weight of the respondents, a body mass index (BMI) will be obtained. The Ministry of Health defines that BMI is a simple index of weight for height that is used to classify overweight and obesity in adults. BMI is defined as a person's weight in kilograms divided by the square of the height in meters (kg/m). Based on the results of the BMI analysis of women of reproductive age in Gamol Rt. 06, the following picture is obtained:

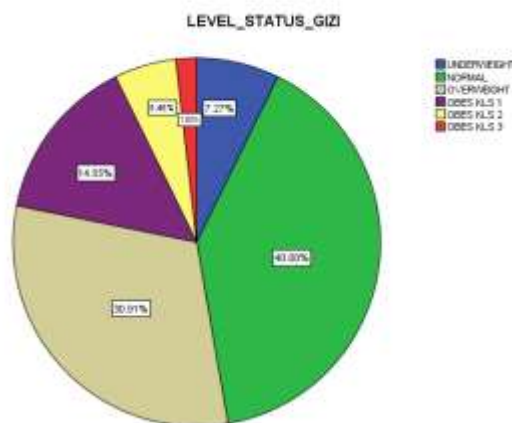


Figure 1. Overview of the Nutritional Status of Women of Productive Age based on BMI in Dukuh Gamol

Based on figure 1, an overview of the nutritional status of women of reproductive age based on BMI in Dukuh Gamol Rt.06 is 40% in normal status. The other 60% have various nutritional status conditions, namely 7.27% are in BMI status below average, and 53.74% of respondents are in BMI status above average. In addition to BMI, abdominal circumference was also observed. Abdominal circumference is measured using a measuring tape that is looped from the navel around the body. According to the Ministry of Health of the Republic of Indonesia, the safe limit for normal abdominal circumference for men is 90 cm and for women is 80 cm. Abdominal circumference that exceeds this limit indicates that a person has excess belly fat. Based on measurements of the abdominal circumference of women of reproductive age in Gamol Village, RT. 06, the following picture is obtained:

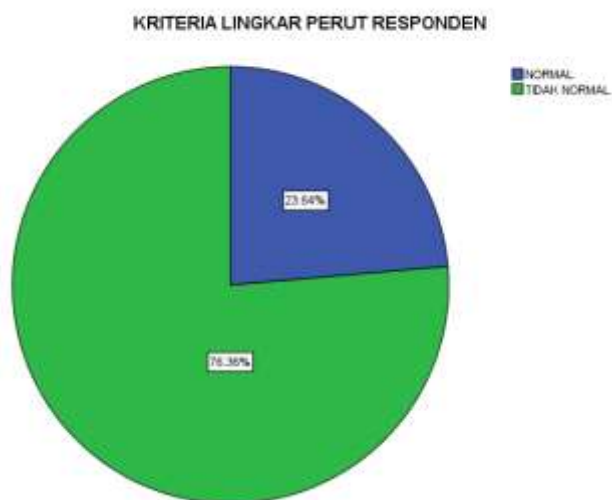


Figure 2. Overview of the Abdominal Circumference of Women of Productive Age in Dukuh Gamol RT.06 in 2022

Based on figure 2, 76.36% of the 55 women of reproductive age in Gamol Village, RT. 06 has a waist size above 80 cm. Normal abdominal circumference describes normal levels of abdominal fat. Abdominal fat consists of subcutaneous fat (fat that lies under the skin) and visceral fat (fat that surrounds the liver and other abdominal organs). Both types of fat, especially visceral fat, need to be reduced because it can be the beginning of many diseases.

Table 1.
Consumption Pattern Criteria for Women of Productive Age in Dukuh Gamol (n=55)

Characteristic	f	%
Age (year)	21-30	10 18,2
	31-40	25 45,5
	41-50	12 21,8
	51-60	8 14,5
	>60	
Occupation	Midwife	21 38,2
	Civil employees/PNS/TNI Polri	13 23,6
	Self-employed	9 16,4
	Casual/Daily Worker	11 20,0
	Farmer	1 1,8
History of Degenerative Diseases	Diabetes Mellitus	1 1,8
	Hypertension	15 27,3
	Stroke	1 1,8
	Cardiovascular	1 1,8
	Asthma	4 7,3
Abdominal Circumference	Normal	13 23,6
	Non-Normal	42 76,4
Education	No school	4 7,3
	SD/MI/Equivalent	22 40,0
	Middle School/Equivalent	13 23,6
	SMA/Equivalent	13 23,6
	D1/D3	2 3,6
	S1/D4/Equivalent	1 1,8
Income	No Income	1 1,8
	<1,000,000	15 27,3
	1,000,000-2,500,000	29 52,7
	2,500,000-5,000,000	8 14,5
	>5,000,000	2 3,6
Main Meal of the Day	2 times a day	17 30,9
	3 Times a Day	36 65,5
	> 3 times a day	2 3,6
Vegetable/fruit consumption	Every day	42 76,4
	3 Times a Week	10 18,2
	2 Times a Week	3 5,5
Eating <i>fast food</i>	Never	37 67,3
	1 Time a Week	2 3,6
	2 Times a Week	15 27,3
	3 Times a Week	1 1,8
Eating Snack	Never	3 5,5
	2 Times a Week	21 38,2
	3 Times a Week	9 16,4
	5 Times a Week	1 1,8
	Every day	21 38,2

Characteristic	f	%
Drink Sugar Content	Never	26 47,3
	1 Time a Day	15 27,3
	2 times a day	13 23,6
	> 3 times a day	1 1,8
Habits of Eating Packaged Foods	Never	28 50.9
	1 Time a Week	11 20.0
	2 Times a Week	13 23.6
	3 Times a Week	2 3.6
	Every day	1 1.8
Knowledge about the Dangers of Obesity	Yes	19 34,5
	No	36 65,5
Regular diet / fasting	Yes	3 5,5
	No	52 94,5

Based on the consumption pattern criteria table above, it can be seen that 36 of the 55 interviewed respondents had 3 main meals a day and almost all of them were accompanied by vegetable fiber. Most of the respondents also never ate fast food such as crispy chicken or burgers or pizza and the like. This gives an indication that women of reproductive age in Dukuh Gamol RT.06 are aware of efforts to live a healthy life. But what needs to be watched out for is the habit of eating snacks or fried foods in spare time. Most of the productive age women in Dukuh Gamol spend their free time eating snacks or fried foods, this can lead to increased cholesterol in the blood and obesity. The habit of drinking warm, sweet tea in the morning cannot be separated from the daily life of Dukuh Gamol residents. This can be seen from the average of 15 women of productive age in Dukuh Gamol who drink hot tea at least once a day and 13 respondents drink sweet drinks twice a day, namely in the morning and evening.

Table 2.

Characteristic	f	%
Physical activity/moving habits	Yes	48 87.3
	No	7 12.7
Sports Habits	Yes	25 45.5
	No	30 54.5

Ideally, in an effort to prevent the dangers of obesity, daily physical activity is required. One way to avoid the dangers of obesity is to exercise regularly every day. Physical activity such as walking or doing moderate aerobics, at least 30 minutes per day, or can also do a healthy bike and running, at least 15 minutes per day. If using step counting, it requires an average of 10,000–15,000 steps/day to prevent excess weight gain. Based on the table above, the women of reproductive age in Dukuh Gamol that we interviewed, as many as 48 respondents did light physical activity every day which caused the body to move and sweat, however in exercising habits, only 25 respondents exercised regularly at least once or twice a week. time.

Hypothesis testing is needed to test bivariate or two-way to find out whether there is a significant influence of the independent variables which in this case are the respondent's age, occupation, income, educational history, respondent's history of degenerative diseases, respondent's abdominal circumference, respondent's consumption patterns, knowledge about the dangers obesity and physical activity habits of respondents to the dependent variable in

the form of obesity status which is known through the level of body mass index (BMI) of the respondent. Table 3 below will provide information on hypothesis testing between obesity status and independent variables including age, occupation, income, education, abdominal circumference, history of degenerative diseases, consumption patterns and habits of doing physical activity.

Table 3.
Bivariate Analysis of the Influence between Nutritional Status and Disease History, Consumption Patterns and Physical Activity of Women of Productive Age in Dukuh Gamol

Variable	Category	Crosstabs		Sign* OR	
		Normal	No		
Age (year)	21-40	17	18	*0,043	1,069
	41-60	5	15		
Occupation	Doesn't work	11	10	*0,015	1,940
	work	31	46		
Income	less than the minimum wage	19	25	0,891	1,048
	minimum wage	3	8		
Education	Elementary School	7	19	0,087	0,635
	Advanced	15	14		
Hipertension	Yes	1	14	*0,011	0,065
	No	21	19		
abdominal circumference	Normal	9	4	*0,019	5,019
	Not-Normal	13	29		
How many times do you eat main meals in a day	2 times a day	6	11	0,999	1,146e 9
	3 Times a Day	16	22		
Respondents' habit of consuming vegetables/fruits every day	Everyday	17	25	0,865	1,050
	rarely	5	8		
Eating Snakcs	never	1	2	0,160	1,322
	more than 2 times a week	15	16		
Eating Fast food	never	16	21	0,478	1,245
	more than 2 times a week	6	12		
Drinking sugar content	never	10	16	0,862	1,055
	everyday	12	17		
Eating packaged food	never	8	20	*0,059	3,080
	more than 2 times a week	14	13		
Knowledge about the Dangers of Obesity	Yes	6	13	0,141	1,500
	No	16	20		
Regular diet / fasting	Yes	1	2	0,809	0,738

Variable	Category	Crosstabs		Sign* OR	
		Normal	No		
Physical Activity	No	21	31	0,330	0,427
	Yes	18	30		
Sports Habits	No	4	3	0,805	1,153
	Yes	10	15		
	No	12	18		

*=Associated Significantly

Through the research hypothesis, it can be interpreted based on the results of bivariate analysis using logistic regression analysis between obesity status in this case BMI level and the variables of respondent's age, respondent's occupation, respondent's income, respondent's educational history, abdominal circumference, history of hypertension, consumption pattern and physical activity. Table 3 provides information that the age of the respondents has a significant influence on the obesity status of the community with a significant value of 0.043 and an Odds Ratio value of 1.069. As the age of the respondent increases, as we get older, the movement of human metabolism becomes slower and will affect the accumulation of fat in the body with an opportunity of 1.069 times. Likewise, the respondent's work has a significant value of 0.015 and an Odds Ratio value of 1.940. This provides information that, the more the respondent do the physical activity, so it can be the protective factor from obesity by 1.940 times or almost 2 times for the better. The nutritional status of the community as indicated by the body mass index (BMI) has an influence on degenerative diseases that occur, in this case the influence on respondents having a history of hypertension or high blood pressure with a significant value of 0.011 with an Odds Ratio value of 0.065. People with obesity status, will have a chance to experience hypertension by 0.065 times compared to people who have a normal body mass index. In addition, the respondent's abdominal circumference had a significant influence on the obesity status of the respondent with a p-value of 0.019 and an Odds Ratio value of 5.019. Eating packaged food, for example instant noodles, which is often done by respondents, has a significant effect on obesity status of 0.059 with an Odds Ratio value of 3.080. Instant food will have a negative effect of 3 times the effect on abnormal nutritional status.

DISCUSSION

Based on Figure 1, it can be seen that the Body Mass Index (BMI) of women of productive age in Dukuh Gamol RT.06 varies. 40% of the 55 respondents had normal nutritional status, the remaining 60% had variations from below average BMI to class 3 obesity levels. BMI or Quatelet index is a form of measurement or screening method used to measure body composition as measured using weight and height which are then measured by the BMI formula. BMI at the age of more than 18 years tends to be dominated by obesity, although underweight is still quite high (Paramurthi, 2014). The underweight condition in Dukuh Gamol was 7.27% of the respondents. The prevalence of obesity cases in the adult age group is 11.7% and overweight is 10%, bringing the total to 21.7%. Data from the Indonesian Ministry of Health stated that the problem of being overweight in women was 26.9% higher than that of men, which was 16.3%. However, both underweight and over weight have the potential to have a major influence on the occurrence of infectious and degenerative diseases. Changes in BMI can occur in various age and gender groups which are not only influenced by diet but also by the level of physical activity performed (Pudjiadi, Hegar, & Dkk., 2010).

Another health parameter that needs to be measured besides BMI is the percentage of body fat, which is divided into subcutaneous fat and visceral fat (visceral). Subcutaneous fat is fatty tissue that is located under the skin and is distributed throughout the body. Meanwhile,

visceral fat is fatty tissue that accumulates between the internal organs (picture the difference between subcutaneous and visceral fat below). This fat can be measured by measuring the abdominal circumference. Figure 2 provides information about the abdominal circumference measured by the respondents. Based on figure 2, 76.36% of the 55 women of reproductive age in Dukuh Gamol RT. 06 has a waist size above 80 cm. Normal abdominal circumference describes normal levels of abdominal fat. Fat found in this part of the abdomen needs to be reduced because it can be the beginning of many diseases.

Based on Figure 1, the percentage of respondents with a BMI above normal is 52.73%, which is an accumulation of the categories of overweight, obesity class 1, obesity class 2 and obesity class 3. Based on these facts, more than 50% of women of reproductive age in Dukuh Gamol RT 06 has BMI above normal. This fact shows that quite a lot of young people experience an increase in BMI values, whether they are overweight or obese. An increase in BMI occurs due to an energy imbalance between food intake or the number of calories consumed and the energy used or expended, causing energy to accumulate in the form of fat. Where age also affects muscle mass and fat accumulation that occurs physiologically (Galletta, 2005). The prevalence of obesity increases continuously until the age of 44 years and decreases at the age of 45-54 years (Li-Ching, Chi-Yin, S, H, & L, 2003).

Based on Table 1 regarding the criteria for consumption patterns of women of reproductive age in Dukuh Gamol RT.06, we can see that almost all respondents eat 3 times a day and always eat vegetables. This is a very good habit as an effort to live a healthy lifestyle. In addition, respondents very rarely eat fast food or instant food, because they remember that there is a lot of unhealthy fat in fast food and instant food products. However, people's habit of eating snacks such as fried products and snacks that contain a lot of glucose is carried out almost every day. Fast food can affect an increase in a person's Body Mass Index, this is caused by the high fat and sugar content in fast food. People who consume high-fat foods will gain weight faster than people who consume high-carbohydrate foods with the same number of calories. A study conducted by Nicklas (Nicklas, Yang, Baranowski, & Berenson, 2003) in Euro-Americans and African Americans also mention that diet, especially the total amount of food consumed is associated with obesity. Besides that according to Patro and Szajewska (Patro & Szajewska, 2010) Obesity is not only influenced by the composition of food consumed, but also by diet. Reducing meal and snack frequency, limiting consumption of sugary drinks and snacks may be associated with reduced risk of obesity.

Table 2 provides information about the physical activities carried out by women of reproductive age in Dukuh Gamol RT.06 every day. As many as 48 respondents out of 55 respondents diligently do physical activity every day. The physical activities carried out were warming up in the morning, cleaning the house, pulling the grass in the yard, working in the fields and cooking or caring for small children. Even though the physical activities carried out are not related to sports, these activities are able to make the respondents sweat and all limbs move, but these physical activities do not significantly affect the obesity status of the community as shown in table 3. Physical activity is defined as any form body movement produced by skeletal muscles and resulting in significant energy expenditure and divided into light, moderate and severe groups. Each activity requires different energy depending on the duration of intensity and muscle work (Fakultas Kesehatan Masyarakat Universitas Indonesia, 2007). Based on WHO estimates, body weight and physical activity are associated with various chronic diseases and overall cause of death globally (WHO, 2010) and (Safro, 2007). Various conveniences obtained in everyday life have an impact in the form of limitations and lack of physical activity ([RISKESDAS], 2013).

According to Rauner et al (Rauner, Mess, & Woll, 2013) excessive weight one of which is caused by low levels of physical activity and body fitness. According to the Head of the Health Promotion Center of the Ministry of Health in 2013, a lazy lifestyle and lack of physical activity can increase BMI and weaken and reduce muscle tone. Muscle tone plays an important role in maintaining the balance of the human body. Dynamic balance that is not optimal will increase the risk of injury that will be experienced when walking or making movements, especially during strenuous motion activities. Nutritional status is a risk factor that plays a role in body metabolism and changes in blood pressure, especially over nutrition. Of the six articles reviewed, all concluded that there was a relationship between nutritional status and the incidence of hypertension (Yuliana, 2020). Women are more at risk of experiencing hypertension because the older they get, the less estrogen levels in the body and followed by a decrease in High Density Lipid levels. So this can make nutritional status as measured by body mass index become obese.

Table 3 shows the results of bivariate analysis, providing information that the age of the respondents has a significant influence on the obesity incidence of the community with a significant value of 0.043 and an Odds Ratio value of 1.072. As the age of the respondent increases, The older a person is, the slower the body's metabolism will be and this will cause fat accumulation which will eventually lead to obesity with an opportunity of 1.072 times. This is in line with research conducted by Hastono (Hastono, 1999), that many socio-demographic factors can affect nutritional status, including age, gender, education, income and smoking habits. Besides that, heredity, hormone levels and one's emotions also play an important role in nutritional status. In addition, the respondent's occupational variable in the results of this study has a significant value of 0.015 with an Odds Ratio value of 1.940, this provides information that the more the respondent do the physical activity, the effect on the increase in nutritional status to normal is 1.940 times or almost 2 times for the better. People who work every day will continue to do physical activity, causing the body to always move and make the body's metabolism better. If the body's metabolism is good, then the intake of energy that enters the body is good so that the nutritional status of the respondents will be stable.

Obesity status has a correlation with the incidence or history of hypertension in women of reproductive age with a significant value of 0.011. Obesity status associated with hypertension suffered by respondents, has an Odds Ratio value of 0.065, which means it has a chance of 0.065 times influencing the incidence of hypertension. In addition, eating packaged foods such as instant noodles which are often done by respondents has a significant effect on obesity status of 0.059. Instant food will have a negative effect of 3 times the effect on obesity status. One of the risk factors for hypertension is lifestyle which includes diet and food intake. Food intake has an important role in determining a person's nutritional status. Nutritional status is a condition caused by a balance between nutrients from food and the need for nutrients used for the body's metabolism (Kemenkes RI, 2019). Based on research conducted by Fitriana in 2015 stated that changes in nutritional status which are marked by an increase in body weight can directly affect changes in blood pressure, therefore the assessment of nutritional status is important because it can describe a person's nutritional status which has a correlation with the occurrence of illness in terms of This nutritional status is associated with the incidence of hypertension (Fitriana, Rohmati, & Sulistiyana, 2015).

In addition to the significant value of obesity in cases of hypertension, this study found that abdominal circumference has a significant effect on obesity incidence in the community. The abdominal circumference variable has a significant value of 0.019 with an odds ratio of 5.019.

This means, people with abdominal circumference that exceeds normal, will tend to have an obesity status. This is in line with research conducted by Hita (Hita, Kushartanti, & Pranata, 2021), that abdominal circumference is related to obesity. In this study, abdominal circumference has a relationship with obesity as indicated by body mass index (BMI). Individuals who have abdominal circumference conditions above safe limits have a factor in the occurrence of overweight or obesity conditions. According to Ilmi & Utari (Ilmi & Utari, 2020) Individuals who have abdominal circumference above safe limits have the possibility of experiencing overweight or obesity. In addition, Rindorindo et al (Rindorindo, W. G., Sapulete, I. M., Pangkahila, 2020) states that obesity status has a significant relationship with abdominal circumference. Abdominal circumference is greatly influenced by the amount of intake we consume without being balanced with balanced sports activities. Basically, foods that contain lots of calories and fat have a big influence on the occurrence of excess weight. Nutrition in food has an effect on the level of a person's nutritional status (Siregar, N. S., Harahap, N. S., Sinaga, R. N., & Affandi, 2020). According to Harbuwono (Harbuwono, D. S., Pramono, L. A., Yunir, E., & Subekti, 2018) There is a significant relationship between abdominal circumference and people who have hypertension. When a person's nutrition increases, various diseases will arise, including abdominal circumference and hypertension which have a close relationship.

Table 3 provides the results of the analysis that consumption patterns of packaged foods such as instant noodles or instant porridge have a significant effect on obesity incidence with a significant value of 0.059 with an Odds Ratio value of 3.080. This provides information that people who regularly consume packaged foods that contain lots of MSG are three times more likely to have an obesity status/overweight. Excessive consumption of MSG can cause health problems such as overweight to obesity (Putri, Anggraeni, Widyastuti, Purwanti, & Fitrianti, 2020). Most people and various groups from children to adults like packaged food because it is considered practical and easy to find anywhere. Research shows that consumers consume the most packaged snack foods because their time is very limited, so they choose to consume packaged snacks that are packaged instantly and practically. Most teenagers like to eat foods containing MSG. Several studies in the United States also reported that children who consumed packaged snacks in excess (derived from types of packaged snacks containing MSG) greatly contributed to increased intake beyond daily requirements and caused obesity in some adolescents. Monosodium Glutamate has the ability to increase hunger and can increase appetite and food intake (Kazmi, Fatima, Perveen, & Malik, 2017).

Excess nutritional status or obesity is the impact of an energy imbalance in which the intake far exceeds the energy expended within a certain period of time, in which condition this nutritional status is a risk factor for non-communicable diseases or degenerative diseases, one of which is hypertension (Arisman, 2018). The government has now created the GERMAS (Community Movement) healthy living program as an effort to reduce the prevalence of non-communicable diseases which include eating fruits and vegetables, periodic health checks such as blood pressure, height and weight. In addition, the Ministry of Health of the Republic of Indonesia also made a program related to diet by implementing the 4 pillars of balanced nutrition, one of which is monitoring and maintaining normal body weight. Government programs that have been made preventive in nature must be implemented as an early warning for the community, including adults.

CONCLUSION

Based on the research results, the body mass index (BMI) of 55 women of reproductive age in Dukuh Gamol RT.06 shows the nutritional status of the respondents. 40% of respondents had

normal nutritional status with a range of 18.5 to 24.99, while 30.91% were overweight and 7.27% of respondents were obese. Factors that influence the obesity status of the people in Dukuh Gamol include the age of the respondent, occupation, education, income, abdominal circumference, history of high blood pressure or hypertension and fast food consumption patterns. The habit of the people to eat snacks such as fried products and snacks that contain lots of glucose is carried out almost every day. Fast food can affect an increase in a person's Body Mass Index, this is caused by the high fat and sugar content in fast food. The daily consumption of vegetables by the residents of Dukuh Gamol RT.06 and physical activity carried out every day, although not related to exercise, are both very helpful in improving the nutritional status of the respondents.

Based on the results of statistics analysis with logistic regression, information was obtained that the age of the respondents had a significant influence on obesity status of the community with a significant value of 0.043. The older a person is, the slower the body's metabolism will be and this will cause fat accumulation which will eventually lead to obesity with an opportunity of 1.072 times. Likewise, the respondent's occupation has a significant value of 0.015, this provides information that, the more often the respondents do physical activity, it will be a protective factor for the incidence of obesity by 1.940 times or almost 2 times for the better. The nutritional status of the community as indicated by the body mass index (BMI) has an influence on degenerative diseases that occur, in this case the influence on respondents having a history of hypertension or high blood pressure with a significant value of 0.011. Obesity status has a 0.065 times chance of influencing the incidence of hypertension. In addition, the respondent's abdominal circumference has a significant correlation with the obesity with a p-value of 0.019 and an Odds Ratio of 5.019. This means that people with stomach circumferences exceeding normal will have a five times chance of having an obesity status. Eating packaged food, for example instant noodles, which is often done by respondents, has a significant effect on nutritional status of 0.059. Instant food will have a negative effect of 3 times the effect on obesity status. Even so, the risk of hypertension in women can be minimized by improving lifestyle which includes eating patterns by implementing GERMAS (Community Movement) healthy living as an effort to reduce the prevalence of non-communicable diseases which include eating fruits and vegetables, do the regular physical activity and exercise and regular health checks such as blood pressure, high body and weight.

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