

## THE FACTORS ASSOCIATED WITH OBESITY IN PT BUKIT MURIA JAYA KARAWANG OFFICE DIVISION EMPLOYEES

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### ABSTRACT

**Background:** Obesity is one of the health problems that often occur in employees who do not maintain a healthy lifestyle. This study aims to determine the factors associated with obesity in employees of the office division of PT BMJ Karawang in 2023 **Methods:** This study used a quantitative approach with a cross-sectional study research design. The study will be conducted from August 2023 to September 2023. The population in this study was 190 workers and the sample used was 83 respondents with a simple random sampling technique. The variables studied were age, sex, food intake, and physical activity. Data collection was carried out using questionnaires, and secondary data from the 2022 MCU results and employee data of PT Bukit Muria Jaya Karawang. **Results:** The data will be analyzed with a chi-square test with results showing that there is a significant relationship between nutritional adequacy (p-value = 0.000) and physical activity (p-value = 0.000) with obesity. While the variables that did not have a significant relationship were gender (p-value = 0.906), age (0.185). **Conclusion:** Efforts are needed to control obesity through healthy eating patterns and increasing physical activity in employees.

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## INTRODUCTION

Obesity is the accumulation of abnormal or excessive fat which can cause a person's weight to exceed predetermined health standards so that it can disrupt health (WHO 2019). According to the International Obesity Institute in London, England in the journal (Pajriyah and Sulaeman 2021) it is estimated that as many as 1.7 billion people on earth are overweight. In (UNICEF 2019) it is explained that the Asia-Pacific region currently has the highest absolute number of people who are overweight and obese in the entire world, namely 40 percent of its total population. In Indonesia, obesity is a serious nutritional problem. Based on the Basic Health Research Report (Kemenkes RI 2018b), obesity in the adult population (aged > 18 years) in the (BMI) category prevalence in Indonesia is 21.8%. In West Java, the prevalence of obesity in adults > 18 years in 2018 is still high, namely 23%. Meanwhile in Karawang Regency in 2018 the adult population (aged > 18 years) in the (BMI) category was 24.28%.

The problem of obesity often occurs in employees, according to Wegiarti Sikalak (2017), someone who works in the office computer department has a high probability of suffering from obesity. When you come home from work you still watch television or sit in front of the computer to get back to work. This results in a lack of time to pay attention to a healthy lifestyle due to insufficient rest time and a lot of work that must be completed immediately. Based on Riskesdas (Kemenkes RI 2018b), the prevalence of nutritional status based on BMI category in the adult population (aged >18 years) in the private sector employment category is 21.8% obese. Meanwhile, the first position is occupied by civil servants/ TNI/ Polri/ BUMN/ BUMD workers with an obesity prevalence of 33.7%.

The impact of obesity is quite broad on various chronic degenerative diseases such as hypertension, coronary heart disease, stroke, cancer and type 2 diabetes as well as bone disorders. So obesity has an impact on health costs both directly and indirectly (Masrul 2018). The incidence of obesity can be influenced by several factors, the first is individual factors such as gender, age and lifestyle (Hermawan 2020). The gender factor occurs most frequently in women compared to men. This result is in line with data on obesity in Indonesia as shown in the 2018 Riskesdas results which show a comparison between obesity in women of 15.11% and men of 12.1% (Kemenkes RI 2018a). According to research conducted by Makmun and Risdayani, (Risdayani and Makmun 2021) it shows that there is a relationship between age and obesity. The third factor is food intake. Currently, ready-to-eat foods that are high in sugar/carbohydrates and high in fat are widely sold and have become a lifestyle for some people. The fourth factor is behavioral factors such as lack of physical activity, for workers who sit more often in front of computers or cellphones so there is very little physical activity and outdoor activities. (Hermawan 2020). Factors that can cause obesity include individual factors such as gender, age and lifestyle as well as genetics or heredity (Hermawan 2020).

The results of research by Gunawan et al (Gunawan, Ichwansyah, and Abdullah 2019) show that there is no relationship between gender and obesity. Furthermore, based on Nugroho's research (Nugroho 2020) Kusteviani (Kusteviani 2015) obtained the results that there was a relationship between age and the incidence of obesity. The results of the 2013 national RISKESDAS found that the incidence of obesity was highest in the 45-54 year age range, namely 36.9%. Furthermore, the results of research by Wening and Afiatna

(Wening and Afiatna 2019) stated that only less than half (42%) of the workforce had normal nutritional status. This can mean that more than half of the workforce (58%) experience nutritional problems, namely underweight and overweight (overweight and obesity). Then, based on the results of research by Winandar et al (Winandar, Muhammad, and Nurlisa 2021), Ratri (Ratri, Budiman, and Hasan 2021) and Agustina et al (Agustina, Lestari, and Prasida 2023), it was found that there was a relationship between physical activity and the incidence of obesity.

PT. (BMJ) is a company operating in the industrial sector. PT. BMJ was founded in 1989 as a company that produces paper and packaging. There are 4 divisions at PT Bukit Muria Jaya, namely Office, Paper Production, Rotogravure Production, and Offset Production. Based on MCU data from PT Bukit Muria Jaya Karawang from 2019 – 2022, there is an increase in the percentage of obesity. In the MCU results from 2019 to 2022, there was an increase in the percentage of obesity in the office division. In the 2022 MCU results for the office division in the age category  $\geq 40$  years, as many as 44 out of 80 employees (55.0%) were obese, with an average age of 48 years. Researchers found

the incidence of obesity using a Body Mass Index (BMI) calculation of  $\geq 27$  kg/m<sup>2</sup>. Based on these circumstances, this research was carried out with the aim of finding out the factors related to obesity among employees of the PT BMJ Karawang Office Division in 2023.

## METHODS

This research uses a quantitative approach with a cross sectional study design. The variables studied were gender, age, food intake and physical activity. The research was carried out from August 2023 to September 2023. The population in this study was 190 people with a sample of 83 respondents using a simple random sampling technique. Primary data collection used the GPAQ questionnaire for physical activity, and the 24-hour Food Recall questionnaire for food intake. Meanwhile, secondary data was obtained from the 2022 MCU results and from employee data from PT Bukit Muria Jaya Karawang for the variables studied, namely age, gender, food intake and physical activity. Data analysis was carried out univariate and bivariate using the chi-square test.

## RESULTS

The results of the univariate analysis in this study are a description (obesity, gender, age, food intake, physical activity) of PT Bukit Muria Jaya Karawang Office Division workers in 2023. The result contains the output of the research, it should be clear and concise. The result should describe or summarize the authentic

findings, valid, and in accordance with the objectives and methods of research.

In this study the independent and dependent variables analyzed were the relationship between gender, age, food intake and physical activity on the incidence of obesity in PT BMJ Karawang Office Division workers in 2023.

**Table 1**

Distribution Of Obesity, Age, Gender, Food Intake, Physical Activity Of PT Bukit Muria Jaya Karawang Office Division Employees in 2023

Variables	n	Percentage (%)
Incidence of Obesity		
- Risk	39	47
- No Risk	44	53
Age Group		
- ≥ 40 years	54	65.1
- < 40 years	29	34.9
Gender		
- Female	25	30.1
- Male	58	69.9
Food Intake		
- ≥ 120 % AKG	38	45.8
- < 120 % AKG	45	54.2
Physical Activity		
- ≤ 600 METS	30	36.1
- > 600 METS	53	63.9

**Table 2**

Distribution of Obesity, Age, Gender, Food Intake, Physical Activity Of PT Bukit Muria Jaya Karawang Office Division Employees in 2023.

Independent Variable	Category	Incidence Of Obesity				Total		P-Value	PR (95%CI)
		Yes		No					
		N	%	N	%	N	%		
Age	≥ 40 Years	22	40.7	32	59.3	54	100	0.185	0.695 (0.446 – 1.083)
	<40 Years	17	58.6	17	41.4	29	100		
Gender	Woman	11	44.0	14	56.0	25	100	0.906	0.911 (0.544 - 1.527)
	Man	28	48.3	30	51.7	58	100		
Food Intake	≥ 120% AKG	36	94.7	2	5.3	38	100	0,000	14,211 (4,750 -42,511)
	< 120% AKG	3	6,7	42	93.3	45	100		
Physical Activity	≤ 600 METS	29	96.7	1	3.3	30	100	0,000	5,123 (2,920 – 8,989)
	>600 METS	10	18.9	43	81.1	53	100		

## DISCUSSION

Based on the results of the study, it was known that respondents who were obese as many as 39 respondents (47.0%). This result is almost the same as the study (Lela et al. 2021) which showed the proportion of obesity by 18 respondents (39.1%). This result is almost the same as the study (Nurmadinisia et al. 2020) which showed the proportion of obesity as many as 45 respondents (45.0%). The results of Basic Health Research in 2018 (Kemenkes RI 2018b) also show the proportion of adult obesity in Indonesia (BMI >27 kg / m<sup>2</sup>) of 29.6%. This result is almost the same as the study (Wulandari, Widari, and Muniroh 2019) which showed the proportion of obesity as many as 11 respondents (22.4%). Based on the results of the study were at the age of ≥ 40 years as many as 54 respondents (65.1%). This result is almost the same as the study (Gunawan et al. 2019) where most of the age of respondents ≥ 40 years as many as 107 respondents (52.2%). This result is almost the same as the study (Zulfa, Dardjito, and Prasetyo 2022) where most of the age of respondents ≥ 40 years as many as 46 respondents (52.9%). This result is almost the same as research (Christianto 2018) where the majority of respondents were ≥ 40 years old with 189 respondents (77.78%). This result is almost the same as research (Wulandari et al. 2019) where the majority of respondents were ≥ 40 years old, with 48 respondents (98.0%). Most employees are ≥ 40 years old. This is because the average employee at PT Bukit Muria Jaya has worked for >10 years, apart from that, the recruitment of new employees, especially in the office division, are workers who have work experience. The number of employees aged ≥ 40 indicates a fairly high risk of obesity. Apart from being busy at work which causes a lack of time to exercise, at the age of ≥ 40 years the body's metabolism begins to

decline, causing body fat to begin to accumulate. If someone does not control their diet and has an irregular lifestyle, they will be at risk of becoming obese (Esther Foni et al. 2023)

The age factor is something that cannot be modified, so it is recommended that companies make efforts to prevent obesity, especially for employees aged ≥ 40 through positive activities such as sports activities. The company has provided quite a lot of free sports facilities to all employees, but employee enthusiasm is quite small so it is not optimal. Suggestions for companies to further increase health promotion related to obesity and invite all employees to take part in sports provided by the company, for example with a program requiring every employee with obesity based on MCU results to take part in sports activities at company facilities at least once a week.

Based on the research results, the majority of respondents were male, namely 58 respondents (69.9 % ). This result is almost the same as research (Nurmadinisia et al. 2020) where the majority of respondents were male, namely 52 respondents (52.0%). This result is almost the same as research (Rosa and Riamawati 2019) where the majority of respondents were male, namely 31 respondents (70.5%). This result is almost the same as research (Wulandari et al. 2019) where the majority of respondents were male, namely 26 respondents (53.1%). The proportion of male employees is higher than female. This is apart from the fact that the majority of PT Bukit Muria Jaya Karawang employees are men. This is because the nature of work at PT Bukit Muria Jaya requires quite a high level of physical activity. Therefore, it is recommended for PT BMJ Karawang Office division to provide closer outreach to employees, especially male ones, about living a healthy lifestyle.



Based on the research results, the average food intake of respondents was 2194.6 Kcal . Meanwhile, there were 45 respondents with food intake <120% of the AKG (54.2 % ). This result is almost the same as research (Zulfa et al. 2022) where the majority of food intake was <120 AKG as many as 54 respondents (62.0%). This result is almost the same as research (Wulandari et al. 2019) where the majority of food intake was <120 AKG for 44 respondents (89.8%).

Apart from excessive food intake, physical activity is also believed to have an influence on the incidence of obesity in employees. At PT Bukit Muria Jaya there is a canteen which provides meals to all employees, but it has not been optimal in evaluating employee food, especially in the canteen, whether employees work hard, medium or light. Should The company creates a healthy catering menu program and diet program for all employees based on employee calorie needs . Suggestions for employees to obtain adequate nutrition are by consuming low calorie foods, consuming fruit or by adequate energy intake in accordance with the AKG recommended by the government in Minister of Health Regulation 28 of 2019. Creating a Thursday program without fried food will accustom employees to healthier consumption. food. Apart from that, you can collaborate with nutritionists in providing a canteen, and at the same time provide education to employees that everyone's food needs are not the same.

Based on the results of the study, respondents who had physical activity  $\geq 600$  METS as many as 53 respondents (63.9%). Research (Nurmadinisia et al. 2020) also shows that the majority of respondents had physical activity  $\geq 600$  METS as many as 68 respondents (68.0%). Research (Winandar et al. 2021) also shows that the majority of respondents had physical activity  $\geq 600$

METS as many as 48 respondents (55.8%). Research (Lela et al. 2022) also shows that the majority of respondents had physical activity  $\geq 600$  METS as many as 24 respondents (52.2%). Most employees have done sufficient physical activity (METS  $\geq 600$ ). Of the 83 respondents, the average physical activity was 1247.66 METS . This shows that individuals can be said to pay attention to their health by doing physical activity before doing activities and without realizing it, the company has helped employees to do enough activities every day. PT Bukit Muria Jaya Karawang provides sports facilities such as football, badminton, table tennis, field tennis, futsal, fitness, swimming, running and other sports without paying. Therefore, it is recommended that companies do more to promote the sports activities provided by the company to employees so that they can get the most out of them. This promotion can be done through social media, posters pasted on wall boards, or banners related to the dangers and prevention of obesity. Companies can also create health-related programs such as holding regular sports such as gymnastics every Thursday together at least once a week.

The results of the study show that there is no relationship between gender and the incidence of obesity at PT Bukit Muria Jaya Karawang Office division. This research is in line with research conducted by (Gunawan et al. 2019) which showed research results that there was no relationship between gender and obesity. This research is also supported by research (Nurmadinisia et al. 2020) with statistical test results showing that there is no relationship between gender and obesity. This research is also supported by research (Agustina et al. 2023) with statistical test results showing that there is no relationship between gender and obesity. This research is also supported by research (Sijabat and Maria 2019) with statistical test results

showing that there is no relationship between gender and obesity. This research is also supported by research (Rizka 2018) with statistical test results showing that there is no relationship between gender and obesity.

The research results show that there is no relationship between age and the incidence of obesity at PT Bukit Muria Jaya Karawang Office division. This research is also supported by research (Gunawan et al. 2019) with statistical test results showing there is no relationship between age and obesity. This research is also supported by research (Sijabat and Maria 2019) with statistical test results showing that there is no relationship between age and obesity. According to (Indonesian Ministry of Health, 2016), it is explained that the most basic health problems are caused by degenerative factors. As you get older, the possibility of experiencing physical, mental, spiritual, economic and social problems will increase. This is also confirmed by (Esther Foni et al., 2023), after  $\geq 40$  years of age, humans will experience a 50% decrease in metabolism. The lower your metabolism, the higher a person's risk of becoming obese.

The results of the study show that there is a relationship between food intake and the incidence of obesity at PT Bukit Muria Jaya Karawang Office division with a PR value of 14.211 (95% CI: 4.750 – 42.511) which means that there is a relationship between food intake and the incidence of obesity at PT Bukit Muria Jaya Karawang Division Office in 2023. This research is in line with research conducted by (Khoiroh et al. 2022) which showed that there was a relationship between food intake and the incidence of obesity with a P value of 0.001. This research is in line with research conducted by (Wulandari, Widari, and Muniroh 2019) which showed that there was a relationship between food

intake and the incidence of obesity. This research is in line with research conducted by (Puspitasari 2018) which showed that there was a relationship between food intake and the incidence of obesity.

The results of the research show that there is a relationship between physical activity and the incidence of obesity at PT Bukit Muria Jaya Karawang Office division with a PR value of 5.123 (95% CI: 2.920 – 9.989) which means that there is a relationship between physical activity and the incidence of obesity at PT Bukit Muria Jaya Karawang Office Division in 2023. This research is in line with research conducted by (Winandar et al. 2021) that there is a relationship between physical activity and the incidence of obesity. This research is in line with research conducted by (Ratri et al. 2021) that there is a relationship between physical activity and the incidence of obesity. This research is in line with research conducted by (Agustina et al. 2023) that there is a relationship between physical activity and the incidence of obesity. This research is in line with research conducted by (Basri 2020) that there is a relationship between physical activity and the incidence of obesity.

## CONCLUSION

The proportion of obesity among PT Bukit Muria Jaya Karawang Office Division workers in 2023 as many as 47%. The factors related to obesity are food intake and obesity and physical activity and obesity. Therefore, workers are expected to regularly carry out physical activity both at home and in the office.

## AUTHOR CONTRIBUTIONS

Winda Bola Adhiraga contributed equally as the main contributor to this

article. Mr. Mugi Wahidin, Ade Haryana, and Ms. Fierdania Yusvita read and approved the final paper.

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