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## FACTORS RELATED TO OBESITY IN EAST JAKARTA CITY WORKERS

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### ABSTRACT

**Background:** Obesity or commonly known as being overweight is a medical condition in which the body has excess fat which has accumulated negative effects on health. Obesity from a health perspective is a disease of malnutrition, as a result of consuming food that far exceeds one's needs. This study aims to determine the factors associated with the incidence of obesity in workers at PT X City of East Jakarta in 2023. **Methods:** This study used a quantitative approach with a cross-sectional study design. The population in this study were 75 workers and the sample used was 75 respondents with a total sampling technique. **Results:** The data will be analyzed using the chi-square test with the results showing that there is a significant relationship between age (p-value = 0.030), nutritional adequacy (p-value = 0.0005) and physical activity (p-value = 0.016). While the variable that has no significant relationship is gender (p-value = 0.896). **Conclusion:** Obesity was related to age, nutrition adequacy and physical activity.

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## INTRODUCTION

Obesity or commonly known as being overweight is a medical condition in which the body has excess fat which has accumulated negative effects on health. Obesity from a health perspective is a disease of malnutrition, as a result of consuming food that far exceeds one's needs (Sumbono, 2021). Obesity is growing rapidly affecting many countries in the world because of its impact on health. The impact of obesity such as: coronary heart disease (CHD), high blood pressure, stroke, type 2 diabetes, dyslipidemia, metabolic syndrome, cancer, sleep apnea. Obesity does not only have an impact on physical health, but can cause psychological disorders, because many studies have reported cases of low self-esteem and depression in obese people and there is even a tendency to despair.

Based on data from the World Health Organization of 115 million people. In most European countries the trend has increased from 10% to 40% in the last 10 years, even in the UK the prevalence of obesity has more than doubled. The World Health Organization (WHO) states that obesity in adult women is more common than in men (Ella et al., 2022). According to the Ministry of Health of the Republic of Indonesia, 39% of adults aged 18 years and over are overweight and 13% have obesity (Ministry of Health of the Republic of Indonesia, 2018). In Indonesia, the incidence of obesity is increasing every year, in 2007 it was 10.5%, in 2013 it increased to 14.8% and in 2018 there was another increase of 21.8%. This condition is experienced by all age groups, both men and women. DKI Jakarta is one of the provinces whose population experiences obesity problems in Indonesia after the province of North Sulawesi (RI Ministry of Health, 2018). Based on the DKI Jakarta Health Profile in 2017, the prevalence of obesity (> 15 years) in East Jakarta was 13.28% (12.63% for men and 13.71% for women) (Natasya, 2020).

The cause of obesity is when a person consumes high-calorie foods and drinks in the long term without being balanced with physical activity (Ministry of Health, Directorate General of Health Services, 2022). In addition, there are other factors that can cause obesity, including individual factors such as gender, age and lifestyle as well as genetics or heredity (Hermawan, 2020). Therefore, based on the results of observations made by researchers, there are four main factors that cause obesity in workers at PT X, namely gender, age, nutritional adequacy and physical activity.

The results of the study by Gunawan et al (2019) showed that there was no relationship between gender and obesity. This research is also supported by research conducted by

Kurniasari et al (2021) which obtained the results of the study, namely that there was no relationship between gender and the incidence of obesity with a p-value (1,000). Furthermore, based on research by Astheria & Djokosujono (2013), Nugroho (2020) Kusteviani (2015) who found that there was a relationship between age and the incidence of obesity. 9%. Furthermore, the results of the research by Wening and Afiatna (2019) stated that only less than half (42%) of the workforce had normal nutritional status. This can be interpreted that more than half of the workforce (58%) experience nutritional problems, namely underweight and overweight and obese. Then, based on the research results of Winandar et al (2021), Ratri (2021) and Agustina et al (2023) which resulted that there is a relationship between physical activity and the incidence of obesity.

PT X operates and provides supplier, contractor services for heavy equipment, mechanical and electrical. PT X is committed to providing the best service to every customer to meet every customer need. The work process is carried out starting from the procurement of goods needed by the customer and carried out by the marketing department until an order for goods occurs, then it will be carried out by the administration section until the goods ordered by the customer arrive at the office, then it will be checked by the warehouse department, when the goods are ready to be sent to the customer by the expedition department. In the marketing and administration department, most of the work is spent indoors in a sitting position until the time the work is finished and the work process is done using a computer,

Based on the results of the initial observations that have been made, with Preliminary study results through interviews, direct measurements of workers using a stature meter and weight scales. Then the data obtained will be calculated using the calculation of Body Mass Index (BMI)  $\geq 25$ . Researchers found the incidence of obesity in PT X workers as many as 9 people (45%) who suffered from obesity out of 20 people.

This study used a quantitative approach with a cross sectional study design. Data collection was carried out using primary data obtained through interviews and direct measurement of workers with the variables studied namely gender, age,

nutritional adequacy and physical activity. Meanwhile, data analysis was carried out using univariate and bivariate methods using the chi-square test. The population in this study were 75 workers and the sample used was 75 respondents with a total sampling technique.

## RESULTS

**Table 1.** Distribution of Obesity, Age, Gender, Physical Activity, and Adequacy of Nutrition in East Jakarta City PT X workers in 2023

Variables	Frequency (n)	Percentage (%)
<b>Obesity Incidence</b>		
- At Risk	24	32
- No Risk	51	68
<b>Gender</b>		
- Males	43	42.7
- Female	32	57.3
<b>Age groups</b>		
- ≥ 35 years	49	65.3
- < 35 years	26	34.7
<b>Nutrition Adequacy</b>		
- ≥ 120%	24	32
- < 120%	51	68
<b>Physical Activity</b>		
- ≤ 600 METs	24	22.7
- > 600 METs	51	77.3

Based on Table 1, the results of univariate analysis showed that the incidence of obesity in PT. X City of East Jakarta in 2023, namely as many as 24 respondents (32.0%) are at risk of experiencing obesity. With the highest proportion of respondents, namely based on the gender variable, there were 43 male respondents. Then in the age variable, there were 49 respondents (65.3%) aged ≥ 35 years, then in nutritional status there were <120% nutritional status, 51 respondents (68.0%), and in the physical activity variable, 58 respondents (86.8%) ) has an activity of >600 MET.

**Table 2.** Factors Associated with Obesity in East Jakarta City PT X Workers in 2023

## DISCUSSION

Based on the results of research conducted by researchers, it is known that 24 respondents (32%) are obese. These results are almost the same as Basri's research (2020), which shows the proportion of obesity is 25 (55.6%). Puspitasari's research (2019) also shows that the proportion of

Variables	Obesity Incidence						P Value
	Yes		No		Total		
	n	%	n	%	n	%	
Gender							0,896
- Male	13	30.2	30	69.8	43	100	
- Female	11	34.4	21	65.6	32	100	
Age groups							0.030
- ≥ 35 years	13	50	13	50	26	100	
- < 35 years	11	22.4	38	77	49	100	
Nutrition Adequacy							0.005
- ≥ 120%	19	79.2	5	20.8	24	100	
- < 120%	5	9.8	46	90.2	51	100	
Physical Activity							0.016
- ≤ 600 METs	10	58.8	7	41.2	17	100	
- > 600 METs	14	24.1	44	86.3	58	100	

Based on table 2, the results of bivariate analysis on the chi-square test showed that there was no relationship between gender and the incidence of obesity (p-value = 0.896 > 0.05). There is a relationship between age and the incidence of obesity (p-value = 0.030 <0.05)

and the Prevalence Ratio (PR) value shows that workers aged ≥ 35 years are at risk of 2.227 times experiencing obesity compared to workers aged <35 years.

There is a relationship between nutritional adequacy and the incidence of obesity (p-value = 0.000 <0.05) and the Prevalence Ratio (PR) value indicates that workers with adequate nutrition ≥ 120% have a risk of 8,075 times experiencing obesity compared to workers who have adequate nutrition < 120%.

There is a relationship between physical activity and the incidence of obesity (p-value = 0.016 <0.05) and the Prevalence Ratio (PR) value indicates that workers with physical activity >600 MET have a risk of 2,437 times experiencing obesity compared to workers with physical activity ≤600.

obesity is 69 (67.6%). Savitri's research (2017) also shows that the proportion of obesity is 59 (62.7%). The 2018 Basic Health Research results also show the proportion of overweight and obese people adults in Indonesia (BMI > 25) of 21.8%.

Based on the results of the study, the results showed that the sex of the majority of respondents who were obese was male, namely 43 respondents

(57.3%). of 262 (60.1%). Loliana's research (2015) also showed that most men had an obesity proportion of 12 (52.2%), while this study was different from research conducted by Kurniasari et al (2021) which showed that most women had an obese proportion of 20 (66.7%). The proportion of male employees is higher than female. This is because male employees pay less attention to healthy lifestyles such as consuming alcohol, high-fat foods, smoking and so on.

Based on the results of the research that has been done, it shows that the characteristics of respondents based on age in this study were the majority aged  $\geq 35$  years, as many as 49 respondents (65.3%). This result is almost the same as Saraswati's research (2019) which showed that most of the aged had an obese proportion of 44 (62.5%). Puspitasari's research (2020) also shows that most of the respondents who are obese are aged 75.6%. Makmun's research (2021) which also shows that the majority of adult respondents are obese by 88 (88.0%). Most of the employees are  $\geq 35$  years old. This is because the older a person is, the immune system will decrease so that they will be more easily infected with disease. The number of employees aged  $\geq 35$  indicates a high risk of obesity. Body fat begins to accumulate starting at the age of 30, due to busy work, causing a lack of time to exercise. If someone does not control their diet and has an irregular lifestyle, they will be at risk of becoming overweight (Saraswati and Fillah, 2012).

Based on the results of research conducted by researchers, it is known that at the level of nutritional adequacy, respondents with nutritional adequacy  $\geq 120\%$  were 24 respondents (57.3%). These results are almost the same as Kurniasari's research (2021) which shows that most of them have good nutritional adequacy so that they experience a proportion of obesity of 16 (53.3%). Research by Astheria (2013) also shows that most of the respondents have good nutritional adequacy. Saraswati's research (2012) also showed that the majority of respondents had good nutritional adequacy, namely 23 (76.7%). The high nutritional adequacy rate ( $> 120\%$ ) among employees is probably due to employees' lack of attention to the food they consume, resulting in a high nutritional adequacy rate. based on observation,

Based on the results of research conducted by researchers, it is known that from

75 respondents, univariate analysis of the characteristics of the respondents was obtained, namely in the category of physical activity respondents who had physical

activity  $> 600$  MET were 58 respondents (77.3%). These results are almost the same as Kurniasari's research (2021) which shows that most have moderate physical activity so that they experience an obesity proportion of 27 (90%). Agustina's research (2023) also shows that most respondents who are obese have moderate physical activity, namely 26 (33.8). Research by Widiantini and Zanfai (2014) also shows that most adult respondents have moderate physical activity so they are at risk of experiencing obesity by (33.9%). Most of the employees have done sufficient physical activity (MET  $> 600$ ). This shows that individuals can be said to pay attention to their health by carrying out physical activities before carrying out activities and without realizing it the company has helped employees to carry out sufficient activities every day. Suggestions for employees to meet the need for physical activity is by stretching the muscles such as sports or you can also do yoga, gym and so on.

The results of the study showed that there was no relationship between gender and the incidence of obesity at PT X in East Jakarta, with a p-value (0.894). between gender and obesity. This research is also supported by research conducted by Kurniasari et al (2021) which obtained the results of the study, namely that there was no relationship between gender and the incidence of obesity with a p-value (1,000). The free time that men have is used to do screen-based activities such as: playing games, playstation, and computers. This is one of the factors that causes the incidence of obesity in males to be higher than females.

The results showed that there was a relationship between age and the incidence of obesity at PT X in East Jakarta, with a PR value of 2.227 (95% CI: 1.166 – 4.254). This research is in line with research conducted by Astheria & Djokosujono (2013), Nugroho (2020) Kusteviani (2015) which found that there was a relationship between age and the incidence of obesity. The 2013 national RISKESDAS results found that the highest incidence of obesity was in the age range of 45-54 year is 36.9%. Weight gain begins at the age of 40 and over and obesity generally occurs at around 40 years of age. It was found that the high prevalence of obesity was in the age range of 20-60 years and after the age of  $> 60$  years the incidence of obesity would decrease. In this study, the age  $> 60$  years with the percentage of obesity reached 79.1%. According to Saraswati and Fillah (2012) In general, at the age of 30, the body's metabolism will work a little slower. As a result, a

person's weight will easily increase more quickly. Even if someone

thinks they have reduced their fat intake, this can still happen. Someone who is aged 30 years or more should avoid obesity, because obesity can be the beginning of the emergence of various diseases.

The results showed that there was a relationship between nutritional adequacy and the incidence of obesity at PT X in East Jakarta with a PR value of 8.075 (95% CI:

3.426 – 19.032). This research is in line with research conducted by Kurniasari et al (2021), Savitri (2017) and Khoiroh (2022) which found that there is a relationship between nutritional adequacy and the incidence of obesity. According to Wening and Afiatna (2019) which stated that only less than half (42%) of the workforce had normal nutritional status. This can be interpreted that more than half of the workforce in CV. Laksana's body (58%) experienced nutritional problems, namely underweight and overweight and obesity. Labor force is a group that is vulnerable to various nutritional problems. This nutritional status will affect labor productivity, but it also reduces accuracy and concentration at work. This can endanger worker safety, because there is a risk of having a work accident (Hardinsyah et al., 2016).

The results showed that there was a relationship between physical activity and the incidence of obesity at PT X in East Jakarta with a PR value of 2.437 (95% CI:

1.330 – 4.464). This research is in line with research conducted by Winandar et al (2021), Ratri (2021) and Agustina et al (2023) which found that there is a relationship between physical activity and the incidence of obesity. However, this research is different from research conducted by Aditya et al (2018), which shows that there is no relationship between physical activity and 77 incidences of obesity in Banjaroyo Kulon Progo Village, Special Region of Yogyakarta. Lack of physical activity can cause nutrients that enter the body not to be burned, but only stored in the body as body fat. This is very risky for various diseases, especially those related to obesity, such as diabetes mellitus. Physical activity markedly modifies the effects of a person's genetic factors. Heavy levels of physical activity can prevent increased fat accumulation with age. Exercise can reduce obesity with a duration of 370 minutes/week for men and 295 minutes/week for women. In strenuous physical activity of more than 30

minutes/day it can reduce abdominal circumference by 0.91 cm (Puspitasari, 2018). Exercise can reduce obesity with a duration of 370 minutes/week for men and 295 minutes/week for women. In strenuous physical activity of more than 30 minutes/day it can reduce abdominal circumference by 0.91 cm (Puspitasari, 2018). Exercise can reduce obesity with a duration of 370 minutes/week for men and 295 minutes/week for women. In strenuous physical activity of more than 30 minutes/day it can reduce abdominal circumference by 0.91 cm (Puspitasari, 2018).

## CONCLUSION

Based on research that has been conducted on factors related to obesity in PT X Kota East Jakarta workers in 2023, the results show that there is no relationship between gender and obesity at PT X Kota Jakarta Timur in 2023. There is a relationship between age and obesity at PT X City of East Jakarta in 2023, There is a relationship between nutritional adequacy and obesity at PT X City of East Jakarta in 2023 and There is a relationship between physical activity and obesity in PT X City of East Jakarta in 2023. Employees are advised to do regular exercise, eat regularly by not eating fatty and high-carbohydrate foods and ensure that the food consumed fulfills the body's nutrition. It is also recommended for employees to prevent obesity by doing moderate physical activity such as sports such as running, swimming, cycling, rollerblading, skateboarding, or even dancing. For employees who have experienced obesity, this can be done by walking at least 10,000 steps/day, aerobics (biking, jogging and golf) and anaerobic (breathing exercises, karate, high jumping, weightlifting) with a frequency of 3-5 times a week and a duration of 40 minutes. -60 minutes. the exercise adjusted to the maximum heart rate according to age, then increase it gradually and follow the principles of the BBTT exercise (Good, Right, Regular and Measurable).

## CONFLICT OF INTEREST

The author declare that no conflict of interests in this work.

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