

# Sex, physical activity, obesity, and hypercholesterolemia in millennial workers of X Corp, Jakarta, Indonesia, in 2023

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## Abstract

**Purpose:** This study aims to analyze the relationship between sex and sedentary behavior and obesity and its impact on hypercholesterolemia in millennial generation workers at X Corp., Jakarta, Indonesia, in 2023. **Methods:** This research is an observational analytic study conducted on 269 millennial workers at X Corp. The data collection was the results of X Corp's workers' medical check-ups. Data processing using the Chi-square test to see whether there's a linkage between the research variables. **Results:** From the tables, there is a correlation found between sex and obesity ( $p=0.001$ ); there is no correlation found between physical activity ( $p=0.105$ ) and smoking behavior ( $p=1.000$ ). There is a correlation between obesity and hypercholesterolemia ( $p=0.004$ ) in millennial workers at X Corp. **Conclusions:** Unhealthy life behaviors can be a risk factor for health problems, including degenerative diseases, as millennial workers get older. Male workers are more at risk of being obese and having an impact on the emergence of hypercholesterolemia and the risk of diabetes mellitus if a healthy lifestyle is continuously neglected. It is suggested that the application of occupational health promotion at X Corp., Jakarta, Indonesia, can be further optimized.

**Keywords:** millennial workers; obesity; occupational health

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## INTRODUCTION

Obesity is a fat-accumulated condition in the body due to an imbalance between energy intake and energy use [1]. Obesity is a complex and multifactorial health problem that develops from various interactions, including interactions with the environment and working activities. The clinical understanding of how and why obesity occurs is uncertain. However, it is suspected that there is a linkage among social factors, including work, habits, cultural, psychological, metabolic, and genetic [2]. Obesity can also be stated as a health risk that affects most of the body's systems because it leads to various non-communicable diseases

(NCDs), such as non-insulin-dependent diabetes mellitus (NIDDM), cardiovascular disease, hypertension, stroke, various forms of cancer, and mental health problems. People with obesity are also three times more likely to be hospitalized due to COVID-19 [3]. Obesity categorization can be clustered by measuring body mass index, where a BMI of  $\geq 27$  kg/m<sup>2</sup> is classified in the obese group [4].

Millennial generation workers dominate the current workforce, so it becomes a challenge to create a work atmosphere that can accommodate the characteristics of millennial generation workers, including in implementing Occupational Health and Safety (OHS) [9]. OHS is a crucial component of labor relations for

millennial, so the government, employers, and trade unions must all commit to carrying it out jointly [10]. The main focus of occupational health and safety efforts is the management of hazards and risks through the implementation of an occupational health and safety management system, with risk management as the core program [11].

Health Risk Assessment includes identification, assessment, and risk control. In the matter of non-communicable diseases in workers generally related to lifestyle, including hypertension, coronary heart disease, and diabetes, proper risk management is carried out on the daily lifestyle of the workers, carried out with health promotion efforts at the workplace [12]. Health promotion at the workplace is a coordinated strategy that includes programs, policies, benefits, and environmental support to keep all workers healthy and safe. These can include health education, access to local fitness facilities, policies that promote a healthy diet or a tobacco-free workplace, and working protection through insurance [13].

A previous study has shown that the majority of workers were obese when associated with age, income, and workplace factors, and it can be seen that the majority of respondents were not active in doing physical activities [14]. Past research showed that obesity suffered by office workers is supported by several risk factors, such as lack of physical activity, lack of sleep duration, consuming monotonous food, excessive energy consumption, marital status, and heredity [15]. Another study stated that managing obesity in the workplace is an ongoing program where preventing obesity through several improvements, including changing lifestyles, became the main focus [16]. A previous study stated that obesity in millennial workers as an active workforce does not only have an impact on health and productivity but also is impactful to the economy, so preventing the increase in the incidence of obesity in millennial workers requires commitment from both the management and the workers. Therefore, it would not impact the productivity of workers and companies for a long period of time [5].

X Corp., Jakarta, Indonesia, is a company engaged in the telecommunication infrastructure sector. The company, which has an office in Jakarta, has a total of 652 employees, 65% of whom are millennial generation workers aged 24-39 years. The implementation of routine medical checkups is carried out by the company as part of its obligation to implement occupational health insurance. Based on the medical checkup results, most of the workers were declared fit to go to work with medical and recommendation notes because several health problems were found, including being overweight and obese, which affected 75% of workers at

X Corp. Accordingly, processing the examination data contained in the medical checkup document to find out whether these things are the cause of obesity exposure to the majority of workers, including millennial generation workers at X Corp., is important to do through this research.

## METHODS

This research is a descriptive study with a cross-sectional study design. Data collection was carried out on millennial workers at X Corp. in Jakarta, Indonesia. The data obtained in this study is secondary data in the form of medical checkup (MCU) results. Sampling was carried out using consecutive non-random sampling, with a total sample size of 269 respondents. The results of BMI calculations, which divide body weight (kg) by height (m<sup>2</sup>) squared, serve as the basis for determining obesity.

The dependent variable is obesity, while the independent variables are individual characteristics covering gender and characteristics of sedentary behavior, which include physical activity and smoking behavior. Respondents' smoking behavior was divided into 'yes' and 'no'. Physical activity variables in this study were divided into 'routinely' and 'non-routinely'. In the results of the MCU examination, routine or regular physical activity is defined as sports, exercise, and physical activities carried out at home or at work that are carried out continuously, rhythmically, and are aerobic in nature, such as walking, cycling, tennis, badminton, volleyball, and tennis, with a frequency of 3 times per week for 15-60 minutes/activity. Statistical data analysis includes univariate and bivariate analyses. The Chi-square test was applied for bivariate analysis with a significance value of 0.05.

## RESULTS

The research results are divided into univariate and bivariate analyses. Based on Table 1, it can be seen that the obesity prevalence of millennial X Corp workers is 69.5%, male workers have the highest prevalence of 57.2%, the prevalence of respondents who do not routinely carry out physical activity is 70.6%, the prevalence of respondents who smoke is 17.5%, the prevalence of respondents who consume alcohol is 8.2%, and the prevalence of hypercholesterolemia in respondents is 45.4%.

Based on Table 2, it can be seen that the prevalence of male millennial workers who are obese is 77.92%, the prevalence of respondents with obesity who do not routinely carry out physical activity is 66.31%, and the prevalence of respondents who are smokers and classified in the obese group is 70, or 21%.

**Table 1. Respondent characteristics (n=269)**

Variable	Percentage (%)
<b>Obesity</b>	
Obese	69,5
Not Obese	30,5
<b>Sex</b>	
Male	57,2
Female	42,8
<b>Physical activity</b>	
Routinely	29,4
Not Routinely	70,6
<b>Smoking habit</b>	
Yes	17,5
No	82,5
<b>Hypercholesterolemia</b>	
Yes	45,4
No	54,6

**Table 2. Variable correlation of sex, physical activity, and obesity (n=269)**

Variable	Obesity		p-value	
	Obese	Not obese		
	%	%		
<b>Sex</b>				
Male	77,92	22,08	0,001	2,53
Female	58,26	41,74		
<b>Physical activity</b>				
Routinely	77,21	22,79	0,105	1,72
Non-Routinely	66,31	33,69		
<b>Smoking behavior</b>				
Yes	70,21	29,79	1,000	1,04
No	69,36	30,64		

Table 2 shows a relationship was found between sex and obesity (p-value=0.001), but there was no relationship found between physical activity and obesity (p-value=0.105). There is also no relationship found between smoking behavior and obesity (p-value=1.000). The results of the odds ratio (OR) showed that male respondents had a 2.53 times higher risk of being obese. The results also show that respondents who did not routinely carry out physical activity had a 1.72 times higher risk of being obese. In addition, respondents who smoked had a 1.04-fold higher risk of being obese.

Table 3 shows one of the effects of obesity, namely hypercholesterolemia. Based on Table 3, it can be seen that the prevalence of obese respondents who suffer from hypercholesterolemia is 51.33%. There is a linkage between obesity and hypercholesterolemia with a p-value of 0.004 (p-value<0.005) and an OR of 2.27, which means that millennial workers in the obese group have a 2.27 higher risk of experiencing hypercholesterolemia.

**Table 3. Variable correlation of obesity and hypercholesterolemia (n=269)**

Variable	Hypercholesterolemia		p-value	OR
	Yes	No		
	%	%		
<b>Obesity</b>				
Obese	51,33	48,67	0,004	2,27
Not-Obese	31,71	68,29		

**Table 4. Multivariate test results**

Variable	p-value	OR	95% CI
Gender	0,0008	2,124	1,216-3,078

Based on Table 4, it can be seen that the only variable that can enter the multivariate stage is gender. The results of the multivariate analysis showed that gender has the strongest relationship to obesity. Male respondents have 2,124 times the risk of experiencing obesity compared to female workers.

## DISCUSSION

The results showed that the prevalence of male respondents was more obese than that of female respondents. The prevalence of respondents who do not routinely carry out physical activity is more obese than the prevalence of respondents who carry out physical activity routinely. The prevalence of respondents who smoke is more obese than that of non-smoker respondents. Respondents with obesity who have hypercholesterolemia have the highest prevalence in the short term. These results are in accordance with previous findings, which stated that the percentage of obese male workers was 38.7% while the percentage of obese female workers was 36.8%. Thus, males are more likely to be obese than females.

Additionally, this study explains how other health issues are to blame for the prevalence of obesity among most respondents [17]. The results of this study are also in accordance with past research, which stated that more male workers are obese than female workers. It was also explained that environmental factors, including work, contribute to the incidence of obesity in male workers [18]. However, the results of this study are not in accordance with the results of most studies, which state that obesity is more common in women than men and that sedentary behavior, such as physical activity, is associated with obesity [15, 16, 19].

Based on data from the World Health Organization (WHO) in 2022, it was stated that more than 1 billion people in the world suffer from obesity, with the prevalence of adult sufferers being 65%; the remainder was from the adolescent and children group [3]. In

Indonesia, based on the Basic Health Research (*Riskesdas*) report, the prevalence of obesity at the age of >18 years shows a successive increase, starting from 11.7% in 2010, increasing to 15.4% in 2013 and adding up to 21.8% in 2018. The data specifications for the second highest obesity sufferers were the millennial age group (23%), and sufferers from a group of private sector workers were 21.8%. Based on the Basic Health Research report, it is also known that the prevalence of obesity in Jakarta was 29.8% [4]. The adult age group in this national research report is the productive age population (> 18 years old), which also includes the working age group. Thus, it can be concluded that obesity is also a health problem for the working-age group. Apart from causing health problems, obesity also has a certain impact on socio-economic problems. Therefore, its handling requires multi-sectoral contributions and coordination, including industrial sector concerns [5].

The International Labor Organization (ILO) explains in its report that 2.78 million workers die every year due to work accidents and work-related diseases. About 86.3% (2.4 million) of workers' deaths are due to work-related diseases, while more than 13.7% (380,000) of deaths are due to work accidents [6]. Every year, it is estimated that there are nearly a thousand times more non-fatal work accidents than fatal work accidents. Non-fatal accidents are estimated to affect 374 million workers each year, and many of these accidents have serious consequences for the long-term health and safety conditions and income of workers [7]. In Indonesia, data on the incidence of work-related accidents and diseases has continued to increase in the last three years (2019–2022). Based on data on the number of workers in the Working Accident Protection program from the Social Security Agency on Health (BPJS Kesehatan), incidents and occupational diseases were recorded in a row with 210,789 people (4,007 fatal), 221,740 (3,410 fatal), and 234,370 (6,552 fatal). Compensation costs incurred from 2019 to 2021 were IDR 1.58 T, 1.56 T, and IDR 1.79 T, with a prevalence of occupational incidents and diseases caused by various factors of 24% in 2021 [8].

Obesity is a health problem that involves many factors, including complex interactions among genetics, hormones, the environment, certain diseases, and the consumption of drugs. In some workplaces, obesity limits workers from doing certain types of work due to their posture, muscle strength, cardiorespiratory capacity, and range of motion, so the issue of obesity is not only a problem for individual workers but also a problem for companies [20]. The millennial group of workers, as a productive workforce, spends most of their time on work and other activities related to their

responsibility as workers, so the incidence of obesity is an interesting opportunity for management or the company to create an occupational health culture in the workplace [5].

Work activities at X Corp. involve a combination of two work areas: the office area and the field area. Most of the administrative work processes are carried out in the office, while the processes of installing infrastructure, monitoring, and evaluating the installation of towers are carried out in the field. The number of workers is dominated by male workers, but by looking at the results of the study, basically, the number of obese male workers and obese female workers have the same ratio, in which 3 out of 4 workers are classified as being in the obese group. Hence, based on the research results, it can be concluded that the quite high occupational health issues among millennial workers in X Corp., Jakarta, Indonesia, are obesity, hypercholesterolemia, and a lack of physical activity, especially regular exercise. Based on the results of the medical check-up documents review, it was stated that workers do not routinely do sports, exercise, or other physical activities, including walking, etc. They spend most of their time at work, and when they have spare time, they usually get rest all day long at home or go to the mall.

The limitation of X Corp's MCU documents was that data were not collected regarding food consumption and eating patterns of workers, so the track record regarding food intake and eating patterns of the respondents could not be analyzed. The MCU results also did not elaborate on the consumption of drugs and the medical history of the respondents, so it cannot be concluded that obesity was due to the disease they were suffering from. The MCU data shows that most millennial-age workers have a fairly good lifestyle; for example, it was found that only a small proportion of millennial workers regularly smoke and/or consume alcohol. This might be an opportunity for X Corp. to apply the concept of public health in general and make preventive and promotive efforts to optimize workers' health standards.

During the young age (millennial generation), the physiological system is still running quite well. The term "fat but healthy" is usually used to justify some people's not prioritizing nutritional status. Even though they do sports and exercise diligently, the risk of obesity is also quite serious. Obesity can cause sleep disturbances, decrease the initiation rate in an individual, and cause prostate cancer for men and breast cancer and cervical cancer for women [21]. The convenience of current technological advances also influences human lifestyles, including consuming food and carrying out activities.

It is known that today's technology allows us to meet basic needs much easier. As an example, in carrying out

eating activities, instead of starting with selecting food ingredients and cooking with the right technique, present it as attractively as possible. For effective and efficient reasons, most of us prefer to consume the so-called healthy and homemade ready-to-eat food that is easy to find in various smartphone applications. The lack of physical activity makes this situation worse. The atmosphere of the community, home, school, health facility, and workplace can influence a person's health decisions. Therefore, it is important to create an environment where one can easily engage in physical activity and eat healthy foods [2].

The treatment of obesity for workers usually includes the application of systematic occupational health and safety (OHS), since the impact of obesity is not only on workers' health conditions but also on work safety. Obese workers tend to have a higher chance of experiencing work accident incidents due to decreased muscle strength, changes in posture, etc. Thus, the treatment of obesity should not only be the responsibility of the workers but also of the management or corporation. A company is required to have a strong commitment to regulating itself [16]. The US Centers for Disease Control and Prevention (CDC) explain that there are at least four things that can be done in the workplace to deal with obesity: monitoring and assessing work productivity, health care costs, ongoing surveys on obesity and its impact on hypertension, non-insulin-dependent diabetes mellitus, as well as the implementation of an organized occupational health and safety culture. These treatments should be impactful for workers' health behavior and for workers' safety behavior [22].

The results of this study still require more research to analyze in more depth the linkages or correlations of obesity with several behavioral and environmental factors in the workplace because of the limitations of this study. The limitation of this study is that the main source of the research was fully dependent on secondary documents from the company (the MCU result document). Hence, the results of the research show the prevalence of obesity in millennial workers at X Corp. can be a major input for the treatment of occupational health risk management and the establishment of an occupational health culture at X Corp. The results of this study can be used as material for management considerations regarding the short- and long-term risks of obesity among workers. The dominance of millennial generation workers in all working units of X Corp requires good OHS guarantees, which ultimately have a strong impact on the smooth running of the business and on the productivity of X Corp, Jakarta, Indonesia. The concept of OHS is indeed prioritized in various steps to prevent and improve

knowledge about workers' health and safety attitudes and behaviors. Therefore, any single piece of data showing OHS issues in a workplace requires a solid commitment from the company and the workers to prevent further losses.

## CONCLUSION

The prevalence of obesity among millennial workers at X Corp., Jakarta, Indonesia, shows a percentage of 69.5%. There is a correlation found between sex and obesity, but there is no significant correlation found among smoking behavior, physical activity, or alcohol consumption related to obesity. The obesity variable has a linkage to hypercholesterolemia and hyperglycemia in millennial workers at X Corp. Health risk assessment steps are needed as part of follow-up and treatment for risk communication in the management of X Corp. Therefore, the implementation of occupational health promotion focusing on reducing the prevalence of obesity among workers can proceed more optimally.

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