

Emotional Eating on Sedentary Workers: Is It Caused by Individual Characteristics, Exercise Habits, and Work Stress?

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ABSTRACT

Introduction: Emotional eating is a person's response to stress or inadequate and ineffective stress coping and is shown by the behavior of eating more than needed and is associated with increased body weight. Emotional eating is caused by age, gender, exercise habits, and work stress. Based on the observations carried out at Kalla Group Office, employees tend to work in a monotonous and static manner that has the potential to increase the risk of emotional eating. The aim of this research is to determine the strength and weakness of the correlation between age, gender, exercise habits, and work stress with emotional eating in Kalla Head Office workers. **Methods:** This quantitative research was carried out through analytical observational design. The number of samples taken is 133 people using purposive sampling. In this case, the independent variables measured are age, gender, exercise habits, and work stress. Meanwhile, the dependent variable studied is the level of emotional eating using "The Dutch Eating Behavior Questionnaire of 13 items (DEBQ-13)". Data were further analyzed using Spearman correlation coefficient test (Spearman rho). **Results:** The research results show varied relationship with the independent variables including age ($r = 0.052$), gender ($r = 0.251$), exercise habits ($r = -0.128$), and stress ($r = 0.048$). **Conclusion:** Age is a variable that has the weakest relationship, while gender has the strongest relationship with emotional eating compared to the variables exercise habits and work stress.

Keywords: emotional eating, sedentary workers, work stress

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INTRODUCTION

Nutritional status is one of the main health indicators of a country. This indicator relates to the balance between the intake of nutrients and the body's nutritional needs (Kamilah *et al.*, 2022). The nutritional status of people in Indonesia is still poor. This is evidenced by the increasing prevalence of overweight and obese adults. Based on the Basic Health Research (Riskesdas) 2018, the adult

population or those above 18 years old who are overweight showed an increase from 11.5% in 2013 to 13.6% in 2018. This increase also occurred in the adult population or those above 18 years old who are obese. In 2013, the obese adult population was 14.8% and it increased to 21.8% in 2018 (Amrynia and Prameswari, 2022).

Health problems that can arise from this overnutrition status are degenerative diseases such as high blood pressure, stroke, and coronary heart disease. One of the causes of this excess nutritional status is the wrong eating behavior, one of which is emotional eating. Emotional eating is defined as a person's response to stress or stress coping that is

Cite this as: Irwansyah, P. D. *et al.* (2024) 'Emotional Eating on Sedentary Workers: Is It Caused by Individual Characteristics, Exercise Habits, and Work Stress?'; *The Indonesian Journal of Occupational Safety and Health*, 13(2), pp. 155-162.

inadequate and ineffective and is shown by eating more than needed and is associated with weight gain (Annisa and Zahra, 2021). Emotional eating can also be interpreted as a person's tendency to eat large and excessive portions in response to negative emotions felt by the person concerned (Sukianto, Marjan and Fauziyah, 2020). Emotional eating behavior is influenced by several things, namely gender, age, exercise habits, and work stress.

Stress is the fourth ranked health problem in the world with a high prevalence of 350 million people in 2013 (Ambarwati, Pinilih and Astuti, 2019). Data from Rikesdas in 2013 also shows an increase in the prevalence of mental emotional disorders in Indonesia in the population aged over 15 years old (Ayuningtyas, Misnaniarti and Rayhani, 2018). In 2013, the prevalence of mental emotional disorders in Indonesia was 6% and in 2018 it increased to 9.8% (more than 19 million people) (Singal, Manampiring and Nelwan, 2021). A person who experiences stress and which cannot be overcome by the existing coping mechanisms, his body will produce cortisol by the adrenal glands (Maryatun, 2020). This cortisol hormone will increase a person's desire to eat. Indirectly, this stressful condition will affect behavior, especially changes in eating behavior (Wijayanti, Margawati and Wijayanti, 2019). A person who experiences stress and cannot control it with the existing coping mechanisms, his body will respond to the internal hunger and satiety signals (Sukianto, Marjan and Fauziyah, 2020). This will eventually lead to an increased risk of emotional eating. Emotional eating can occur to calm the mind and reduce discomfort triggered by stress even when the person is not hungry (Wulandari and Widyana, 2023).

These stressful conditions can be influenced by an individual's age. Epidemiologic studies in the US show that the 12-month prevalence of stress is greater in people aged 18-29 years old by 40%, and higher in people of all ages, especially mood disorders, anxiety disorders, and substance abuse (Agusti, Ifdil and Amalianita, 2022). Mood disorders and anxiety disorders are also the most common psychiatric disorders in people aged 20-34 years old in Japan (Agusti, Ifdil and Amalianita, 2022). The incidence of stress in the age range of 18-35 years old is mostly caused by work pressure in the workplace, which has the potential for emotional eating behavior. In addition, this emotional eating behavior is experienced more by women than men. Women have 39% more mood receptors than men

so this causes women tend to have high stress levels and are vulnerable to the influence of negative emotions (Graves *et al.*, 2021). Physical activity or exercise is also a factor that affects an individual's stress or emotional levels. Physical activity is very important for the health of the human body and has many benefits that are useful for carrying out daily activities (Putri and Sundari, 2019). There are benefits contained in physical activity if done correctly and regularly, namely physical/ biological benefits and also psychological/ mental benefits including emotional eating (Putri and Sundari, 2019).

Work that is done indoors or in offices tends to have limited space for movement. As such, workers will be lazy to move actively and spend more time sitting at their desks. This sedentary behavior is no exception for non-operational workers at Kalla Group Head Office, Makassar. This place was chosen because Kalla Group Head Office is one of the largest business groups in eastern Indonesia which has many businesses from various sectors ranging from trade, transportation, infrastructure, property, manufacturing, energy, to education. Office workers tend to work monotonously in front of computer. Based on the preliminary study, the monotonous work of workers at Kalla Group Head Office causes high stress levels among the workers. In addition, monotonous work conditions and high work stress cause workers to tend to have a poor diet and high fat. Research on emotional eating needs to be done to see what factors are associated with emotional eating to be used as a basis for prioritizing the preparation of interventions.

Based on the above background, the purpose of this research is to analyze the correlation between age, gender, exercise habits, work stress with emotional eating at Kalla Group Head Office workers.

METHODS

This study is an observational analytic study using a cross-sectional approach. Respondents involved in this study are 133 employees at Kalla Group Headquarters, Makassar, South Sulawesi who were taken using purposive sampling technique from unknown population size. Researchers used purposive sampling technique by taking samples with certain considerations, namely workers who worked at the Kalla Group Head Office when the data were collected. Data collection was conducted

in July 2023. In this case, the independent variables in this study are individual characteristics (age, gender), exercise habits, and work stress. Meanwhile, the dependent variable is emotional eating. Data on respondents' characteristics (age, gender) and exercise habits were obtained through questionnaire. Furthermore, stress levels were measured using the Kessler Psychological Distress Scale and emotional eating was measured using the Dutch Eating Behavior Questionnaire of 13 items (DEBQ-13).

The Kessler Psychological Distress Scale is a standardized psychological screening tool designed to identify adults with significant levels of psychological distress. It is widely used in Australia and frequently used in primary care settings to identify people with clinically significant psychological distress. This instrument was translated into Indonesian and has been tested for validity and reliability. Based on research conducted by Salsabila (2022), the results of the validity test were around 0.722-0.864 (>0.25) and the reliability test was 0.955. These results indicate that the Kessler Psychological Distress Scale is valid and reliable (Salsabila and Amna, 2022). The measurement results of the Kessler Psychological Distress Scale (K10) are categorized into four categories, namely good, mild disorders, moderate disorders, and severe disorders (Bayu *et al.*, 2022).

Furthermore, emotional eating was measured using the Dutch Eating Behavior Questionnaire of 13 items (DEBQ-13). The DEBQ-13 was chosen because this instrument focuses on measuring emotional eating, which consists of 13 emotional eating question items. The measurement results of the DEBQ-13 are categorized into four categories, namely emotional eating 1 (good), emotional eating 2 (mild), emotional eating 3 (moderate), emotional eating 4 (severe). This instrument has been tested using content validity with the help of expert judgment and using a reliability test of Cronbach's alpha coefficient. The results of the content validity index (CVI) are 0.9 and the Cronbach's alpha value is $\alpha = 0.911$. These results show that the DEBQ-13 is valid and reliable (Ramadhani and Mastuti, 2022). In this case, questionnaire was also employed by giving instructions to the respondent to answer the questions in the questionnaire according to the circumstances experienced by the respondent. Data were further analyzed using Spearman correlation coefficient test (Spearman rho).

Furthermore, this research was conducted after obtaining approval for the implementation of research from the Research Ethics Code Committee (KEPK) of the Faculty of Public Health, Universitas Airlangga with number 96/EA/KEPK/2023. In addition, data were analyzed both univariately and bivariately. However, before the bivariate test, researchers first conducted a normality test using Kolmogorov-Smirnov. Then, bivariate analysis was carried out with the Spearman statistical test because the data were not normally distributed, with a significance level of 0.05.

RESULT

Data on the characteristics of respondents can be seen in Table 1. Based on the data, most of the respondents aged 26-35 years old by 66.9% and male by 54.9%. The table also explains that most respondents rarely exercise (54.9%), do

Table 1. Distribution of Age, Gender, Exercise Habits, Work Stress, and Emotional Eating

Category	Frequency n=133	Percentage (%)
Age		
16-25 years	15	11.3
26-35 years	89	66.9
36-45 years	20	15.0
46-55 years	9	6.8
Gender		
Male	73	54.9
Female	60	45.1
Exercise Habits		
At least once a week	4	3.0
At least once a month	42	31.6
Rarely	73	54.9
Never	14	10.5
Work Stress		
Good	70	52.6
Mild Disorders	16	12.0
Moderate Disorders	8	6.0
Severe Disorders	39	29.3
Emotional Eating		
Emotional Eating 1	22	16.5
Emotional Eating 2	54	40.6
Emotional Eating 3	54	40.6
Emotional Eating 4	3	2.3

not experience work stress (52.6%), and have a moderate level of emotional eating or are at the level of emotional eating 2 and emotional eating 3 (40.6%).

The results of the correlation test conducted between the variables of age, gender, exercise habits and emotional eating can be seen in Table 3. Based on the relationship test that has been carried out, the results show that the gender variable has the strongest relationship compared to the other variables by 0.251 or 25.1%. Meanwhile, the age variable (0.052), exercise habits (-0.128), and work stress level (0.048) have weaker relationship compared to the gender variable.

DISCUSSION

Distribution of Age

Age is the length of a person's life from the date of birth until the date of measurement (Sa'adah, Martadani and Taqiyuddin, 2021). The age of workers at Kalla Group Head Office is mostly in the range of 26-35 years by 66.9%. This age belongs to the productive age (Kemenkes RI, 2022). This is a potential for business development at Kalla Group

Head Office if workers are well-qualified (Goma, Sandy and Zakaria, 2021).

Distribution of Gender

Gender is the biological distinction between men and women at birth (Sa'adah, Martadani and Taqiyuddin, 2021). Men and women have different natural characteristics, one of which is in personality traits (Pambudi *et al.*, 2021). Based on the results of the study, most workers at Kalla Group Head Office are male by 54.9%. Male workers tend to use problem-focused coping because men usually use logic and directly face the source of stress. Meanwhile, female workers are more likely to use emotion-focused coping because they use feeling or are more emotional so they rarely use logic (Rahman, Putra and Nio, 2019).

Distribution of Exercise Habits

Exercise is a physical activity that involves repetitive body movements and is carried out in a planned and structured manner, aiming to improve and maintain one or more components of a person's physical fitness (Andalasari and Berbudi, 2018). Exercise can reduce the hormone cortisol which triggers stress if done regularly (Yanita, 2022). Based

Table 2. Correlation between Age, Gender, Exercise Habits, and Work Stress with Emotional Eating

Category	Emotional Eating (EE)				r
	EE1	EE 2	EE 3	EE 4	
Age					
16-25 years	3	6	5	1	0.052
26-35 years	19	33	35	2	
36-45 years	0	10	10	0	
46-55 years	0	5	4	0	
Gender					
Male	19	29	23	2	0.251
Female	3	25	31	1	
Exercise Habits					
At least once a week	0	2	2	0	-0.128
At least once a month	6	14	20	2	
Rarely	13	33	26	1	
Never	3	5	6	0	
Work Stress					
Good	11	32	24	3	0.048
Mild Disorders	4	5	7	0	
Moderate Disorders	0	4	4	0	
Severe Disorders	7	13	19	0	

on the results of the study, most workers (54.9%) at Kalla Group Head Office rarely do exercise/ This is in line with previous study which showed that 87.5% of workers in Banten Class II Port Health Office rarely did exercise (Putri, Faizal and Adha, 2022).

Distribution of Work Stress

Work stress is a condition of tension that creates a physical and psychological imbalance, which affects emotions, thought processes, and the condition of an employee (Bhastary, 2020). Based on the results of the study, most workers (52.6%) at Kalla Group Head Office have good job stress. There are several factors that can cause work stress, including factors from the work environment (physical environment and social environment) and personal factors (Asih, Widhiastuti and Dewi, 2018). Problems are one of the causes of stress. Every worker can experience stress, depending on the motivation that can cause it or commonly referred to as stressors (Washinta and Hadi, 2021).

Distribution of Emotional Eating

One of the stress coping methods is eating. Eating as a stress coping method means consuming food not because you are hungry, but to satisfy your cravings because you feel unable to withstand the burden that occurs or called emotional eating (Alkhalwaldeh *et al.*, 2023). Emotional eating is a change in eating behavior caused by a person's negative emotions (Rahmah and Priyanti, 2019). Based on the results of the study, most workers (40.6%) at Kalla Group Head Office have emotional eating 2 (mild) and 3 (moderate). When workers have emotional eating, workers tend to choose foods that are high in energy and fat. If this habit is continuously practiced, it will cause significant weight gain, resulting in overweight or obesity (Wijayanti, Margawati and Wijayanti, 2019).

Correlation between Age and Emotional Eating

The bivariate test results show that there was almost no relationship between age and the level of emotional eating. Nonetheless, both have a positive correlation, i.e. respondents with older age tend to have a high level of emotional eating compared to respondents with younger age. Adulthood is a vulnerable age to experience stress due to the transitional period from adolescence or early adulthood. This is in line with the previous research that found emotional eating is more prone to occur

in early adulthood, particularly in a range of 20 to 40 years old (Samuel and Cohen, 2018). Individuals within this age range tend to experience excessive pressure due to emotional tension, fear, and anxiety arising from certain issues. The enormous pressure and density of activities experienced by individuals in young adulthood trigger stress. If this is not overcome with the right coping mechanism, there is a potential for emotional eating behavior (Nurwahidah, Rohmah and Hilwa, 2022). The regulation of locus of control, self-efficacy, resilience, coping strategies, and anxiety is important for stress control that has an impact on emotional eating in productive age (Tarigan *et al.*, 2019)

Correlation between Gender and Emotional Eating

The bivariate test results show that there is a weak relationship between gender and the level of emotional eating. However, among the independent variables studied, gender is the only one that has the highest relationship with the level of emotional eating. Both also have a positive correlation, i.e. female respondents tend to have high emotional levels compared to male respondents. This is in line with research which states that women are more likely to experience emotional eating compared to men. This is because women have 39% more mood receptors than men (Nurwahidah, Rohmah and Hilwa, 2022). Women can have higher emotional eating scores than men because women are more susceptible to negative influences. In addition, women have higher stress levels compared to men. Women tend to use emotionally-focused coping strategies (Graves *et al.*, 2021), and emotional eating is a form of emotionally-focused coping mechanism (Serin and Şanlıer, 2018).

Correlation between Exercise Habits and Emotional Eating

The bivariate test results show that there is a weak relationship between exercise habits and the level of emotional eating. However, these two variables have a negative correlation, namely respondents who experience an increase in exercise frequency tend to experience a decrease in the potential for emotional eating compared to someone who has a habit of rarely exercise or never. This is in line with the research results that there is a weak relationship between physical fitness and emotional eating behavior with a negative or inversely

proportional correlation value. If physical fitness increases, then emotional eating behavior shows a decrease (Triguna and Dewi, 2020). Exercise done regularly will stimulate the brain to release endorphin hormones that will improve mood to be happier and reduce the potential for emotional eating (Flora, Zulkarnain, and Sukirno, 2020). The WHO recommends 60 minutes of daily physical three times a week (Bull *et al.*, 2020). For adults and the elderly (>17 years), the WHO recommends physical activity for 75 minutes/week with vigorous aerobic exercise intensity or 150 minutes/week with moderate aerobic intensity, with muscle and bone strengthening twice a week (Hammami *et al.*, 2022).

Correlation between Work Stress and Emotional Eating

The bivariate test results show that there is almost no relationship between work stress habits and the level of emotional eating. However, these two variables show a positive correlation, that is, respondents who have severe work stress tend to have high levels of emotional eating compared to someone who has mild work stress. This is because someone who has high work stress will trigger the brain to release cortisol from the adrenal glands (Wang *et al.*, 2023). This hormone will further increase a person's desire to overeat as a response to coping mechanisms due to stress (Wijayanti, Margawati and Wijayanti, 2019). In this case, sources of stress can change according to human development. Sources of stress can arise from oneself, family, and work environment. Stress coping is the process of managing self-capacity and perceived task demands in stressful situations. This coping serves to change the problems that cause stress and regulate emotional responses to a problem (Zuanny and Husna, 2023). Coping can be divided into problem-focused coping and emotion-focused coping. Physical activity is an example of emotion-focused coping (Liu, Wang and You, 2021).

LIMITATION

There are several limitations to this research, namely that external factors related to emotional eating have not been studied, such as environmental factors and social support. The author hopes that this research can be useful and developed by other researchers.

CONCLUSION

Gender is the factor with the strongest relationship with the level of emotional eating of workers, followed by exercise habits, age, and work stress. It is necessary to control efforts based on the gender of workers so that the interventions to be carried out can be right on target. The implementation of routine exercise can be also implemented by management in the work environment with the aim of preventing stress that has the potential to cause emotional eating in workers.

ACKNOWLEDGMENTS

We would like to thank all respondents and lecturers as authors involved in this research.

CONFLICT OF INTEREST

All authors declare that they had no conflict of interest.

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