FACTORS ASSOCIATED WITH OVERWEIGHT AND OBESITY AMONG WORKING ADULTS IN KUALA LUMPUR

By

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The spiralling rise of obesity prevalence is alarming nationwide. Overweight/obesity will have a greater chance of getting NCDs including hypertension, diabetes mellitus, and heart attack as well as cancer. This study aims to determine whether there is any association between sociodemographic characteristics, lifestyle factors, and work environment, with overweight/obesity among Malaysian working adults in Kuala Lumpur. A cross-sectional study design is carried out among Malaysian workers aged 18 to 64 years. The data were obtained through online administered questionnaires. In this study, 290 respondents were involved using convenient sampling. Multiple logistic regression analysis was used to determine the association and odds ratio of overweight/obesity among working adults for each study factor, with a $p < 0.05$ significance value. The prevalence of overweight/obese workers in this study was 24.8%. This study found that work-related factors such as working hours, work status, work shift, type of occupation, and type of work had no association with overweight/obesity among working adults, but certain sociodemographic characteristics and lifestyle factors were associated with overweight/obesity. It was reported that male workers (aOR: 3.465, 95% CI: 1.723, 6.968) who are married (aOR: 4.392, 95% CI: 1.853, 10.410) with sleep less than 7 hours (aOR: 2.752, 95% CI: 1.350, 5.611), and those who did not have breakfast every day (aOR: 2.46, 95% CI: 1.113, 5.437) were reported to be associated with increased odds of overweight/obesity among workers. Further research should be undertaken on other work condition factors like work stress, lifestyle factors such as diet quality, and specific job categories that contribute to an increase in BMI, especially among working adults in our country.

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LIST OF ABBREVIATIONS

%	Percentage
±	Plus-minus
<	Less than
≤	Less than equal to
>	More than
≥	More than equal to
aOR	Adjusted odd ratio
B40	Bottom 40%
BMI	Body mass index
CI	Confidence interval
CDC	Centre for Disease Control and Prevention
CVD	Cardiovascular disease
h/night	Hour per night
NHMS	National Health and Morbidity Survey
kg	Kilogram
kg/m^2	Kilogram per meter square
LDL	Low density lipoprotein
m	meter
M40	Middle 40%
MET	Metabolic equivalent of task
min/week	Minute per week
n	Frequency
NCDs	Non-communicable diseases
OR	Odd ratio

OW/OB	Overweight or obesity
PA	Physical Activity
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences
T20	Top 20%
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1 Background

Obesity is a disease in which excess fat in the body accumulates to a degree that may affect one's medical condition. The spiralling rise of obesity prevalence is alarming nationwide. It has been described as a global epidemic with a growing number associating population with an increase in morbidity and mortality. The latest data from the World Health Organization (2021b) reported having about 1.9 billion overweight (39%) and 650 million obese (13%) adults at the age of 18 years and above, in 2016. Statista (2021) reported that the prevalence of over-nutrition problem in Malaysia is among the highest in Southeast Asia (SEA). According to the findings from recent National Health and Morbidity Survey (NHMS), 1 in 2 of the Malaysian adults are overweight/obese and had abdominal obesity in 2019 (Institute for Public Health (IPH), 2020). People with obesity have an increased risk of premature deaths and heart failure with aging (Sun et al., 2019). Globally, the rates of deaths linked to overweight/obesity are more than underweight (Agha & Agha, 2017). Overweight/obesity will have a greater chance of getting overnutrition-related problems of non-communicable diseases such as hypertension, diabetes mellitus, and heart attack as well as cancer (Steele et al., 2017). This rising burden of health leading to overweight/obesity is linked with many factors. Socio-demographic characteristics, lifestyle factors, and working environment were significant factors associated with obesity in adults (Bennett et al., 2011; Cheah et al., 2019; Zubery et al., 2021).

Numerous reviews have been done over the past few years showed that the overweight/obesity prevalence among adults of working age is increasing in the community (Hyun & Kim, 2018; Ma et al., 2021; Yarborough et al., 2018). There is growing evidence showing work environment contribute to the increase in the prevalence of overweight/obese workers (Myers et al., 2021; Yoon et al., 2016; Zhu et al., 2020). Most adults spend about half of their day in the workplace. Studies proven that occupational characteristics such as working hours, amount of time sitting, type of works, work shifts, and work-related stress are associated with body weight status (Eum & Jung, 2020; Lin et al., 2015; Sharma et al., 2016). Zubery et al. (2021) mentioned that sedentary working adults has higher odds of being overweight/obese compared to non-sedentary working adults. In Malaysia, 1 in 4 of the adults are physically inactive which putting them at risk of being obese (Institute for Public Health (IPH), 2020). Adverse occupation-related consequences may impact the obese employees. High body mass index (BMI) among workers may impact health issues and other consequences that affect their work productivity and quality of life (Kudel et al., 2018; Rozjabek et al., 2020).

1.2 Problem statement

According to Global Burden of Disease in 2017, obesity is responsible for the premature deaths of 4.7 million people each year since 2012 (Ritchie & Roser, 2017). Whereas the trend of overweight/obesity among adults in Malaysia increase significantly since 2006 to 2019. Nearly 3% increment in Malaysian adults with overweight/obesity within 4 years was reported (Institute for Public Health (IPH), 2015). If this problem continues rising, they are more likely to be threatening and lead to low quality of life (Centers for Disease Control and Prevention, 2021). More than half of the adult population is working. There are approximately 22 million Malaysian adults and 15 million of them are employed in 2019 (Hirschmann, 2019). Working adults are prominent to the exposure of overweight/obesity compared to the general population as previous studies found that occupation and work environments such as night shifts, long working hours, work stress, and poor work time arrangement are associated with increasing BMI (Borak, 2011; Mercan, 2014; Myers et al., 2021; Nigatu et al., 2016; Song et al., 2019; Virtanen et al., 2020; Zubery et al., 2021). Having a higher BMI status were found to link with the reduction in cognitive flexibility, memory, fluency in talking, and ability of planning and analysing which eventually may affect their work productivity (Yang et al., 2018). Thus, the risk factors that influence overweight/obesity in employed adults are crucial to be studied. Additionally, other variables such as sociodemographic and lifestyle factors also could be the possible confounder of overweight and obesity. For instance, sex, age, educational level, household income, physical activity, and hours of sleep were shown to have association with overweight/obesity (Andoy-Galvan et al., 2020; Kim, 2021; Park & Ko, 2021; Simo et al., 2021; Wanner et al., 2017; Wu et al., 2014; Zubery et al., 2021).

A study found that there were 36% of overweight and 28% of obese working adults, in United State (Park et al., 2014). While in Malaysia, one of the systematic reviews reported that from 2009 to 2015 the prevalence of overweight (9.5% to 43.5%), obesity (1.77% to 26.4%), and abdominal obesity (11.4% to 57.4%) among Malaysian working-age adults were increased, dramatically (Tan et al., 2019). Though there are many recent reviews on adulthood obesity in Malaysia, however, far too little attention has been paid to the influences of the workplace affecting workers (Lim, 2016; Mohamad Nor et al., 2018). The rise of obesity is not a problem unique to Malaysia. Despite, most of the studies on the prevalence of overweight/obese working adults are from other countries (Abubakar et al., 2021; Chu, 2021) and there is an insufficient study that emphasizes this population in Malaysia. Additionally, there is lack of study in determining working hours associated with overweight/obesity among adults in Malaysia. By comparing the top overworked country in the world, Kuala Lumpur was reported to be one of the cities in Malaysia with an overworked population (21%), having the longest working hours, and minimum vacations offered (Azizan & Murad, 2020). Hence, the aim of this study is to determine whether there is any association between the sociodemographic characteristic, lifestyle factors, and work environment, with overweight/obesity among Malaysian working adults in Kuala Lumpur.

1.3 Significance of the study

The findings of this study could fill in the knowledge gap since there is inadequate study regarding work environment influence the risk of overweight/obesity among working adults. This study helps in raising awareness in the work community especially to the employees and employers on recognizing obesity as a serious health condition concerning public health. The importance of this issue is stepping up in today's society that may have an impact on our life expectancy and many of the reviews talked about the awareness and risk factors such as eating and sedentary behaviours that can be modified to bring down the rate of obesity. It can also provide health institutions, government agencies, and health NGOs insight into the perception of Malaysian working adults on the issue of obesity prevalence. It is important to recognize and understand the prevalence of overweight/obesity due to working environment and lifestyle as a key modifiable behavioural risk factor to adverse work conditions and non-communicable diseases.

Furthermore, this study provides baseline data for future research related to overweight/obesity among working adults. The high prevalence of overweight/obesity in the adults' population may be contributed by work-related factors. With this study, it could be a reference and aid in targeted policy and guidelines for labour force to improve the work environment by reducing the working hours to not more than 40 hours, providing healthy food in the cafeteria, providing fitness gadgets, and organizing weight-management programs for the employees. This can eventually reduce the prevalence of overweight/obesity in working adults. From this finding, public health professionals and employers, or any authorities can develop an effective workplace intervention to reduce the obesogenic environment to have better work productivity and promote healthy behaviour to be safe and well. As this study is focusing on working adults, not only the work environment involved but their lifestyle factors may also play a part in their BMI status.

1.4 Research questions

1. What is the prevalence of overweight/obesity among working adults' population in Kuala Lumpur, Malaysia?

2. Do the work-related factors affect overweight/obesity among working adults in Kuala Lumpur, Malaysia?

1.5 Objectives of the study

1.5.1 General objective

To determine the association of sociodemographic characteristics, lifestyle factors, and work-related factors with overweight/obesity among working adults in Kuala Lumpur, Malaysia.

1.5.2 Specific objective

1. To determine the sociodemographic characteristics (age, sex, ethnicity, marital status, education level, and monthly household income), lifestyle factors (physical activity, commute mode, meal pattern, and sleeping hours), and work-related factors (type of work, working hours, work shifts, work status and type of job) of working adults in Kuala Lumpur, Malaysia.

2. To determine the prevalence of overweight/obesity among working adults in Kuala Lumpur, Malaysia.

3. To determine the association of sociodemographic characteristics (age, sex, ethnicity, marital status, education level, and monthly household income), lifestyle factors (physical activity, commute mode, meal pattern, and sleeping hours), and work-related factors (type of work, working hours, work shifts, work status and type of job) towards overweight/obesity among working adults in Kuala Lumpur, Malaysia.

1.6 Research hypothesis

1. There is an association between sociodemographic characteristics, lifestyle factors, and work-related factors with overweight/obesity among working adults in Kuala Lumpur, Malaysia.

1.7 Conceptual framework

The conceptual framework for this study is presented in Figure 1.1. This conceptual framework was based on other relevant research determining the risk factors associated with overweight/obesity. This study examined 3 independent variables, such as sociodemographic, lifestyle factors, and work-related factors. Studies show that difference in age, sex, ethnicity, levels of education and income are crucial in the aspects of epidemiology, pathophysiology, treatment, consequences, and prevalence of obesity (Arroyo-Johnson & Mincey, 2016). Apart from that, BMI also can be correlated with sedentary behaviours, mode of commute, meal pattern, and sleeping duration (Leung et al., 2018; Motuma et al., 2021; Sa et al., 2020). Also, Zhu et al., (2020) proved that there was association between adverse weight-related outcomes with long working hours where higher BMI may lead to obesity.

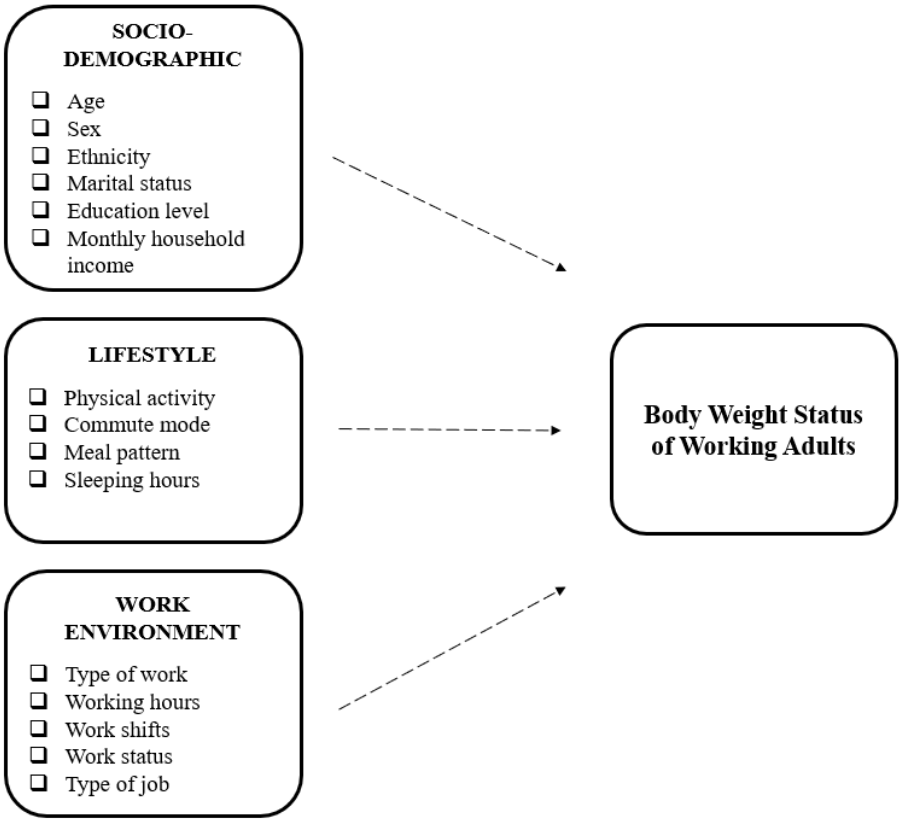

Figure 1.1 : Conceptual framework

(Source : Cooper et al., 2021; Doerrmann et al., 2020; Fröhlich et al., 2019; T. J. Kim & Knesebeck, 2018; Kim, 2021; Myers et al., 2021; Osunkwo et al., 2021; Taib et al., 2019; Wanner et al., 2017; Wu et al., 2021; Zubery et al., 2021)

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