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Apakah Kebiasaan Makan berhubungan dengan Overweight/Obesitas pada Wanita Dewasa Indonesia? Berdasarkan Indonesian Family Life Survey (IFLS) 5 Tahun 2014

Are Eating Habits Associated With Overweight/Obesity among Indonesian Women Adults? Based on The Indonesian Family Life Survey (IFLS) 5 in 2014

Sabitha Wina Octararine*[1], Trias Mahmudiono [1]

ABSTRAK

Latar Belakang: Kebiasaan makan sering kali dikaitkan dengan overweight atau obesitas. Beberapa jenis makanan yang sering dikonsumsi masyarakat diketahui berhubungan dengan terjadinya kelebihan berat badan. Namun informasi mengenai hubungan antara setiap jenis makanan masih terbatas terutama pada dewasa muda.
Tujuan: Penelitian ini bertujuan untuk menganalisis hubungan antara kebiasaan makan dengan status gizi lebih pada wanita dewasa muda di Indonesia.
Metode: Penelitian ini menganalisis 4966 orang dewasa dari *Indonesian Family Life Survey (IFLS)* 5 tahun 2014. Kebiasaan makan diukur berdasarkan frekuensi dari konsumsi masing-masing jenis makanan. Uji chi square dan regresi logistik digunakan untuk menyelidiki hubungan antara variabel dengan status gizi lebih pada wanita dewasa muda.
Hasil: Prevalensi *overweight* dan *non-overweight* diketahui sebesar 41,1% dan 59,9%. Konsumsi susu; keju; mentega; dan sejenisnya (p=0,006) dan konsumsi nasi (p=0,017) berkorelasi negatif dengan status gizi lebih, sedangkan konsumsi makanan manis (p=0,034) berhubungan dengan status gizi lebih. Selain itu ditunjukkan bahwa konsumsi telur, konsumsi daging, konsumsi minuman bersoda, dan konsumsi makanan cepat saji tidak berhubungan dengan status gizi lebih pada wanita dewasa muda (p>0,05).
Kesimpulan: Disimpulkan bahwa konsumsi makanan manis berkaitan dengan kemungkinan overweight atau obesitas yang lebih tinggi. Selain itu konsumsi nasi dan konsumsi susu; keju; mentega; dan sejenisnya yang semakin jarang berkaitan dengan kemungkinan overweight atau obesitas yang lebih rendah. Oleh sebab itu, konsumsi makanan manis pada usia dewasa perlu dibatasi guna mengurangi dan mencegah terjadinya masalah kelebihan berat badan.

Kata kunci: kelebihan berat badan, dewasa, kebiasaan makan

ABSTRACT

Background: Eating habits were often linked with overweight or obesity. Several types of food that are often consumed by the public were known to be associated with the occurrence of being overweight/obesity. But information about the association of each type of food is lacking especially in young adults.
Objectives: This study aimed to analyze the association between eating habits with overweight status among women young adults in Indonesia.
Methods: This study analyzed 4966 adults from the fifth waves of the Indonesian Family Life Survey (IFLS5) in 2014. Eating habits are measured by the frequency of consumption of each type of food. A chi square test and logistic regression were used to explore the association between the variables with the overweight status among women young adults.
Results: The prevalence of overweight and non-overweight were known to be 41.1% and 59.9%. Milk; cheese; and others consumption (p=0.006) and rice consumption (p=0.017) had negative correlation with overweight/obesity meanwhile sweet foods consumption was associated with overweigh/obesity (p=0,034). On

the other hand, it is shown that there is no association between egg consumption, meat consumption, soft drink consumption, and fast food consumption with overweight status among women young adult (p>0,05).
Conclusions: *It was concluded that the consumption of sweet foods was associated with a higher likelihood of being overweight or obese. In addition, the consumption of rice and milk; cheese; butter; and others that were less frequent associated with a lower likelihood of being overweight or obese. Therefore, the consumption of sweet foods among adult needs to be limited in order to reduce and prevent the problem of being overweight.*

Keywords: *overweight, adult, eating habits*

*Koresponden:
sabitha.wina.octarine-2017@fkm.unair.ac.id
Sabitha Wina Octarine
[1]Departement of Nutrition, Faculty of Public Health, Airlangga University, Campus C Mulyorejo, 60115, Surabaya, East Java, Indonesia

INTRODUCTION

Obesity has become a global epidemic problem whose numbers tend to increase every year. Overweight and obesity are the health problems that dominate the nutritional status of adults over the age of 18 years (Novitasary, 2014). Overweight is a condition when the bodyweight exceeds the normal limit according to the calculation of the Body Mass Index (BMI). A person is categorized as overweight when the BMI value is >25 (Ministry of Health, 2014). The prevalence of overweight has increased every year both in all parts of the world and in Indonesia. In 2013, 11.5% of Indonesia's population aged >18 years were overweight and in 2018 it increased to 13.6%. The proportion of obesity has also increased from 10.5% in 2007, 14.8% in 2013, and 21.8% in 2018 (Ministry of Health, 2018).

Globalization and modernization affect the development of food in society (Dwiningsih and Pramono, 2013), namely changes in unhealthy lifestyles (Jaminah and Mahmudiono, 2018). This is due to changes in the food system that have an impact on the availability of foods at low prices, as well as the increasing availability of ultra-processed food and sugar-sweetened beverages (Popkin, Corvalan and Grummer-Strawn, 2020). The high exposure to obesity and various diseases in adults is caused by unbalanced eating habits (Kim, Park and An, 2015). This is marked by an imbalance in diet, such as low consumption of vegetables and fruit and also high consumption of high-calorie foods and beverages.

Eating habits were human behavior in meeting the needs for life through eating activities including attitudes, beliefs, and food choices (Kadir A., 2016). Eating habits, such as infrequent meals, consumption of meat, fried foods, and fast food, are often associated with overweight or obesity (Pengpid and Peltzer, 2017). Eating habits can be influenced by various factors, both internal and external. The increasing busyness of society causes individuals to need things that are faster and more practical, especially in terms of food. A study shows that employees prefer to buy ready-to-eat food compared to buying food ingredients and processing them first because of the limited time they have (Novela, 2019). In addition, excess consumption of sugar is also one of the main causes of increasing levels of overweight and obesity (Maffetone and Laursen, 2017). The purpose of this study was to analyze the relationship between eating habits with overweight or obesity status in adult women.

METHOD

This is a crosssectional study to assess the association of eating habits and physical activity with overweight status among young adults. This study using secondary data analysis from Indonesian Family Life Survey 5 (IFLS5) 2014. IFLS is a longitudinal survey conducted by the Research and Development (RAND) Corporation in collaboration with a research institution such as the Demographic Institute of the University of Indonesia, The Population and Policy Studies Center of the Gajah Mada University, and Survey Meter. The study was conduct in 13 province of Indonesia: Sumatera Utara, Sumatera Barat, Sumatera Selatan, Lampung, DKI Jakarta, Jawa barat, Jawa Tengah, D.I. Yogyakarta, Jawa Timur, Bali, Nusa Tenggara Barat, Kalimantan Selatan, dan Sulawesi Selatan.

Eligibility criteria included women adults aged 25-35 years old in 13 provinces of Indonesia. The exclusion criteria of this study were respondents aged <25 and >35 years and gender other than female. Indonesian Family Life Survey 5 (IFLS5) used a random sampling technique. There were total 50148 participants at baseline and only 36380 participants were aged >15 years old. 18455 participants were excluded because of a gender other than women and only 5227 participants were aged 25-35 years old. Individuals with missing data in weight, height, and eating habits were not included in this study. After excluding individuals who were ineligible to be enrolled, 4966 participants were included in this study.

This study have 2 variables, there are exposure and outcome variables. Exposure variable are the individual's characteristics such as marital status and educational level. The marital status subject was the individual's marital status when the survey is conducted and the educational level was the last level of education that has been or was attended by individuals. Educational level was defined as no education, elementary school, junior high school, senior high school, university, and others. These variables were collected from the questionnaire of book 3A on IFLS5. In addition, eating habits were also considered exposures of interest. The eating habits subject was constructed based on the type of food were consumed in the last 7 days. These variables were collected from the questionnaire of book 3B on IFLS5.

Meanwhile the outcome variable is overweight status of participants. Overweight defined as BMI >25 kg m^2 and individuals with BMI ≤25 kg m^2 were defined as non-overweight based on the result of the BMI formula. Weight and height data of all participants were used to calculate the BMI. The anthropometric data of participants (weight and height) was obtained from the questionnaire of book US on IFLS5.

The STATA version 12 and IBM SPSS Statistics 20 were used to conduct the analyses. The STATA 12 was used to combine several datasets that will be used as variables of the study and cleaning the existing data of the dataset so there is no missing data. Data cleaning is carried out on all variables and then data coding is carried out following operational definitions and objective criteria. Furthermore, an analysis of all variables was carried out using the IBM SPSS Statistics 20. Univariate analysis was carried out to present the data descriptively with the distribution table of the variable characteristics. Bivariate and multivariate analysis were carried out to analyze the relationship between the influencing variables and the dependent variable. Bivariate analysis using chi-square and multivariate analysis using logistic regression.

RESULT AND DISCUSSION

The distribution of the characteristics of respondents are shown in Table 1. The majority of the participants were married (92.1%). The distribution of the educational level of women young adults is varied. The last educational level of most participants is senior high school (34.2%). More than half the proportions of women young adults aged 25-35 years were overweight.

Meanwhile, the distribution of eating habits has shown in table 2. In Table 2, most of the respondents never consume certain types of foods in the last seven days such as milk; cheese; butter; and other, soft drinks, fast food, and sweet foods. Only rice was the most frequently consumed by almost all participants (99.3%). Table 3 showed the relationship between eating habits with overweight status among women adults based on chi square test and logistic regression. Based on chi square test, milk; Cheese; butter; and others consumption (p<0.001), rice consumption (p=0.028), and sweet foods consumption (p=0.01) were associated with overweight status among women adults. Meanwhile, eggs consumption, meat consumption, soft drink consumption, and fast food consumption was not associated with overweight status among women adults ($p>0,05$).

The variables based on the results of the chi square test were related to overweight status, will be tested further using logistic regression. Based on the results of the logistic regression, it is known that milk; Cheese; butter; and others consumption (p=0.006, OR: 0.771) and rice consumption (p=0.017, OR: 0.155) were the type of food that associated with lower risk of being overweight or obesity in women adults. Meanwhile, sweet foods consumption (p=0,034, OR: 1.244)) was the type of food which associated with higher odds of overweight or obesity.

Table 1. Characteristics of Respondents Based on IFLS 5

Characteristics	n	%
Marital Status		
Single	242	4.9
Married	4575	92.1
Divorce/Separated	149	3.0
Educational Level		
Elementary School	1097	22.1
Junior High School	1229	24.7
Senior High School	1698	34.2
University	928	18.7
Others	14	0.3
Overweight Status		
Overweight	2042	41.1
Non-Overweight	2924	58.9

Table 2. Distribution of Eating Habits among Respondents Based on IFLS 5

Eating Habits	n	%

Eggs		
Never	687	13.8
Rare	2077	41.8
Occasional	1404	28.3
Often	798	16.1
Meat		
Never	1829	36.8
Rare	2137	43.0
Occasional	693	14.0
Often	307	6.2
Milk, Cheese, Butter, and Others		
Never	3528	71.0
Rare	567	11.4
Occasional	298	6.0
Often	573	11.5
Soft Drink		
Never	4287	86.3
Rare	531	10.7
Occasional	98	2.0
Often	50	1.0
Fast Food		
Never	4286	86.3
Rare	549	11.1
Occasional	102	2.1
Often	29	0.6
Rice		
Never	12	0.2
Rare	11	0.2
Occasional	11	0.2
Often	4932	99.3
Sweet Foods		
Never	2055	41.4
Rare	1213	24.4
Occasional	674	13.6
Often	1024	20.6

Table 3. Relationship of Eating Habits with Overweight Status

Variable	p-value	OR
Eggs	0.128[a]	
Meat	0.894[a]	
Milk, Cheese, Butter, and Others	<0.001[a]	
Often	Reference	
Occasional	0.483[b]	1.112
Rare	0.449[b]	0.911
Never	0.006[b]*	0.771
Soft Drink	0.421[a]	
Fast Food	0.108[a]	
Rice	0.028[a]	
Often	Reference	
Occasional	0.688[b]	1.287
Rare	0.017[b]*	0.155
Never	0.193[b]	0.464
Sweet Foods	0.01[a]	

Often	Reference	
Occasional	0.034[b]*	1.244
Rare	0.497[b]	1.061
Never	0.705[b]	0.970

[a] Chi Square Test (α=5%)
[b] Regression Logistics (CI 95%)
*P-value<0,05

Changes in eating behaviour over a decade were contributed to the high proportion of overweight and obesity including in Indonesia. There are several factors that are commonly associated with overweight or obesity, one of them is eating habits. Current lifestyle changes, which are characterized by high energy and fatty foods, especially saturated fat, can be one of the causes of being overweight or obese. Based on The University of North Dakota (2012), saturated fats are the biggest dietary cause of high LDL levels. Saturated fats can be found in animal products such as butter, cheese, cream, ice cream, fatty meats, and whole milk. Like saturated fats, trans fats can raise LDL levels and lower HDL levels. Fried foods, baked foods, margarine, processed foods, donut, wafers, and cookies are several types of foods that contain trans fats (World Health Organization, 2018). Based on studies, fat spread (butter or margarine) has the largest positive association with three-year excess weight gain (Dong et al., 2015). That was because butter, cream, cream products, and cheese contains high in fat, especially saturated fat (Ministry of Health, 2020).

Consume sweet beverages, milk, and alcohol was known to be associated with increased energy intake among adults (Gibson et al., 2016). This is because full-fat dairy products provide more energy in the diet which can lead to excess weight (Metro South Health, 2018). If milk and dairy products are consumed in excessive amounts, especially the full-fat type, it can lead to long-term weight gain (Mozaffarian et al., 2011). But there are a few contradictory studies that showed consumption of milk and dairy products as the causing factor of overweight and obesity. Increased dairy products consumption was associated with a lower risk of obesity (Song et al., 2019). In addition, it is stated that dairy products such as milk, yogurt, and cheese can cause overweight or obesity because they provide more energy in the diet of each individual (Metro South Health, 2018).

Meanwhile increased consumption of butter was associated with weight gain of 0,30 *lb* every 4 years (Mozaffarian et al., 2011). Although there are differences in research results, milk and dairy products should only be eaten occasionally and in small quantities to prevent weight gain. This is because consuming foods that contain saturated fat regularly is associated with obesity, cardiovascular disease, and other diseases (BPAC, 2014). This is evident from the result of this study which shows that never consume milk, cheese, butter, and other reduces the possibility of being overweight or in women adults. But some studies still found that no clear association between dairy products with weight change.

Besides milk and dairy products consumption, the consumption of rice may also be an overweight factor among adults. Rice is the staple food of Asia, especially Indonesia (Panuju, Mizuno and Trisasongko, 2013). Rice is a food that contains high carbohydrates (Lalitha and Shetty, 2016) and different fibers based on the type (Jung et al., 2020). Refined grain consumption is known to be associated with a higher BMI, especially when consumed more than recommended (Jones, García and Braun, 2019). This is because refined grains, including white rice, contain less fiber than whole grains, which are good sources of fiber (Jung et al., 2020). Rice is one of the foods that contribute greatly to total energy intake (Bahreynian and Esmaillzadeh, 2012). If individuals regularly consume high-carbohydrate foods, especially refined grains, it can encourage overweight. Research related to the relationship between rice consumption and overweight in adults is still quite limited and shows different results. A study conducted in 4 workplaces in Singapore showed that low white rice intake was associated with overweight or obesity (Nazeha et al., 2021). Whereas a study in Korean adults showed that consumption patterns of white rice and kimchi were associated with an increased likelihood of being overweight (Kim et al., 2012). So, lower consumption of rice can prevent excess energy and result in a lower risk of being overweight. A previous study showed that higher consumption of white rice was associated with a higher risk of weight gain compared to lower consumption (Sawada et al., 2018). The result of these studies is in line with the results of this study which showed that rarely consume rice will reduce the occurrence of overweight or obesity. However, never consume rice is also not recommended. Therefore it is more recommended to eat whole grains because they can provide a longer feeling of fullness and are useful for preventing obesity (Procter and Mendoza, 2020).

Sweet foods can also cause overweight or obesity. A study showed that consumption of fatty food and sugary food had a strong association with the overweight and obesity risk (Abbas et al., 2013). Excess consumption of free sugars contributed to unhealthy weight gain which can lead to overweight and obesity (The World Bank, 2017). Some types of sweet foods such as cookies, chocolate, candy, and pastry were contained high in sugar (UNICEF, 2020) and some of them contains fat (Departement of Health State Government of Victoria, 2011). Excessive sugar consumption was a factor that can lead to overweight and obesity (World

Cancer Research Fund International, 2015) because the calorie content of high sugar foods contributes to unhealthy weight gain (World Health Organization, 2020). A diet high in sugar will affect the work of hormones in the body, especially hormones that control hunger and satiety (The British Dietetic Association, 2020). This can cause leptin resistance which will interfere with leptin signals in the brain and have an impact on increasing hunger. An energy-dense diet, including high sugar and fat, increases the risk of consuming more foods with excess calories and increases the risk of being overweight or obese (Food Standards Scotland, 2018). A study conducted on civil aviators in Indonesia showed that the habit of eating sweet food is associated with the risk of obesity. Based on research by (Syauqy et al., 2020), fried snacks, rice, or processed food from flour, dessert, and other types of food are associated with the parameters of obesity (BMI). The result of these studies was in line with the result of this study which showed that frequent consumption of sweet foods increases the likelihood of being overweight or obesity by 1.24 times.

This result was different with the result of eggs, meat, soft drinks, and fast-food consumption. The habit of consuming these foods is known to be not associated with overweight or obesity among women adults. The previous study found that the frequency of meat and egg consumption among female workers in Dhaka was not associated with BMI (Begum et al., 2020). This is because based on Australian Eggs, meat and eggs were foods that contain high protein which is good for the body, especially for maintain body weight. As well as fast foods and soft drink consumption, another study also found if this food were not associated with overweight or obesity among adults (Oo, Rao and Zin, 2017; Motswagole *et al.*, 2020). No relationship was found between the consumption of this food with overweight or obesity because overweight or obesity among adults is not only caused by these factors but can be caused by various factors both from the individual (genetic) and the environment. However, consumption of soft drinks and fast food still needs to be limited because these foods contain high calories and fat which if consumed in excess and continuously can encourage unhealthy weight gain and another disease (Mutaqin, 2018).

CONCLUSION

Eating habits were well known as the factor of overweight or obesity. This study showed that consume less of several types of food such as milk; cheese; butter; and others and rice were associated with lower odds of being overweight or obesity Meanwhile consumption of sweet foods was associated with higher odds of being overweight or obesity. Further studies are needed to better understand eating habits as an overweight status factor. Interventions to modify eating habits in individuals would help the management and prevention of overweight or obesity.

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