

The Relationship of between Eating Habits and Obesity Incidence in Adolescent Girl during the Covid 19 Pandemic

Deviro¹, Tonang Dwi Ardyanto² and Anik Lestari³

¹Postgraduate Student of Human Nutrition Sciences, Sebelas Maret University, Surakarta, Indonesia

²Department of Clinical Pathology, Faculty of Medicine, Sebelas Maret University, Indonesia

³Department of Public Health Science, Faculty of Medicine, Sebelas Maret University, Surakarta, Indonesia

Keywords: Obesity, Eating Habits, Adolescent Girls.

Abstract: Obesity is a nutritional problem that has a negative impact on the health of adolescent girls. Based on the Ministry of Health of the Republic of Indonesia report in 2018, the prevalence of obesity in adolescent girls in Pontianak City was 32.50%. Changing conditions during COVID-19 had changed the eating habits of adolescent girls, up to the point they were at risk of obesity. This study aimed to determine the relationship between eating habits and obesity incidence in adolescent girls during the COVID-19 pandemic. The research method used is a cross-sectional design. The targeted population for this study was all female students at the Pontianak Health Polytechnic, Yarsi College of Health Sciences, and Aisyiyah Health Polytechnic. The sample was 102 female students, and the sample was selected using proportional random sampling. Data collection was carried out from March to April 2022. The obesity criteria are based on the measurement of waist-to-hip ratio (WHR) and the measurement of eating habits using the Adolescent Food Habit Checklist (AFHC) questionnaire with a Cronbach's alpha of 0.905. The research data were analyzed using the chi-square test with a 95% confidence level. The results of this study showed that the prevalence of nutritional status of adolescent girls with obesity was 72.5% and the prevalence of bad eating habits was 62.7%. There was a correlation between eating habits and obesity incidence in adolescent girls (p -value = 0.01, OR=0,317). In conclusion, eating habits correlated with obesity among adolescent girls in Pontianak City. Preferably, adolescent girls are able to choose healthy foods for daily consumption, monitor their nutritional status regularly, and expand their knowledge about balanced diets.

1 INTRODUCTION

Obesity is a nutritional problem that has a negative impact on public health (World Health Organization, 2022). Based on Southeast Asia data, the highest prevalence of obesity in adolescents aged >18 years was in Cambodia at 50.20% and the lowest prevalence was in Myanmar at 8.4% (Ni et al., 2021). The prevalence of obesity in Indonesian adolescents was 23.1% and central obesity had a 28% prevalence (Harbuwono et al., 2018). According to the data from Indonesia Basic Health Research in 2018, the prevalence of obesity in West Kalimantan Province was 23.3%. A report by the Indonesia Health Ministry in 2018 stated that obesity among adolescent girls had a 32.50% prevalence in Pontianak City. The highest prevalence of obesity among adolescent girls was in the District of South Pontianak at 28% (Albertina, 2017).

Obesity occurs due to the lack of balance in daily food intake (Rambing et al., 2021). Adolescents tend to choose foods that have high energy and high fat, if they are lacking physical activities, they are at a high risk of becoming obese (Nuraelah, 2022).

Adolescence is a period when they are in transition from childhood to adulthood (Das et al., 2017). Adolescents eating habits follow the trends in western countries, namely consuming fast foods and soft drinks (Ribeiro-Silva et al., 2018). Maintaining bad eating habits in long term can affect the nutritional status of adolescents girls (Abdella et al., 2019).

During the COVID-19 pandemic, there were changes in the eating habits and the lifestyle of adolescents who were increasingly less active in daily activities (Robinson et al., 2021). The COVID-19 pandemic led to the imposition of major social restrictions which caused adolescents girls to increase

their sitting and eating frequency compared to before the pandemic (Mutia et al., 2022). Therefore, this study aimed to determine the association of between eating habits and obesity incidence among adolescent girls during the COVID-19 pandemic in Pontianak City.

2 MATERIALS AND METHODS

This research was observational analytics research with a *cross-sectional design*. The studied population was girl students in Pontianak City. The selection of universities was carried out randomly so that the Pontianak Health Polytechnic, Yarsi College of Health Sciences, and Aisyiyah Health Polytechnic were selected. This research was conducted from March to April 2022. The number of samples was 102 respondents, taken using the proportional random sampling technique. The sample was selected according to the inclusion criteria, students aged >18 to 21 years, who were registered on campus, and lived with their families. Exclusion criteria were Nutrition student, sick for ≤ 1 month, taking contraceptive drugs, consuming alcoholic beverages, and having a history of metabolic disorders. The waist and hip circumference data collection process was assisted by one of the enumerators who graduated with a nutrition diploma and the data collection process was done following the applicable procedures during COVID-19.

The collected data includes general characteristics such as waist circumference, hip circumference, age, eating habits, and pocket money. Waist to hip ratio (WHR) was used to determine obesity criteria and the Adolescent Food Habit Checklist (AFHC) questionnaire was used to measure eating habits with a Cronbach's alpha of 0.9. Using the measurement of nutritional status, the waist-to-hip ratio method was divided into obese (> 0.80 cm) and non-obese (≤ 0.80 cm), while eating habits were categorized into good and poor. The data were analyzed using the chi-square test with the help of the IBM SPSS version 19 application. The confidence level was 95%.

3 RESULTS AND DISCUSSION

3.1 Characteristics of Respondents

Respondents in this study were 102 adolescent girls. Characteristics of respondents including age, pocket money, nutritional status, and eating habits can be seen in table 1.

Table 1: Distribution of Respondent Characteristics.

Characteristics of Respondents	(n)	Percentage (%)
Age (years)		
19	63	61.8
20	35	34.3
21	4	3.9
Pocket Money (Rp)		
<500,000	9	8.8
500,000	5	4.9
>500,000	30	29.4
1,000,000	10	9.8
>1,000,000	48	47.1

Table 1 shows that 61.8% of the respondents were 19 years old, some of the respondents got pocket money more than 1,000,000 rupiah (47.1%), and most of the respondents were Muslim (77.5%).

3.2 Distribution of Eating Habits and Nutritional Status

Table 2: Frequency Distribution of Variable.

Variable	n	%
Eating Habits		
Good	38	37.3
Poor	64	62.7
Nutritional Status		
Obese	74	72.5
Non-obese	28	27.5

Respondents who had obese status were at the 72.5% percentage. Half of the respondents had poor eating habits of about 62.7% percentage. It means that most adolescent girls were obese, and their eating habits were poor. The reasons could be due to the lack of references for food and respondents only eating what they like to eat, without considering the food quality and quantity. Adolescent girls with poor eating habits were caused by the absence of dietary restrictions and they are becoming free to eat any food they like.

3.3 The Association between Eating Habits and Obesity Incidence

Table 3: Association between eating Habits and Obesity (n=102).

Eating habit	Nutritional status				OR	p
	Obese		Non Obese			
	n	%	n	%		
Good	22	21.57	16	15.6	0.317 CI= 0,129 – 0.780	0.01
Poor	52	50.98	12	11.7		

Table 3 shows that respondents with poor eating habits and obese status were 50.98% of the total, it was higher than the obese respondents with good eating habits (21.57%). Results of the statistical test indicate there was an association of between eating habits and obesity incidence in adolescent girls during the COVID-19 pandemic with a p-value of 0.01 ($p < 0.05$).

Based on the results of this study, it was found that respondents with poor eating habits and obese status were 50.98%, while respondents with good eating habits and non-obese status were 15.6%. These results showed eating habits and obesity incidence in adolescent girls were associated ($p = 0.01$). It was in line with Handayani's research (2020) which said that there was an association of between eating habits and nutritional status in adolescent girls ($p < 0.05$).

In this study, it was found that more than half of adolescent girl respondents have poor eating habits (62.7%). The cause was that adolescent girls tend to choose fast food and sweet foods such as boba drinks, tea, soda, and other drinks with high sugar content.

The results of the study by Badriyah & Pijaryani (2022) showing that adolescents tend to choose foods and drinks with high sugar content is in line with the study by Mazzolani *et al.* (2021), stating adolescent girls often order food online during the covid 19 pandemic when they are staying at home. According to Mutia *et al* (2022), adolescent girls prefer to consume foods that contain high energy and fat because it is easy to obtain in fast food.

Social distancing measures during the Covid-19 pandemic resulting in a change in adolescents' moods because there was a policy to stay at home and limit their activities (Ammar *et al.*, 2020). Hourani *et al.* (2021) research showed that 58.4% of adolescent girls had difficulty maintaining good eating habits. It was important for adolescent girls to maintain good eating habits by consuming healthy foods and increasing physical activity at home during the pandemic, so that their nutritional status was normal, and they could avoid obesity.

The results of this research stated that respondents' eating habits can be influenced by their lifestyle. During the COVID-19 pandemic, adolescent girl respondents in Pontianak City had poor eating habits. Respondents tended to choose foods that have high fat and high sugar content. Poor eating habits caused energy and fat intake to exceed the nutritional requirements of adolescent girls, which can lead to obesity. The COVID-19 pandemic made respondents tend to order fast food and drinks that contain high sugar (boba drinks and coffee with milk) when the respondents were bored with the food

provided at their homes. If poor eating habits were carried out continuously by adolescent girls, they can gain obesity during the pandemic. The research of Das, *et al.* (2017) stated that poor eating habits were a trigger for obesity in adolescent girls.

There are limitations for this research. Filling out the questionnaire was carried out during the COVID-19 pandemic, so researchers and enumerators were required to use strict health protocols including wearing masks and keeping a distance so that patience was needed in explaining the research process to respondents. The research instrument is only a closed questionnaire, so it is necessary to collect data using a stronger and better instrument such as an open questionnaire or interviews to get more in-depth data.

4 CONCLUSIONS

There was an association of between eating habits and obesity incidence in adolescent girls during the COVID-19 pandemic in the city of Pontianak with a p-value of 0.01 ($p < 0.05$). Further research can be done by adding energy and fat intake variables or other variables which affect obesity in adolescent girls during the COVID-19 pandemic.

ACKNOWLEDGEMENTS

The researcher would like to thank the Pontianak Health Polytechnic, Yarsi College of Health Sciences, and Aisyiyah Health Polytechnic which have given their permission for us to collect research data, and also others who have helped, guided, and supported this study. The researcher hoped this study's results can be useful and beneficial for the community.

REFERENCES

- Abdella, HM., Farssi, HOE., Broom, DR., Hadden, DA., Dalton, CF. 2019. Eating behaviors and food cravings; influence of age, sex, BMI and FTO genotype. *Nutrients*, 11 (2), 1–16. <https://doi.org/10.3390/nu11020377>
- Almira, N., Hamidatun. 2022. Macronutrient Intake of Students on the Food Technology and Health Faculty of Sahid University during the Covid-19 Pandemic. *Journal of Food Technology and Health*, 4 (1), 20–24.
- Ammar, A., Brach, M., Trabelsi, K., Chtourou, H., Boukhris, O., Masmoudi, L., Bouaziz, B., Bentlage, E.,

- How, D., Ahmed, M., Müller, P., Müller, N., Aloui, A., Hammouda, O. 2020. Effects of COVID-19 Home Confinement on Eating Behavior and Physical Activity: Results of the ECLB-COVID19 International Online Survey. *Nutrients*, 12 (1583), 13. <https://doi.org/10.3390/nu12061583>.
- Badriyah, L., Pijaryani, I. 2022. Eating Habits and Sedentary Lifestyle with More Nutrition in Teenagers during the Covid-19 Pandemic. *Scientific Journal of Health*, 21 (1), 33–37. <https://doi.org/10.33221/jikes.v21i1.1521>
- Das, JK., Salam, RA., Thornburg, KL., Prentice, AM., Campisi, S., Lassi, ZS., Koletzko, B., Bhutta, ZA. 2017. Nutrition in adolescents: physiology, metabolism, and nutritional needs. *Annals of the New York Academy of Sciences*, 1393 (1), 21–33. <https://doi.org/10.1111/nyas.13330>
- Handayani. 2020. Relationship between eating habits, physical activity, and mental health with nutritional status of nurses. *Hasanuddin University*. <http://repository.unhas.ac.id/id/eprint/1063>
- Harbuwono, DS., Pramono, LA., Yunir, E., & Subekti, I. 2018. Obesity and central obesity in Indonesia: Evidence from a national health survey. *Medical Journal of Indonesia*, 27 (2), 53–59. <https://doi.org/10.13181/mji.v27i2.1512>
- Al Hourani, H., Alkhatib, B., Abdullah, M. 2021. Impact of COVID-19 lockdown on body weight, eating habits, and physical activity of Jordanian children and adolescents. *Disaster Medicine and Public Health Preparedness*, Feb 16, 1-9. <https://doi.org/10.1017/dmp.2021.48>
- Liana, AE., Soharno, AAP. 2017. The Relationship between Knowledge of Balanced Nutrition and Body Mass Index in Students. *Journal of Midwifery*, 7 (2), 132–139.
- Mazzolani, BC., Smaira, FI., Esteves, GP., Santo André, HC., Amarante, MC., Castanho, D., Campos, K., Benatti, FB., Pinto, AJ., Roschel, H., Gualano, B., Nicoletti, CF. 2021. Influence of Body Mass Index on Eating Habits and Food Choice Determinants among Brazilian Women during the COVID-19 Pandemic. *Frontiers in Nutrition*, 8, 1–10. <https://doi.org/10.3389/fnut.2021.664240>
- Mutia, A., Jumiyati, J., & Kusdalinah, K. 2022. Diet and Physical Activity against Adolescent Obesity during the Covid-19 Pandemic. *Journal of Nutrition College*, 11 (1), 26–34. <https://doi.org/10.14710/jnc.v11i1.32070>
- Ni, SM., Putri, K., Christina, M., Suhardin, S., Susanti, I. 2020. Factors Associated with Obesity in Adults in South East Asia. *International Journal of Psychosocial Rehabilitation*, 24 (7), 1475-7192 <https://doi.org/10.37200/IJPR/V24I7/PR270728>
- Praditasari, JA, & Sumarmik, S. 2018. Fat Intake, Physical Activity, and Obesity in Adolescent girls at Bina Insani Junior High School Surabaya. *Indonesian Nutrition Media*, 13 (2), 117. <https://doi.org/10.20473/mgi.v13i2.117-122>
- Rambing, CJE, Bolang, ASL, & Kawengian, SES. 2021. Energy Intake and Nutritional Status of Students during the COVID-19 Pandemic. *Biomedical Journal: Jbm*, 13 (2), 175–179. <https://doi.org/10.35790/jbm.13.2.2021.31776>
- Ribeiro-Silva, RC., Fiaccone, RL, Conceição-Machado, MEP., Ruiz, AS., Barreto, ML., Santana, MLP. 2018. Body image dissatisfaction and dietary patterns according to nutritional status in adolescents. *Jornal de Pediatria*. 94 (2), 155–161. <https://doi.org/10.1016/j.jped.2017.05.005>
- Robinson, E., Boyland, E., Chisholm, A., Harrold, J., Maloney, NG., Marty, L., Mead, BR, Noonan, R., & Hardman, CA. 2021. Obesity, eating behavior and physical activity during COVID-19 lockdown: A study of UK adults. *Appetite*, 156 (August), 104853. <https://doi.org/10.1016/j.appet.2020.104853>
- World Health Organization. 2022. *WHO European Regional Obesity Report 2022*. <http://apps.who.int/book-orders>.