



Physical Activity, Eating Habits, Nutrition Knowledge and Nutritional Status of Central Obesity in Adolescents

Bohari^{1*}, Miranda Nabila¹, Agnes Irma Yuliarta Sijabat¹, Andini Farendhiya¹, Ridha Durati Tsany¹, Uci Amelinda Akta W¹, Rahmah Nur Hidayah¹, Putri Setyaningsih¹, Mutia Tri Anggini¹, Yuniar Wulan Y. P¹

¹ Department Nutrition, Universitas Sultan Ageng Tirtayasa, City of Serang, Indonesia

*Corresponding author; contact: bohari@untirta.ac.id

Abstract

Central obesity can occur in everyone from various age groups. One of the age groups that are prone to central obesity in adolescents. This study aims to determine the description of physical activity, diet, nutritional knowledge, and nutritional status of adolescent central obesity. This type of research uses a quantitative descriptive method. The data collection time was carried out for 9 days starting on November 21, 2021 until November 29, 2021. The data was collected through interviews with research respondents and then the data was inputted into the KoBoToolbox application. The variables measured in this study were divided into several categories including characteristics, anthropometry, physical activity habits, eating habits, and respondents' knowledge. The results of the study are that there are 43.75% of adolescents have central obesity, the physical activity of the respondents is included in the category of very rarely exercising by 46.88%, and the frequency of consumption of junk food and fast food in a week is in the category of sometimes (2-3x/week). of 43.75%, the level of knowledge about obesity is included in the sufficient category, namely 60.94%. The conclusion is that adolescents have sufficient knowledge about obesity, but physical activity is still lacking and the habit of consuming risky foods such as junk food and fast food is high, and fiber consumption includes less in a week

Keywords: Central Obesity, Adolescents, Physical Activity, Eating Habits, Nutrition Knowledge

Key Messages:

- Central obesity in adolescents is high, namely 43.75%, and their physical activity is included in the less category and the habit of consuming junk food and fast food is high.
- Fiber consumption includes less in a week, namely 18.75% who consume 4-5 times a week

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1. Introduction

The nutritional status of obesity is currently a major issue in the health sector, especially central obesity (1). Central obesity is a condition in which a person experiences an accumulation of fat centered in the abdomen (intra-abdominal fat) as a result of the presence of excess fat in subcutaneous fat tissue and visceral fat in the abdomen (2). The accumulation of visceral fat is a result of subcutaneous fat not functioning in the face of excess energy conditions due to excessive fat consumption (3). Central obesity has the potential to cause various kinds

of degenerative diseases, such as heart disease, hypertension, type 2 diabetes mellitus, hypertension, cancer, dyslipidemia to the occurrence of metabolic syndrome (4).

Central obesity can occur in everyone from various age groups. One of the age groups that are prone to central obesity is adolescents (5). The adolescent age group is a transitional stage of children so that there are various changes, especially in terms of lifestyle which include eating patterns, eating habits, less physical activity, increased consumption of fast food which is high in fat, views on body image etc (6).

This study aims to determine the description of physical activity, diet, nutritional knowledge and nutritional status of adolescent central obesity.

2. Methods

This type of research uses a quantitative descriptive method. Data collection time is carried out for 9 days starting on November 21, 2021 until November 29, 2021. Data was collected through interviews with research respondents and then the data was inputted into the KoBoToolbox application. The sample in this study was selected using a purposive sampling technique. The characteristics of the samples studied were male or female adolescents (10-24 years old), had a history of obesity or not, and there were at least 14 respondents who had an abdominal circumference above the normal threshold (male maximum 90 cm, maximum female 80 cm) (7). The total number of respondents or subjects involved in this study were 64 people.

The variables measured in this study were divided into several categories including characteristics, anthropometry, physical activity habits, eating habits, and respondents' knowledge. The respondent's characteristic category consisted of gender, age (years), religion, last education, and family history of obesity. Anthropometry of respondents only focuses on abdominal circumference (cm), because it is to determine indicators of central obesity. Physical activity habits include the frequency and duration of the respondent doing physical activity for 1-week intervals. The respondent's eating habits include the respondent's habit of consuming junk food, soft drinks, fiber (fruits and vegetables), sweet foods or drinks, and the frequency of eating in 1 day. The knowledge of respondents related to obesity, especially central obesity. The questions given are 17 questions. Answers from respondents will be assessed in 3 categories, namely good (score 80-100), sufficient (score 60-79), and less (score <60). Data analysis is descriptive statistics.

3. Results

Table 1 shows that of the 64 respondents with 43 women and 21 men, the most respondents were women with a percentage of 68.19%. The age of the respondents consisted of ages 12-21 years. Religion consists of Islam, Christianity and Catholicism with the highest percentage, namely Islam at 85.94%. The level of education shows that the majority are high school graduates/equivalent by 59.38%. Family history of not having obesity is higher than family history of having obesity as many as 39 respondents with a percentage of 60.94% and for a family history of having obesity the results are as many as 25 respondents with a percentage of 39.06%.

Table 1. Characteristics of Respondents

Characteristics	n	%
Sex		
Femala	43	67.19
Male	21	32.81
Age (Years)		
Mean ± SD	17,83 ± 2,27	
Min – Max	12 - 21	
Religion		
Islam	55	85.94
Christian	6	9.38
Catholic	3	4.69
Level education		
Senior High School	38	59.38
Junior High School	15	23.44
Elementary School	11	17.19
Obesity Family History		
Yes	25	39.06

No	39	60.94
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Table 2 shows that there are 43.75% of adolescents who have central obesity. The respondents' physical activity was found in the time category during exercise, namely the respondents who exercised very rarely, the highest percentage was with time <1 hour per day as many as 30 respondents with a percentage of 46.88% and for respondents who often exercised with time >5 hours/day it was obtained namely as many as 4 respondents with a percentage of 6.25%. In other categories, the results are that respondents exercise less once (<2x/week) with a percentage of 43.75% with 28 respondents for respondents in the frequent category (4-5x/week) the results are 1.56% with respondents as much as 1 person.

Then, the eating habits of the respondents showed that out of 64 respondents, the largest percentage results on the question of how many times the frequency of consuming junk food and fast food in a week were in the category of sometimes (2-3x/week) as many as 28 people (43.75%) and the lowest percentage was in the very frequent category as many as 3 people (4.69%). The largest percentage on the question of how many times the frequency of consumption of soft drinks in a week is in the category of sometimes (2-3x/week) as many as 28 people (43.75%) and the lowest percentage is in the category of very often as many as 7 people (10.94 %). The largest percentage on the question of how many times the frequency of consumption of fiber sources in a week is in the sometimes category (2-3x/week) as many as 26 people (40.62%) and the lowest percentage is in the never category as many as 1 person (1.56%). The largest percentage on the question of how many times the frequency of consumption of sugary foods and drinks in a week is in the sometimes category (2-3x/week) as many as 22 people (34.38%) and the lowest percentage is in the never category as many as 1 person (1.56%). The largest percentage on the question of how many times the frequency of eating in a day that most respondents only eat 3-4 times a day (Table 2). The category of knowledge level about obesity shows that the highest percentage results are in the sufficient category, namely 39 people (60.94%) and the lowest percentage results are in the less category, namely 10 people (15.62%) (Table 2).

Table 2. Variables of Central Obesity, Physical Activity, Eating Habits, and Adolescent Nutrition Knowledge

Variable	n	%
Central Obesity Nutritional Status		
Central Obesity	28	43.75
Normal	36	56.25
Number of hours of exercise in a week		
>5 hours	4	6.25
3-4 hours	6	9.375
2-3 hours	7	10.93
<1 hours	30	46.87
Never	17	26.56
Physical activity (exercise) during free time		
Never	20	31.25
Less (<2x/week)	28	43.75
Regular (2-3x/week)	15	23.43
Often (4-5x/week)	1	1.56
The habit of consuming junk food and fast food (fried foods, canned food, chicken noodles, pizza, burgers, etc.)		
Sometimes (2-3x/week)	28	43.75
Rarely (<2x/week)	20	31.25
Often (4-5x/week)	13	20.31
Very Often (every day)	3	4.68
Habit of consuming soft drinks (coca-cola, bottled tea, instant coffee, milk with different flavors)		
Sometimes (2-3x/week)	28	43.75
Rarely (<2x/week)	21	32.81
Often (4-5x/week)	8	12.5
Very Often (every day)	7	10.93
Habit of eating fiber (fruit and vegetables)		
Sometimes (2-3x/week)	26	40.62
Rarely (<2x/week)	23	35.93

Variable	n	%
Often (4-5x/week)	12	18.75
Very Often (every day)	2	3.12
Never	1	1.56
Habit of consuming sugary foods and drinks		
Sometimes (2-3x/week)	22	34.37
Rarely (<2x/week)	19	29.68
Often (4-5x/week)	18	28.12
Very Often (every day)	4	6.25
Never	1	1.56
Frequency of eating in a day		
1-2 times	29	45.31
3-4 times	35	54.68
Nutritional Knowledge		
Good (score 80-100)	15	23.43
Enough (score 60-79)	39	60.93
Less (score < 60)	10	15.62
Total	64	100

4. Discussion

Characteristics of respondents in this study consisted of gender, age, religion, education level, and family history of obesity. The female sex is more at risk for obesity due to differences in physical activity and intake in female (8). Female control excess energy as stored fat while in men the excess energy is used to synthesize protein(9). Obesity and overweight have a high prevalence in southwest of the country, increasing with age. Although several risk factors are associated with obesity, the prevalence of obesity and overweight can be reduced by controlling the risk factors in the community (10). The relationship between self-esteem and obesity is mixed. Factors that place overweight children "at-risk" for low self-esteem include early adolescence, female gender, identification with majority cultural standards of body shape, exposure to teasing and peer victimization, a history of greater parental control over feeding, and internal attributions about weight status. (11).

A study show that people who know more about health, both from formal and informal education, are more able to carry out preventive behavior (12). Education is related to trust and level of knowledge, low education will make a person not aware of knowledge related to obesity such as risk factors, prevention methods, and others (13). History of obesity can be seen that families who have obesity as many as 39 respondents with a percentage of 60.94%. This is related to a study which states that if both parents are obese, the child has an 80% chance of being overweight or obese, whereas if only one parent is overweight or obese, the child has a 40% chance of being overweight or obese.

Measurement of abdominal circumference is a parameter that provides an estimate of the size of body fat that accumulates in the abdomen(14). WHO (2015) determined that a person is declared to be centrally obese if the abdominal circumference for international men is 102 cm and Asia is 90 cm, while in international women it is 90 cm and Asia is 80 cm (15). A study states that Indonesia is a country that has low physical activity including adolescents, this is related to the results in table 2 which shows that 28 adolescents have central obesity, consisting of 8 male adolescents and 20 female adolescents.

Physical activity is known to play an important role in preventing obesity and plays a role in the distribution of body fat and physical activity has also been strongly associated with maintenance of weight loss. Physical activity that expends 1,500 to 2,000 kcal/week appears necessary to maintain weight loss (16). Physical activity is a body movement produced by skeletal muscles and requires energy, including activities carried out at work, playing, doing household chores, traveling and recreational activities(17). Physical activity is different from sport because sport is a physical activity that is planned, structured, repetitive and aims to improve or maintain one or more components of a person's physical fitness (18). Types of Physical Activity, namely daily activities, such as walking, gardening, working in the garden, washing clothes, washing cars, mopping floors and going up and down stairs. as well as sports such as push-ups, light running, playing ball, swimming, gymnastics, playing tennis, yoga, fitness and lifting weights. Adolescents rarely exercise while exercising for less than 1 hour and only <2x a week, which means that there is still a lack of exercise in their daily lives. this may be due to high activity at school or

spending more time in the room doing assignments, so it is still difficult to manage time and no time to exercise.

Eating habits are a way for someone who has the habit of eating three meals with the frequency and type of food eaten. The university students presented a low frequency of healthy eating habits due to the high intake of food high in fat and sugar and mainly the low consumption of fruits and vegetables and the practice of adding salt to prepared foods(19). Obesity is the result of an energy imbalance(20). Theoretically, two factors that contribute to energy imbalance in obese people are excessive energy intake and lack of physical activity (21). From the perspective of community nutrition, these two factors are essential because each individual can change energy intake through eating habits and energy expenditure through physical activity. Several factors contribute to obesity in adolescents, namely eating habits, physical activity, attitudes and influences from family or peers as well as economic factors (22). In addition, the unique developmental characteristics of adolescents such as self-image, strong self-esteem and cognitive development also play a role(23).

Unhealthy eating habits can lead to obesity, because eating irregularly, excessively, and consuming lots of high-calorie foods can of course lead to obesity, especially in adolescents who sometimes explore themselves more and play a lot outside with their peers and are more often to buy foods that are not nutritious, such as fast food(24). On average, respondents chose the answer sometimes (2-3x/week) in the question of unhealthy eating habits. This means that it proves that the respondents are good enough to avoid unhealthy eating habits, but also that there are still few respondents to consume fiber sources, that is, they have the same answer, which is sometimes (2-3x/week), so this needs to be reproduced. in eating high-fiber foods. as for the frequency of eating respondents who are quite good, namely 3-4 times a day. which belongs to a fairly regular eating habit by eating 3 times a day and the need for an interlude 2 times a day. The category of knowledge level about obesity shows that the highest percentage result is in the sufficient category as many as 39 people (60.94%) and the lowest percentage result is in the less category as many as 10 people (15.62%). In this case, the respondent's level of knowledge about obesity is quite good.

5. Conclusion

The conclusion is that adolescents have sufficient knowledge about obesity, but physical activity is still lacking and the habit of consuming risky foods such as junk food and fast food is high, and fiber consumption including less in a week.

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References

1. Serna-Gutiérrez A, Castro-Juarez AA, Romero-Martínez M, Alemán-Mateo H, Díaz-Zavala RG, Quihui-Cota L, et al. Prevalence of overweight, obesity and central obesity and factors associated with BMI in indigenous yaqui people: a probabilistic cross-sectional survey. *BMC Public Health*. 2022 Feb 14;22(1):308.
2. Tchernof A, Després JP. Pathophysiology of human visceral obesity: an update. *Physiol Rev*. 2013 Jan;93(1):359–404.
3. Wajchenberg BLO. Subcutaneous and Visceral Adipose Tissue: Their Relation to the Metabolic Syndrome. *Endocrine Reviews*. 2000;21(6):697–738.
4. Ginsberg HN, MacCallum PR. The Obesity, Metabolic Syndrome, and Type 2 Diabetes Mellitus Pandemic: Part I. Increased Cardiovascular Disease Risk and the Importance of Atherogenic Dyslipidemia in Persons With the Metabolic Syndrome and Type 2 Diabetes Mellitus. *J Cardiometab Syndr*. 2009;4(2):113–9.
5. Zabeen B, Tayyeb S, Naz F, Ahmed F, Rahman M, Nahar J, et al. Prevalence of obesity and central obesity among adolescent girls in a district school in Bangladesh. *Indian J Endocrinol Metab*. 2015;19(5):649–52.
6. Scaglioni S, De Cosmi V, Ciappolino V, Parazzini F, Brambilla P, Agostoni C. Factors Influencing Children's Eating Behaviours. *Nutrients*. 2018 May 31;10(6):706.

7. Darsini D, Hamidah H, Notobroto HB, Cahyono EA. Health risks associated with high waist circumference: A systematic review. *J Public Health Res.* 2020 Jul 2;9(2):1811.
8. Ciptaningtyas R, Pratiwi N. Gender Differences in Obesity and Physical Activity among Secondary School Students. 2012;3(2):106–12.
9. Darla Leal. How Does Fat Leave the Body When You Lose Weight? [Internet]. Verywell Fit. 2021 [cited 2022 May 20]. Available from: <https://www.verywellfit.com/how-does-fat-leave-the-body-4165132>
10. GHADERIAN SB, YAZDANPANA L, SHAHBAZIAN H, SATTARI AR, LATIFI SM, SARVANDIAN S. Prevalence and Correlated Factors for Obesity, Overweight and Central Obesity in Southwest of Iran. *Iran J Public Health.* 2019 Jul;48(7):1354–61.
11. Lowry KW, Sallinen BJ, Janicke DM. The Effects of Weight Management Programs on Self-Esteem in Pediatric Overweight Populations. *Journal of Pediatric Psychology.* 2007 Nov 1;32(10):1179–95.
12. Hahn RA, Truman BI. Education Improves Public Health and Promotes Health Equity. *Int J Health Serv.* 2015;45(4):657–78.
13. Devaux M, Sassi F, Church J, Cecchini M, Borghoni F. Exploring the Relationship Between Education and Obesity. *OECD Journal: Economic Studies.* 2011 Sep 15;2011(1):1–40.
14. Wehrmeister FC, Menezes AMB, Muniz LC, Martínez-Mesa J, Domingues MR, Horta BL. Waist circumference and pulmonary function: a systematic review and meta-analysis. *Syst Rev.* 2012 Nov 16;1:55.
15. World Health Organization. Regional Office for Africa. Report on the status of major health risk factors for noncommunicable diseases: WHO African Region, 2015 [Internet]. Brazzaville: WHO, Regional Office for Africa; 2016 [cited 2022 May 20]. Available from: <https://apps.who.int/iris/handle/10665/253568>
16. Rippe JM, Hess S. The Role of Physical Activity in the Prevention and Management of Obesity. *Journal of the American Dietetic Association.* 1998 Oct 1;98(10):S31–8.
17. Statistics Austria. Physical Activity [Internet]. STATISTICS AUSTRIA. 2021 [cited 2022 May 20]. Available from: https://www.statistik.at/web_en/statistics/PeopleSociety/health/health_determinants/physical_activity/index.html
18. Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Rep.* 1985;100(2):126–31.
19. Silva N de J, Oliveira-Júnior AA de, Raposo OFF, Silva DG da, Mendes-Netto RS, Barbosa KBF. Frequency of Healthy Eating Habits Among Students of A Public University In Northeastern Brazil. *Revista Brasileira em Promoção da Saúde.* 2016;29(2):227–34.
20. Romieu I, Dossus L, Barquera S, Blotière HM, Franks PW, Gunter M, et al. Energy balance and obesity: what are the main drivers? *Cancer Causes Control.* 2017;28(3):247–58.
21. Hill JO, Wyatt HR, Peters JC. Energy Balance and Obesity. *Circulation.* 2012 Jul 3;126(1):126–32.
22. Sahoo K, Sahoo B, Choudhury AK, Sofi NY, Kumar R, Bhadoria AS. Childhood obesity: causes and consequences. *J Family Med Prim Care.* 2015;4(2):187–92.
23. Kansra AR, Lakkunarajah S, Jay MS. Childhood and Adolescent Obesity: A Review. *Front Pediatr.* 2021 Jan 12;8:581461.
24. Sogari G, Velez-Argumedo C, Gómez MI, Mora C. College Students and Eating Habits: A Study Using An Ecological Model for Healthy Behavior. *Nutrients.* 2018 Nov 23;10(12):1823.