

# Rural–Urban Differences in Overweight and Obesity of Adolescent: A Review Article

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Abstract: *Obesity* is a disease that gives rise to metabolic syndrome problems as a contributor to all health problems associated with an unhealthy lifestyle. The purpose of this literature review is to determine the condition of obesity in adolescents based on urban and rural areas. This study is a literature review that focuses on discussing adolescent obesity in urban and rural areas. The results of this literature review show differences in the frequency and duration of physical activity and variations in consumption menus in overweight and obese adolescents based on regional differences. Differences in rural-urban areas in dealing with obesity problems require different intervention approaches.

## 1 INTRODUCTION

Obesity is a condition where there is an abnormal accumulation of fat in the body that can interfere with health. Obesity or excess fat can be caused by the accumulation of special fat tissue stored in excess by the body or called adipocytes. One of the main health problems in developed and developing countries is obesity. According to WHO in 2010, being overweight and obese are risk factors for the world's fifth leading cause of death. It is estimated that around 2.8 million people in the world die from complications of obesity. In 2016, globally, about 17% of adolescents were overweight (Obesitas, 2014).

Meanwhile, Riskesdas 2018 shows a figure of 21.8% for obesity in Indonesia. This number has continued to increase since the 2007 Riskesdas by 10.5% and 14.8% in the 2013 Riskesdas. The increasing number of obesity will affect the increase in Non-Communicable Diseases (NCDs), such as diabetes and heart disease. Then, obesity at the age above 18 years, namely 13.6% overweight and 21.8% obese. The incidence of obesity in Indonesia has a prevalence of central obesity in adolescents less than 15 years of 31.0%, the highest percentage of obesity is in North Sulawesi, at 42.5%, and the lowest is in East Nusa Tenggara Province, at 19.3% (KemenKes RI, 2022).

An *urban area* is an area with main activities of industry and trade with a functional arrangement of the place for urban settlements, centralization and distribution of government services, social services and economic activities. Meanwhile, rural areas have the main activity of agriculture, including natural resource management with the arrangement of the function of the area as a place for rural settlements, services, government, social services and economic activities. Alternatively, in short, rural areas are rural areas. Obesity cases in rural and urban areas can be said to have no significant difference in food intake and physical activity. However, urban communities have less physical activity and more often eat instant food, and rural communities have more physical activity but consume an unbalanced diet that triggers obesity.

In urban and rural areas, there are differences in terms of their daily habits, especially in consuming food. For example, they prefer to eat fast food because most people in urban areas have more busy schedules and need more time, so they cannot make nutritious food. Meanwhile, in rural areas, people need more education about maintaining a nutritional balance in food. In addition, people in rural areas often do not care about the combination of foods they want to digest, for example, instant noodles with rice.

Nowadays, many teenagers in Indonesia still have the habit of consuming excess food containing more calories. Also, when they exercise regularly but during or after exercise, they consume soft drinks such as Fanta, coca cola, sprite and other soft drinks that can cause weight gain or obesity. Furthermore, most adolescents in rural areas tend to lack education about the importance of maintaining a balance of nutrition in food. Often teenagers in rural areas do not care about the combination of foods to be digested, for example, instant noodles with rice, as previously described. Therefore, we study obesity in adolescents in rural and urban areas to find out the causes of obesity in rural and urban areas, especially in adolescents. The purpose of this literature review is to determine the condition of obesity in adolescents based on urban and rural areas.

## 2 METHODS

The method research we use is a literature review, commonly referred to as analysing research articles on the incidence of obesity in adolescents in rural and urban areas related to diet and physical activity. The research articles that we use are articles or national journals sourced from Google Scholar. The search for articles uses “obesity in adolescents”,

“obesity in rural and urban areas, physical activity”, and “fast food”. We searched the literature using keywords and conducted a data review of several selected articles.

## 3 RESULTS

This paper involves the occurrence of obesity in adolescents in rural and urban areas and the factors that influence the occurrence of obesity. In table 12, it is explained that there are differences in obesity in rural and urban areas, related to the type of food consumed by brands in each area. In urban areas, in addition to many foods that contain high calories, there are also many drinks containing caffeine and energy drinks that can trigger obesity. Whereas in rural areas, it is rare to find places to eat foods that contain excess such as junk food, but local people often consume baked goods and also foods that can trigger obesity. Why baked goods can make obesity? Baked foods such as baked goods can trigger obesity because of their high cholesterol content which can lead to obesity as well. While foods with high salt content can also cause obesity, because salt absorbs / holds air, so air will occur in the body. This condition causes weight gain. In one gram of table salt, the equivalent of 400 milligrams of sodium can increase body weight up to 1 kilogram.

No.	Author, Year	Area	Methods	Result	Conclusions	References
1.	Hermawati Hamalding et al, 2019	Urban	Cross sectional study	The results of the univariate analysis showed that out of 76 students there was the lowest. The highest level of class XI was 52.6%, the age of 16 years was 48.7% and the middle age was 14 years old. The results of multivariate analysis using multiple linear regression test showed the effect of physical activity, consumption of fast food, watching TV, and use of gadgets on weight status.	Based on the results of the research that has been done, it can be concluded that the variables that have the most influence on young women are physical activity, consumption of fast food, watching TV, and using gadgets.	(Hamalding et al., 2019)
2.	Mellia Silvy Irdianty, 2018	Urban	Observation	Based on the results of the analysis, it can be concluded that the relationship between physical activity and obesity is practical and	In obese adolescents who like fried snacks, more lack of activity was found. There is a significant difference between snack weight	(Irdianty and Sani, 2018)

				statistical. In obese students found 4 times more with light physical activity than moderate physical activity.	and snack intake in adolescents. Obese adolescents consume an average of 121 grams of snacks per day	
3.	Aliyansyah Mustofa, 2021	Urban	Cross sectional study	Based on the results of the analysis showed signs that an unhealthy lifestyle, lack of physical activity, frequent consumption of junk food and soft drinks can cause overweight.	There is no relationship between the level of nutritional knowledge and consumption of junk food with overweight events in adolescents.	(Mustofa and Nugroho, 2021)
4.	Made Windha P.A, 2018	Urban dan Rural	Cross sectional study	The results of the analytical test obtained a value of $> 0.05$ . So, it can be said that there is no difference in the average BMI of respondents in urban and rural areas.	It can be concluded that there is no difference in the prevalence of obesity and overweight in public high school students between urban and rural areas in Gianyar Regency.	(Armi and Dwipayana, 2018)
5.	Mardiana, 2020	Rural	Cross sectional study	The results of this study found that there was no relationship between fast food consumption and obesity in adolescents in rt.15 Loa Kulu Village, East Kalimantan.	There is no relationship between fast food and obesity because it is caused by genetic factors and physical activity in adolescents rt.15 Loa Kulu Village, East Kalimantan.	(Mardiana et al., 2020)
6.	dr. Soebandi, 2018	Rural dan Urban	Cross sectional study	The results of the analysis show that the consumption of junk food is a significant influence on early puberty in rural and urban areas.	Based on this study, the habit of consuming junk food can affect the occurrence of obesity.	(dr. Soebandi, 2018)
7.	Deni A. C., 2018	Urban	Cross sectional study	The results of this research show that women have the greatest risk of obesity compared to men, but the results do not show a significant relationship.	There is no relationship between physical activity and obesity based on BMI.	(Deni, 2018)
8.	Irna Pratiwi, 2021	Urban	Cross sectional study	From this study, it can be analysed that the habit of consuming junk food has a significant relationship with the incidence of over or under nutrition	The conclusion is that there is no relationship between physical activity and consumption of junk food with the incidence of obesity	(Pratiwi et al., 2022)
9.	Fatmawati Indah P., 2021	Rural	Descriptive	The frequency of consumption of instant noodles is known as 12 teenagers often consume instant noodles and 37 teenagers rarely	The conclusion is that instant noodles are the main cause of obesity.	(Pratiwi et al., 2021)

10	Wahyuni Hafid, 2019	Urban	Observational analytic	consume instant noodles. The results of the study show that there is a significant relationship between fast food consumption and the incidence of obesity in adolescents.	Fast food is the main cause of obesity in adolescents in the Gorontalo area. This is evidenced by the existence of a significant relationship between the consumption of fast food with the occurrence of obesity in adolescents.	(Hafid and Hanafi, 2019)
11	Bishav Mohan, 2018	Rural and Urban	Cross-sectional surve	A high prevalence of ongoing hypertension and obesity is found among urban schoolchildren and adolescents in the northern states of India.	A high prevalence of ongoing hypertension and obesity is found among urban schoolchildren and adolescents in the northern states of India.	(Mohan et al., 2019)
12	Esti Nurwanti, 2019	Rural and Urban	Cross-sectional surve	The results show that there are differences in the causes of obesity in rural and urban areas. In urban areas, the cause of obesity is the high level of consumption of caffeinated beverages, snacks, and energy drinks. Then in rural areas, the factor that causes obesity is the high consumption of grilled foods and salty foods	There are differences in the factors that cause obesity in rural and urban areas, such as food patterns and types of food consumed.	(Nurwanti et al., 2019)

## 4 DISCUSSIONS

### **The relationship of physical activity with the incidence of obesity in adolescents in urban and rural areas.**

According to WHO (2018), physical activity is a body movement produced by skeletal muscles that requires energy expenditure. Physical activity triggers a process that burns energy, so the more active a teenager is, the more energy he uses. If someone is in the inactive category, the fat and calorie content will accumulate in the body without the burning process. On the other hand, obesity can also affect physical activity. Being overweight makes people less active and preferring to sleep, sit, or rest while eating (Wilda, 2013).

There are differences in the relationship between physical activity and the incidence of obesity in urban and rural areas. In urban areas, teenagers tend to do little physical activity due to the feeling of laziness that arises in them. Adolescents in urban areas also do not pay much attention to diets that are good for their bodies, this is the cause of obesity in adolescents in urban areas. Meanwhile, in rural areas, teenagers tend to do more physical activities such as helping their parents go to the fields, walking, helping mothers clean the house, etc. which can make the body burn more energy. However, teenagers in rural areas have not been able to maintain a balance of nutrients contained in the food they want to consume, so it could be that these foods will trigger obesity.

Based on the results in the table, it is explained that there is a relationship between the use of gadgets and watching TV with obesity in adolescents. This is included in the category of Sedentary Lifestyle. The Ministry of Health of the Republic of Indonesia defines Sedentary Lifestyle as a lifestyle that refers to all types of activities carried out outside of bedtime with the characteristics of very little calorie output (Fildzah, 2022).

The Sedentary Lifestyle classification is divided into 3 based on the duration of time, namely: Low level, less than 2 hours duration; Intermediate level, duration 2-5 hours; High level, over 5 hours duration (Fildzah, 2022).

As a teenager today who often interacts with gadgets with a duration of more than 5 hours. Thus, they can experience the risks of obesity due to lack of physical activity yang This is also done because of the frequent consumption of fast food which generally contains a lot of fat, calories and high sugar. Which in fast food there is an unbalanced nutritional content and lack of fiber. So, it can have a negative impact on adolescent nutrition if they often eat fast food.

#### **Relationship between diet and obesity in adolescents in urban and rural areas.**

The main factor in the occurrence of obesity is a lack of understanding about managing the right diet. There are still many teenagers out there who are indifferent about the importance of maintaining a balanced diet. Along with the times, especially in urban areas, there is a change in food patterns. Teenagers in urban areas tend to prefer to consume fast food which of course contains lots of calories, saturated fat, and cholesterol. This is the main cause of adolescents in urban areas prone to obesity.

Meanwhile, in rural areas, teenagers tend to be less educated about what the nutritional balance in food looks like. Not infrequently, teenagers in rural areas still consume instant noodles mixed with rice.

In rural areas, people often consume grilled foods and salty foods which can trigger obesity. Why baked goods can make obesity? Grilled foods such as grilled meat can trigger obesity due to high cholesterol content which can trigger obesity as well. While foods with high salt content can also cause obesity, because salt is absorbing / retaining water, so there will be a build-up of water in the body. This condition causes weight gain. In one gram of table salt, the equivalent of 400 milligrams of sodium can increase body weight up to 1 kilogram.

Adolescents in rural areas often consume food in excess of the nutritional requirements needed by the body. If the nutrients that enter the body in excess, it will be stored in the form of fat. Not surprisingly, teenagers can be affected by obesity even though they often do physical activity. Because not only physical activity that is not based on a balanced diet. Physical activity and diet are factors that are significantly associated with the incidence of obesity in adolescents.

Where these two things are interrelated, if you often do activities can prevent obesity because our bodies will carry out the fat burning process. Also, by setting a good diet and always paying attention balance of nutrients contained in the food to be consumed. It is recommended for adolescents to better regulate their diet, especially regulate the frequency of eating and reduce consumption of fast food.

## **5 CONCLUSIONS**

Differences in rural-urban areas in dealing with obesity problems require different intervention approaches.

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