Comparative Study of Risk Profiles for Non-Communicable Diseases in Urban and Suburb Adolescents in Padang City (Indonesia)

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Abstract

BACKGROUND: Adolescence is when we still like to experiment and often develop bad habits which may lead to non-communicable diseases (NCDs) in the future.

AIM: This study aimed to understand the lifestyle at risk of NCDs in adolescents that live in the urban and rural areas of Padang city.

METHODS: This research method is comparative descriptive with a descriptive analytical approach, with a total sample of 788 people. The study was conducted from March 2019 to November 2019.

RESULTS: Based on the research, it was found that there was a risk behavior for non-communicable diseases in adolescents. The data shows that about 57.77% of respondents in urban areas and 69.54% of respondents in rural areas like to eat junk food. 45.35% urban respondents and 60.21% rural respondents like to consume high-sweetened beverages. 73.4% of urban respondents and 7.6% of rural respondents like to smoke. About 80.6% of urban respondents and 87.8% of rural respondents lack physical activity. About 59.9% of urban respondents and 49.05% of rural respondents dislike exercising. About 67% of urban respondents and 80.2% of rural respondents sleep late at night.

CONCLUSIONS: The risk behavior of NCDs in rural adolescents is higher than in urban adolescents. It is recommended that parents, teachers, and health workers work together to carry out intervention activities for healthy lifestyles for all adolescents.

Introduction

Changes in diet and lifestyle among adolescents occurred in big cities, making them vulnerable to being the sufferer of non-communicable diseases (NCDs) in their future lives [1].

The increase in NCD prevalence is related to lifestyle [2], including smoking, consumption of alcoholic beverages [3], physical activity, and consumption of fruit and vegetables. Evidence based, since 2013, the prevalence of smoking in adolescents (aged 10–18 years) has continued to increase, namely, 7.2%, data on the proportion of alcoholic beverage consumption have also increased from 3% to 3.3%. Likewise, the proportion of less physical activity also increased from 26.1% to 33.5%. Another thing is that the proportion of less fruit and vegetable consumption in the population is still very problematic, which is 9.1% [4].

Materials and Methods

This research is a comparative descriptive study with a descriptive analytical approach conducted in Padang (West Sumatera Province) from March to November 2019, with a total sample of 788 people. The data were taken using a questionnaire to determine the lifestyle of adolescents. The data are processed with the help of computerization. This research has passed the ethical test on the Research Ethics Committee Team, Faculty of Medicine, Andalas University dated July 1, 2019, No; 199/KEP/FK/2019.

Results

Data collection was assisted directly by 20 enumerators who had been trained by the researchers 1 week before the study was conducted. Before taking the data, all respondents were asked for their consent by signing an informed consent form. Most of the respondents were 17 years old, and most of them were female.

From Table 1, it is known that:

1. The number of adolescents who have the habit of eating fast food types of sausages, pizzas, boiled noodles, fried noodles, French fries, and KFC/CFC in urban areas is 51.93%, while in
Table 1: Frequency distribution of food habits

| Variable               | Category | Urban area | Suburb area |
|------------------------|----------|------------|-------------|
| Fast foods/junk foods  | Never    | 189        | 135         |
|                        | Often    | 205        | 269         |
| High-fat foods         | Never    | 210        | 176         |
|                        | Often    | 184        | 219         |
| Snacks                 | Never    | 172        | 96          |
|                        | Often    | 222        | 298         |
| Street fried foods     | Never    | 109        | 65          |
|                        | Often    | 285        | 330         |
| Grilled foods          | Never    | 152        | 131         |
|                        | Often    | 242        | 263         |
| MEAN                   | Never    | 166.4      | 120         |
|                        | Often    | 227.6      | 274         |

- From Table 1, it is known that: (1) The respondents who never drink high-sweetened drinks in urban areas are 48.07%, while in the suburbs are 34.28%.
- (2) In urban areas, respondents with a lack of physical exercise habits are as much as 59.9%. Meanwhile, the suburb respondents are 49.05%.
- (3) In urban areas, respondents with a lack of physical exercise habits are as much as 59.9%. Meanwhile, the suburb respondents are 49.05%.
- (4) In urban areas, respondents with a lack of physical exercise habits are as much as 59.9%. Meanwhile, the suburb respondents are 49.05%.

Table 2: Frequency distribution of vegetable and fruit eating habits

| Variable          | Category | Urban area | Suburb area |
|-------------------|----------|------------|-------------|
| Eating vegetables | Never    | 25         | 7           |
|                   | Often    | 369        | 387         |
| Eating fruits     | Never    | 39         | 19          |
|                   | Often    | 355        | 375         |

- From Table 2, it is known that: (1) The respondents who never eat vegetables in urban areas are 6.3%, while in the suburbs are 1.8%. (2) The respondents who never consume fruits in urban areas are 9.9%, while in the suburbs are 4.8%.

Table 3: Frequency distribution of drinks of respondents at risk for suffering from NCDs

| Variable                      | Category | Urban area | Suburb area |
|-------------------------------|----------|------------|-------------|
| Drink high-sweetened drinks   | Never    | 215        | 157         |
|                               | Often    | 179        | 237         |

- From Table 3, it is known that respondents who used to drink high-sweetened beverages in the type of soft drinks (carbonated and non-carbonated), instant powder drinks, and instant brewed drinks in urban areas are 45.35%, while in the suburbs are 60.21%.

Discussion

This research was conducted in Padang (West Sumatera, Indonesia) from March to November 2019 (9 months). Respondents who participated in the study were adolescents (junior and high school students) who lived in the urban areas (394 people) and the suburbs area (394 people), so the total number of respondents was 788 people. Viewed from the gender characteristics, female is the majority of the respondents, both from the urban areas (59%) and suburbs areas (61.7%).

Afterward, when viewed from the age characteristics, the respondents from urban areas are mostly 14 years old (38.8%), and 29.2% are 17 years old. Respondents from the suburbs are predominantly 17 years old (35%), while 27.7% are 14 years old.

Adolescents lifestyle in urban and suburb of Padang.

Breakfast habits

From Table 2, the number of respondents who never eat breakfast is higher in the urban areas (7.4%) than respondents who are in the suburbs areas (6.3%). This study shows that there are a few respondents who do not eat breakfast. However, despite the small number, that they exist should raise a concern.

The benefit obtained from breakfast is that it lowers the risk of diabetes and heart disease. Breakfast can also make us more focused and productive in school because the stomach is full [5]. Not having breakfast makes it difficult for the body to meet daily needs for vitamins and nutrients. Research shows that people who eat breakfast are more likely to meet their overall nutritional needs for fiber, calcium, Vitamins A, B, and C, and other essential nutrients [6], [7].

Junk food eating habits

This study shows that both respondents in the urban and suburban areas consume a lot of junk food. Harmful substances mainly caused the destructive impact of junk food such as a wax coating in instant noodles [8]. Not only that, fast food contains

1. In urban areas, respondents with smoking habits are 73.4%, while in the suburbs are 7.6%
2. In urban areas, respondents with a lack of physical activity as much as 80.6%, while in the suburbs, are 87.8%
preservatives and various types of flavoring, such as MSG. If consumed too often will endanger health and cause various diseases, such as cancer, stroke, and kidney stones [9].

**Habits of eating vegetables and fruits**

Some respondents never eat vegetables and fruit. The lack of vegetables and fruit consumption is one cause of the increase in NCDs in Indonesia in recent years [10]. Fruits and vegetables contain Vitamins A, C, and E, folic acid, zinc, magnesium, potassium, and calcium that the body needs [11]. Then, fruits and vegetables contain antioxidants, fiber, and fluids. Fiber helps slow the absorption of sugar in the body. Fiber also regulates the sugar levels in the body, preventing excessive levels and maintaining them not to decrease drastically [12].

**The habit of drinking sugary and high-sweetened drinks**

From Table 4, in general, it can be seen that all respondents, both in the urban and suburban areas, consume a lot of high-sweetened beverages. Consumption of sweet drinks is very detrimental to the health of the human body [13], [14]. The harmful impact of high sweeteners is that they can gain weight and lead to obesity. A 20-year study of 120,000 men and women, published in the New England Journal of Medicine, found that people who increased their consumption of sugar-sweetened beverages to even one serving per day increased their risk of weight gain overtime [15]. Significant weight gain can be seen in 4 years after an individual increase their intake of weight gain overtime. Consuming too much sugar, one-fifth of the daily calories will be harmful to health, obesity, diabetes mellitus can occur and increase the risk of heart disease twice [17], [18].

**Conclusions and Suggestions**

Respondents, both in the urban and in the suburbs of Padang, are at risk of suffering from NCDs. However, in general, the percentage of adolescents living in the suburbs is higher than in urban areas. It is recommended that local governments, especially health workers, intervene in health education on healthy lifestyles comprehensively to the community.
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References

1. Mewton L, Kessler RC, Slade T, Hobbs MJ, Brownhill L, Birrell L, et al. Psychometric properties of the Kessler psychological pressure scale (k6) in a sample of the general population of adolescents. Psychol Value. 2016;28(10):1232-42. http://doi.org/10.1037/psav0000239 PMid:26619095

2. Chaput JP, Dutil C. Sleep deprivation is a contributor to obesity in adolescents: The impact on eating and activity. Int J Behav Nutr Phys Act. 2016;13(1):103.

3. Mike TB, Shaw DS, Forbes EE, Sitnick SL, Hasler BP. The effect of breakfast on the cognitive performance of children and adolescents. Nutr Res Rev. 2009;22(2):220-43. http://doi.org/10.1017/S095442240990175 PMid:19930787

4. Hoyland A, Dye L, Lawton CL. A systematic review of the nutrition, alcohol, physical activity, and/or obesity for young adults. Prev Med. 2017;99:197-206. http://doi.org/10.1016/j.premed.2017.01.009 PMid:28130046

5. World Health Organization. WHO Calls for a Stronger Focus on Adolescent Health. Geneva: World Health Organization; 2016. Available from: http://www.who.int/mediacentre/news/releases/2014/FOCUS-adolescent-health/en [Last accessed on 2016 Nov 29].

6. Wennberg M, Gustafsson PE, Wennberg P, Hammarström A. Poor breakfast habits in adolescence predict metabolic syndrome in adulthood. Public Health Nutr. 2015;18(1):122-9. http://doi.org/10.1017/S1368980013003509 PMid:24468205

7. Hoyland A, Dye L, Lawton CL. A systematic review of the effect of breakfast on the cognitive performance of children and adolescents. Nutr Res Rev. 2009;22(2):220-43. http://doi.org/10.1017/S095442240990175 PMid:19930787

8. Van Ansem WJ, Schrijvers CT, Rodenburg G, van de Mheen D. Consumption of children’s snacks: The role of parents, peers and purchasing behavior of children’s snacks The results of the IMPACT study. Eur J Public Health. 2015;25(6):1006-11. http://doi.org/10.1093/eurpub/ckv098 PMid:26045526

9. Gupta A, Kapil U, Singh G. Consumption of fast food by school-age children in rural Himachal Pradesh, India. Indian Public Health 2018;62(1):65-7. http://doi.org/10.4103/ijph.IJPH_343_16 PMid:29512570

10. Wang D, Steward D, Chang C, Shi Y. Effects of school-based nutrition education programs on knowledge, attitudes, and behavior related to adolescent nutrition in rural areas of China. Prev Environ Health Med. 2015;20(4):271-8. http://doi.org/10.1007/s12199-015-0456-449 PMid:25737683

11. Oyebode O, Gordon-Dseagu V, Walker A, Mindell JS. Consumption of fruits and vegetables and all causes, cancer and deaths due to CVD: Analysis of health surveys for UK data. J Epidemiol Public Health. 2014;2014:203500. http://doi.org/10.1136/jech-2013-203500

12. Fruits and Veggies More Matters. Fruit and Vegetable Variety. 2015. Available from: http://www.fruitsandveggiesmornatters.org/fruit-and-vegetable-variety. [Last accessed 20 August 2019].

13. Vennigau G, Uenzeaki M, Phuanukoonnon S, Siba P, Watanabe C. Association for socio-economic status with diet and physical activity in Bougainvilleans migrants in Port Moresby, Papua New Guinea. Ecol Food Nutr. 2014;53(5):471-83. http://doi.org/10.1080/03670244.2013.855206 PMid:25105859

14. World Health Organization. Guideline: Sugar Intake for Adults and Children. Geneva, Switzerland: World Health Organization; 2015.

15. Vasanti S, Malik and Frank B. Hu. Sugar-sweetened beverages and cardiometabolic health: An update of the evidence. Nutrients. 2019;11(8):1840. http://doi.org/10.3390/nu11081840 PMid:31398911

16. Narain A, Kwok CS, Mamas MA. Soft drinks and sweetened beverages and the risk of cardiovascular disease and mortality: A systematic review and meta-analysis. Int J Clin Pract. 2016;70(10):791-805. http://doi.org/10.1111/ijs.12841 PMid:27456347

17. Huang C, Huang J, Tian Y, Yang X, Gu D. Sugar sweetened beverages consumption and risk of coronary heart disease: A meta-analysis of prospective studies. Atherosclerosis. 2014;234(1):11-6. http://doi.org/10.1016/j.atherosclerosis.2014.01.037 PMid:24583500

18. Keller A, Heitmann BL, Olsen N. Sugar-sweetened beverages, vascular risk factors and events: A systematic literature review. Public Health Nutr. 2015;18(7):1145-54. http://doi.org/10.1017/S1368980014002122 PMid:25321082

19. World Health Organization. Pan-american Health Organization. Who Reports on the Global Tobacco Epidemic, 2015. Raising Taxes on Tobacco. Geneva: World Health Organization; 2015.

20. Oosterveen E, Tzelepis F, Ashton L, Hutchesson MJ. Systematic review of eHealth behavioral interventions that target smoking, nutrition, alcohol, physical activity, and/or obesity for young adults. Prev Med. 2017;99:197-206. http://doi.org/10.1016/j.ypmed.2017.01.009 PMid:28130046

21. Coleman T, Chamberlain C, Davey MA, Cooper SE, Berlin I, Leonardi-Bee J, et al. Pharmacological interventions for promoting smoking cessation during pregnancy. Cochrane Database Syst Rev. 2015;12:CD010078. http://doi.org/10.1002/14651858.CD010078.pub3 PMid:32129504

22. Brown SW, Liu B, Taioli E. The relationship between tobacco smoke exposure and airflow obstruction in US children: Analysis of the National Health and Nutrition Examination Survey (2007-2012). Chest. 2018;153(3):630-7. http://doi.org/10.1016/j.chest.2017.10.003 PMid:29037529

23. World Health Organization. WHO Global Report on Trends in Prevalence of Tobacco Smoking 2000-2025. 2nd ed. Geneva: World Health Organization; 2018.

24. El-Qudah JM. Eating habits and patterns of physical activity among Jordanian adolescents aged 11-18 years. 2014 World Appl Sci J 2014;29:1213-9. http://doi.org/10.5829/idosi.waj.2014.29.10.1972

25. Tomporowski PD, McCullick B, Pendleton DM, Pesce C. Exercise and children’s cognition: The role of the characteristics
of the exercise and the place for metacognition. J Sports Health Sci. 2015;4(1):47-55. http://doi.org/10.1016/j.jshs.2014.09.003

26. Gao Z, Pope Z, Lee JE, Stodden D, Roncesvalles N, Pasco D, et al. The impact of giving energy on young people’s school day energy expenditure and moderate to strong level of physical activity. J Sports Health Sci. 2017;6(1):11-6. http://doi.org/10.1016/j.jshs.2016.11.008

27. Gray CE, Barnes JD, Bonne JC, Cameron C, Chaput JP, Faulkner G, et al. Results from the 2014 Canadian report card on physical activity for children and youth. J Phys Health Act. 2014;11(Suppl 1):S26-32. http://doi.org/10.1123/jpah.2014-0178

PMid:25426910

28. Schmidt RE, Van der Linden M. Relationship between sleep, personality, behavioral problems, and school performance in adolescents. Sleep Med Clin. 2015;10:117-23. http://doi.org/10.1016/j.jsmc.2015.02.007

PMid:26055859

29. Saunders TJ, Vallance JK. Timing and health indicators among children and adolescents: Current evidence, limitations and future directions. Appl Econ Health Policy. 2016;15(3):323-31. http://doi.org/10.1007/s40258-016-0289-3

PMid:27798796

30. Martin A, Saunders DH, Shenkin SD, Sproule J. Lifestyle interventions to improve school performance in children and adolescents who are overweight or obese. Cochrane Database System Rev. 2014;3:CD009728. http://doi.org/10.1002/14651858.CD009728.pub2

PMid:24627300

31. Fucky EL, Ekwaru JP, Gleddie D, Storey KE, Asbridge M, Veugelers PJ. The combined impact of diet, physical activity, screen time, and sleep on academic achievement: A 37 prospective study of fifth graders in Nova Scotia, Canada. Int J Behav Nutr Phys Act. 2017;14(1):29. http://doi.org/10.1186/s12966-017-0476-0

PMid:28274260

32. Hale L, Guan S. Screen of time and sleep in between school-aged children and adolescents: Systematic literary review. Sleep Med Rev. 2015;21:50-8. http://doi.org/10.1016/j.smrv.2014.07.007

PMid:25193149