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Research Article



Study of adolescent health behavior towards non-communicable disease risk factors in Special Region of Yogyakarta

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ABSTRACT

Backgrounds: Non-Communicable Diseases (NCDs) are still one of the causes of high incidence and death rates in people of various age groups, especially adolescents with poor lifestyles and health behaviors due to a lack of awareness to prevent NCDs from an early age. This study aimed to analyze adolescents health behavior of adolescents aged 15-24 years toward risk factors for non-communicable diseases based on the RISKESDAS results of the Special Region of Yogyakarta.

Methods: This research is a quantitative descriptive study using secondary data to analyze the health behavior of adolescents aged 15-24 towards risk factors for non-communicable disease behavior based on data collected from RISKESDAS data for the Special Region of Yogyakarta in 2007, 2013, and 2018. Data analysis was carried out descriptively for each risk factor and presented as a percentage chart.

Results: The research shows that the risk factors for smoking every day and occasionally have decreased from 2007 to 2018. There has been an increase in the awareness of consuming fruits and vegetables. Meanwhile, there was an increase in alcohol consumption in 2018 and a decrease in doing sufficient physical activity for one week in adolescents aged 15-24 years in the Special Region of Yogyakarta.

Conclusion: It can be concluded that risk factors for health behavior related to non-communicable diseases in adolescents are still caused by a lack of physical activity and the large number of adolescents who consume alcohol.

Keywords: Adolescent, Health Behavior, Non-Communicable Disease, RISKESDAS, Risk Factors



INTRODUCTION

Non-communicable diseases (NCDs) kill 41 million people yearly, equivalent to 74% of all deaths globally. Each year, 17 million people die from NCD before age 70; 86% of these premature deaths occur in low- and middle-income countries. Of all NCD deaths, 77% are in low- and middle-income countries. Cardiovascular disease is the most common cause of NCD death, or 17.9 million people each year, followed by cancer (9.3 million), chronic respiratory disease (4.1 million), and diabetes (2.0 million including deaths from chronic kidney disease). Tobacco use, physical activity, harmful alcohol use, and unhealthy eating patterns all increase the risk of death from NCDs. Over 80% of NCD deaths occur from these four disease groups. Detection, screening, and treatment of NCDs and palliative care are critical components of the prevention and treatment of NCDs.¹ People with degenerative diseases (diseases caused by decreased organ function) are increasing due to modern lifestyles, including eating patterns, smoking, drinking, and using drugs.² An unhealthy diet, lack of physical activity, exposure to tobacco smoke, or harmful alcohol use are all risk factors that contribute to NCDs in children, adults, and the elderly.¹

Basic Health Research (Riskesdas) 2013 shows the trend of non-communicable diseases as a cause of death is increasing, from 49.9% (2001) to 59.5% (2007). These non-communicable diseases include hypertension (25.8%), obesity (15.4%), stroke (12.1%), diabetes mellitus (6.9%), coronary heart disease (1.5%), and chronic kidney failure (0.2%).³ The disease is driven by unplanned rapid urbanization, globalization of unhealthy lifestyles, and population aging. Unhealthy eating patterns and lack of physical activity can appear in people as increased blood pressure, increased blood glucose, increased blood lipids, and obesity. Regarding premature mortality, cardiovascular disease is the most common NCD caused by metabolic risk factors.¹

The prevalence of hypertension in the Special Region of Yogyakarta, according to the 2018 Riskesdas, is 11.01% or 14% higher compared to the national figure (8.8%). The Yogyakarta Special Region is in 4th place as a province with high cases of hypertension. Hypertension has been included in the top 10 diseases and the top 10 causes of death in the Special Region of Yogyakarta for the last few years based on the Integrated Disease Surveillance Health Center and Integrated Disease Surveillance Hospital. In 2020, based on the Integrated Hospital Disease Surveillance Report in DI Yogyakarta, 6,171 new cases of hypertension and 33,507 were recorded. The total estimated number of hypertension sufferers aged ≥ 15 years is 210,112 cases. In 2020, the estimated number of hypertension sufferers aged ≥ 15 years have received health services is 69.6%. Several Diabetes mellitus cases in the Special Region of Yogyakarta.⁴

Non-communicable diseases are diseases that are not caused by bacterial or viral infections. Non-communicable diseases often encountered include hypertension, diabetes mellitus, asthma, cardiovascular disease, mental disorders, and accidents. Modernization, improved economic status, and lifestyle changes have increased the prevalence of non-communicable diseases. In the Special Region of Yogyakarta in 2021, it is estimated that there will be 251,100 cases of hypertension sufferers aged ≥ 15 years. Those who have received health services are 129,420 cases or 51.5%. Cases of diabetes mellitus in 2021 are 83,568 cases, and those who receive standard health services are 50,530 cases (60.5%).^{2,5}

Looking at increasingly modern lifestyles and the impact of diseases caused both internationally and nationally, it can also be described in the behavior of adolescents that leads to risk factors for non-communicable conditions in the current era. Changes in lifestyle which are risk factors for NCDs, can also be described in the behavior of adolescents at this time. The prevalence of risk factors is the characteristics, signs, and symptoms of individuals statistically associated with an increased incidence of disease in the future. An unhealthy lifestyle is often associated with teenagers because of their numerous activities and bad eating habits.⁶⁻⁸ In another study, risky alcohol use, drug use, smoking, poor sleep, overweight/underweight, sedentary behavior, high media use, and truancy were linked to a range of poor mental health outcomes, including depression, anxiety and suicide among them. Adolescents (mean age 14.9 years). Risky alcohol use, drug use, smoking, unprotected sex, and sleep were all highly clustered lifestyle risk factors, while BMI was not. A risk index of risky alcohol use, drug use, unprotected sex, and sleep duration predicted the disease burden outcomes with the most incredible precision. More than thirty percent (31.9%) of the sample reported one or more of these behaviors. The risk index does not include energy balance risk behaviors, but BMI is used as a proxy for these behaviors. Physical inactivity, eating patterns, and sedentary behavior was found to coexist in adolescents.⁹⁻¹¹

Previous studies have shown that risk factors for NCD that are at risk in adolescents are less consumption of vegetables and fruit and consumption of fast food.¹² In addition, adolescents are also prone to risky behavior that has not been routinely carried out, namely blood pressure checks, physical activity, exercise, lack of consumption of fruits and vegetables, fast food, and smoking habits. Early smoking is a risk factor for NCDs, such as hypertension, heart disease, stroke, and cancer.⁶

Non-communicable diseases occur due to various factors, such as smoking habits, unhealthy diets or eating patterns, minimal physical activity, and alcoholic beverages. In addition, family health history can also be a trigger for non-communicable diseases. Many productive age groups are now experiencing disorders usually experienced by this elderly group. This condition is a threat that cannot be ignored. How could it not be? The productive age group is expected to become the next generation that will bring Indonesia to face global competition.^{13,14}

According to previous studies, the signs and symptoms generally do not appear during childhood and adolescence, making it difficult to detect during this period. Nonetheless, the prevalence shows that most hypertension is lower in children or adolescents.¹⁵ Based on this description, the purpose of this study was to analyze the health behavior of adolescents aged 15-24 years towards the risk factors for non-communicable disease behavior based on the RISKESDAS results from the Special Region of Yogyakarta.

METHODS

This research is a quantitative descriptive study using secondary data to analyze the health behavior of adolescents aged 15-24 years toward risk factors for non-communicable disease behavior. Data was generated from Riskesdas data for the Special Region of Yogyakarta in 2007, 2013, and 2018. The sample criteria for this study were adolescents aged 15-24 years old and having behaviors/habits: smoking habits (passive and active) both daily and occasionally, consuming less than five servings of fruit and vegetables, and having a history

of drinking alcohol in the last month, history of physical activity for less than one week. Data analysis was carried out descriptively for each risk factor and presented as a percentage chart.

RESULTS

Figure 1 shows the health behavior risk factors in adolescents aged 15-24 years related to smoking habits, alcohol consumption habits, daily fruit and vegetable consumption, and history of physical activity for at least 30 minutes daily. The history of smoking habits in adolescents aged 15-24 years was dominated by non-smoking adolescents in 2007, 2013, and 2018 but experienced a significant decrease every year. The daily history of smoking in adolescents decreased in 2007 from 19.2% to 17.26% in 2018. Likewise, smokers sometimes also reduced to 7.47% in 2018 compared to 2007 (8.8%) and 2013 (8.35%). This is also supported by an increase in ex-smokers in 2018 of 12.78%, a far increase compared to 2007 of only 2.3%.



Figure 1. Percentage of smoking history behavior in adolescents aged 15-24 years in the Special Region of Yogyakarta

The history of consuming alcohol in adolescents aged 15-24 years in the last month increased by 7.5% in 2018 compared to 2007, only 3.7% in 2013 (Figure 2).



Figure 2. Percentage of alcohol consumption in the last month at the age of 15-24 years in the Special Region of Yogyakarta

Figure e shows that the lack of fruit and vegetable consumption in adolescents aged 15-24 years, as much as five portions in 7 days, has decreased significantly from 2007 at 86.3% to 2018 at 31.23%. This shows that awareness of consuming fruits and vegetables among adolescents in the Special Region of Yogyakarta has increased regarding one of the risk factors that trigger the emergence of non-communicable diseases in adolescents.

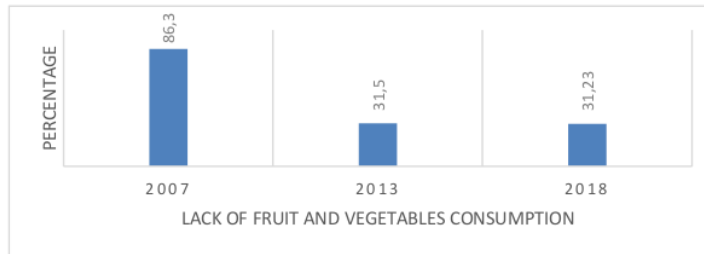


Figure 3. Percentage of lack of fruits and vegetable consumption (<5 servings/week) in 15-24 years old

Figure 4 shows the behavioral risk factors in adolescents on physical activity. It shows that the physical activity carried out by adolescents is still inconsistent; adolescents who did the less physical activity for at least 30 minutes per day decreased in 2013 by 31.05%, while adolescents who did enough physical activity decreased from 2013 by 63,95% to 54.26% in 2018.

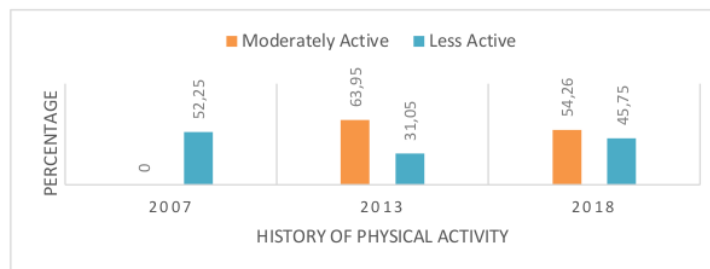


Figure 4. Percentage of physical activity (30 minutes/day) in people aged 15-24 years in the Special Region of Yogyakarta

DISCUSSION

Healthy living behaviors are actions related to a person's efforts or activities to maintain and improve their health or a healthy lifestyle. These behaviors include, among others: 1) eating a balanced menu (containing nutrients the body needs), and the amount is sufficient to meet the body's needs; 2) having regular exercise also includes quality (movement) and quantity in terms of the frequency and time used for sports or physical activities other than sports; 3) no smoking; 4) avoid drink alcohol or drugs.¹⁶

This study indicated that adolescents aged 15-24 still lack the awareness to consume fruits and vegetables and exercise for at least 30 minutes daily. On the other hand, the declining number of non-smokers is one of the focus factors for non-communicable diseases. Smoking is one of the risk factors for non-communicable diseases that are common in society. Still, according to Riskesdas results, smoking is decreasing among people aged 15-24 years. Health impacts that can arise from smoking behavior in adolescents include high blood pressure and heart problems caused by the influence of chemicals in cigarettes, such as nicotine and tar. In addition, it causes a decrease in the sensitivity of the sense of smell and taste for smokers.¹⁷

The research results in developing countries show that smoking habits and diet quality, such as low fruit and vegetable consumption, are significantly higher in groups with low socioeconomic status, which directly relate to low education. Residents with low education are associated with low awareness of healthy living behaviors and inadequate access to healthcare facilities, thereby increasing the risk of unhealthy lifestyles.^{18,19} Based on previous studies, it was found that smoking behavior has a significant relationship with hypertension in adolescents and severe stress in adolescents.²⁰⁻²² Smoking by adolescents is a risk factor for dietary mistakes, poor oral health, and more dynamic damage to teeth, which may result in pain and tooth loss.²³

Our study indicates an increase in alcohol consumption in 2018 compared to 2007, but a history of alcohol consumption in 2013 was not recorded. The most significant factor for people consuming alcohol is environmental factors and friendships that influence a person's behavior. Therefore self-awareness and self-principles are highly prioritized to make oneself avoid a particular risk factor.²⁴ Alcohol consumption, smoking habits, and excessive stress levels will impact health in the long term, one of which is an increase in blood pressure because alcohol has the same effect as carbon monoxide, which causes blood acidity to increase and blood pressure to rise.²⁵

Previous research on high school adolescents showed consistent results, namely that there were risk factors for high school students to experience infectious diseases due to smoking, consuming alcohol regularly, eating fewer vegetables and fruit, less physical activity, and blood pressure above normal and BMI above the normal standard.²⁶ Similar to research conducted at the Anak Dalam Tribe in Nyogan Village, dietary patterns include fruit and vegetable consumption and risky foods such as sweets and foods containing seasonings. Physical activity is a risk factor for hypertension and type II diabetes mellitus (DM). The Anak Dalam society, which has a poor diet, has a risk of suffering 11.23 times from DM compared to Suku Anak Dalam (SAD), who have a good diet; it was seen from the lack of diversity and energy intake in one week.²²

In contrast to alcohol consumption, adolescent awareness of consuming fruit and vegetables has increased; this is indicated by the decrease in the number of adolescents who consume fewer fruits and vegetables, at least five servings per week.¹³ This is in line with the previous research, which said that residents with poor diets and lack of fruit and vegetable consumption increase the incidence of non-communicable diseases and even death. The habit of consuming foods that are high in calories can cause obesity.^{2,27} The lack of fruit and vegetables is caused by the fact that fruits and vegetables are still considered complementary food, not a priority to consume. Mothers' and parents' lack of understanding and skills in getting children to consume fruits and vegetables from an early age and a lack of variety in serving fruit is considered the primary cause of this behavior. Besides, people have the perception that fruit is expensive.^{28,29} Awareness of consuming fruits and vegetables can be increased with regular and continuous education to prevent non-communicable diseases.³⁰

In line with the consumption of fruits and vegetables as a risk factor for non-communicable diseases, the risk factors for non-communicable diseases also experience a decrease in physical activity for 30 minutes per day. Adolescents' awareness of physical activities to prevent non-communicable diseases still needs to improve. Lack of physical activity, namely all body movements that burn calories, can be a risk factor for non-communicable diseases, including cardiovascular disease, obesity, and even diabetes mellitus.^{2,13,14,26} According to the

Ministry of the Health Republic of Indonesia, NCD is caused by an unhealthy lifestyle, one of which is a lack of physical activity. Intense activities and high mobility make people allocate less time to exercise. In addition, advanced technology makes it easier for people to meet their needs, so activities that require body movement are decreasing. Lack of physical activity has also caused the trend of NCD to change; which initially only affected the elderly age group, but now it has been found in the young age group (0-15 years) and the productive age group (15-65 years).³¹

Previous research conducted at the School of HPER at Indiana University found that out of four risky behavior patterns, it was found that as many as 22% of women and 34% of men were included in a high-risk class characterized by poor eating patterns, lack of physical activity, and levels of substance use. Female students in the "low substance use but other poor health behaviors" class were associated with racial/ethnic minority status and lower parental education level.³² Research by Richardo et al. showed that the accumulation of non-communicable disease risk factors was higher in girls, older adolescents, those who did not live with both parents, children of less-educated mothers, students attending public schools, and residents of cities in more developed urban areas of the country.³³ It has been supported by other studies which state that being a boy, increasing age, and the presence of parental support reduce the likelihood of having risk factors for non-communicable disease behaviour.³⁴

Based on research conducted by Yuningrum (2021) explains that the lifestyle of today's youth is at risk of non-communicable diseases as indicated by the consumption of vegetables and fruit, most of which are in the wrong category.¹² Research conducted by other studies also showed an unhealthy lifestyle, such as consumption of soft drinks, smoking, alcohol, and lack of physical activity, which causes a high risk of non-communicable diseases.^{35,36} The number of teenagers who rarely do physical activity and have a low level of physical activity to maintain body fitness is quite a lot. As a result, teenagers' health will be at risk because their body's metabolism is not adequately stimulated as they age. This condition is very worrying because the lack of physical activity will put you at risk for various degenerative diseases and even accelerate the onset of these diseases.⁷

Non-communicable diseases that result from poor health behavior are also based on supporting factors, namely socio-economic status, income, and gender, to body mass index, which has an impact on adolescent obesity, especially in rural areas.³⁷ Supported by other studies which also state that heart disease globally contributes to 7.2-7.6% of deaths due to lack of physical activity, especially in developing countries depending on the population in the country.³⁸

The vulnerability of non-communicable diseases in adolescents needs to be controlled and prevented related to healthy behavior and a healthier lifestyle. One of them is by conducting non-communicable disease screening through the Integrated Development Post or Posbindu NCD for adolescents, which is very useful for early detection of symptoms of non-communicable diseases, monitoring and providing health education to increase youth understanding and knowledge regarding risk factors for non-communicable diseases among adolescents who are assisted by cadres or health center staff, also several strategies with policy-level implications which could be used to reduce smoking, improve nutrition, and increase physical activity.^{29,30,39,40}

The Gernas program must continue to be encouraged to increase public awareness of adopting a healthy lifestyle. Prevention efforts are far better than treatment when you have contracted the disease. With the increasing incidence of NCD, it is necessary to provide education and assistance to the community to carry out early detection or screening of NCD, especially in at-risk groups. Besides that program, the beneficial effects of physical activity and cardiorespiratory fitness for the prevention of chronic non-communicable diseases. Society should always be invited to recognize the disease. It is important to carry out community services regarding screening and assistance to prevent Non-Communicable Diseases in the community.^{2,41}

7 CONCLUSION

Based on the results and discussion above, it can be concluded that there was a fluctuation of health behavior risk factors of Riskesdas in 2007, 2013, and 2018 related to non-communicable diseases. It can be caused by a poor lifestyle and unhealthy behavior such as smoking, alcohol consumption, lack of fruit and vegetables, and less physical activity. A related stakeholder is necessary to prevent and control non-communicable disease risk factors. One is conducting routine screening with health center cadres/officers through the Integrated Development Post (POSBINDU) NCD for adolescents.

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Declarations

Author's contribution

LNR, SND, & IWT contained the presented idea of this study. SND and IWT developed the theory and designed the method. LNR collected the data, and SND & IWT verified the analytical methods. LH and MSH reviewed and revised, and edited the manuscripts and publications. All authors have agreed on the manuscript's final draft before submitting it for publication.

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Conflict of interests

There is no conflict of interest in this research.

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