

Risk Factors Screening for Non-Communicable Diseases Among High School Students

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Abstract

There has been an increase in the incidence of NCDs among teenagers. One of the efforts to respond to the increasing prevalence of NCDs is to develop and strengthen active early detection activities (screening). Early detection of NCDs is a way to determine the presence of NCD risk factors. Early detection helps find early on the possibility that someone may have NCDs or have risk factors. The screening was conducted on 98 High School students. The screening results showed that 77 students (78.57%) did not exercise regularly, 62 students (63.27%) had the habit of sleeping late, 26 students (26.53%) had overweight, and 18 students (18.73%) had prehypertension. These results indicate a risk of NCDs in students. The early known risk factors for NCDs in the prevention and control can be carried out as early as possible. Therefore, screening, or early detection needs to be held in schools in collaboration with local healthcare facilities.

Keywords: early detection; non-communicable diseases; teenagers

INTRODUCTION

Non-communicable diseases (NCDs) are the highest cause of death in Indonesia. Based on the 2018 Basic Health Research of Indonesia results, NCD's prevalence has increased since 2013 (Indonesian Ministry of Health, 2018). There has been an increase in the incidence of NCD at a young age. NCD is often associated with increasing age.

According to the results of the Global School-based Student Health Survey (GSHS) in 2015, it is known that the lifestyle of adolescents is at risk of non-communicable diseases. The data of GSHS shows unhealthy eating patterns of adolescents, such as consuming ready-to-eat food (53%), consuming fewer vegetables and fruit (78.4%), consuming soft drinks (28%), lack of physical activity (67.9%), smoked (22.5%), and consuming alcohol (4.4%) (Xu et al., 2020). The Basic Health Research of Indonesia results in 2013 showed that as many as 26.1% of adolescents did not do enough physical activity. The population aged ten years and over consume less vegetables and fruit by 93.5%, and the population aged 15 years and over who smokes is around 36.3% (Indonesian Ministry of Health, 2018).

The government has made policies to develop and strengthen active early detection (screening) activities to control and decrease the prevalence of NCD. NCD screening is a form of community participation in the early detection, monitoring, and follow-up of NCD risk factors independently and continuously. It is a form of early awareness of NCD diseases because almost all risk factors of NCD do not show symptoms to those who experience it. Risk factors for NCD include smoking, consumption of alcoholic beverages, unhealthy eating patterns, lack of physical activity, obesity, stress, hypertension, hyperglycemia, and hypercholesterolemia.

Screening of NCD is a strategy to determine the presence of NCD risk factors. It helps find early on the possibility that someone has NCD or has risk factors. Knowing the risk factors for NCDs early on, prevention and control could be done as early as possible. Therefore, screening, or early detection, must be conducted in schools cooperating with local healthcare facilities. They facilitate and guide in examining the early detection of NCD risk factors in schools through School Health Program activities, which work together with the person in charge of the Public Health Services (PHC) and teachers to carry out routine health screening related to NCD.

METHOD

Community service activities are expected to provide benefits such as: identifying risk factors of adolescents related to NCD, increasing awareness of teachers, staff of community health service, and parents regarding the results of detection of adolescent health, and for lecturers as community service as a form of active participation in carrying out tri dharma of higher education.

The method of implementing this community service is a health check carried out in one school in the city of Padang. This activity collaborated with the Community Health Service and School Health Program. Data collection on adolescent health will be carried out, which includes family history of NCD, smoking habits, consuming fewer vegetables and fruit, lack of physical activity, obesity, sleeping late at night, consumption of alcohol, and hypertension.

The location of community service is carried out around the Public Health Services and Padang Health Office. The Community Health Service nurse responsible for the School Health Program is involved and invited to attend this community service. The materials and tools used in this activity are forms for recording all student screening results, a digital sphygmomanometer, and a saturemeter.

The following is a flowchart of the activities conducted in this community service.

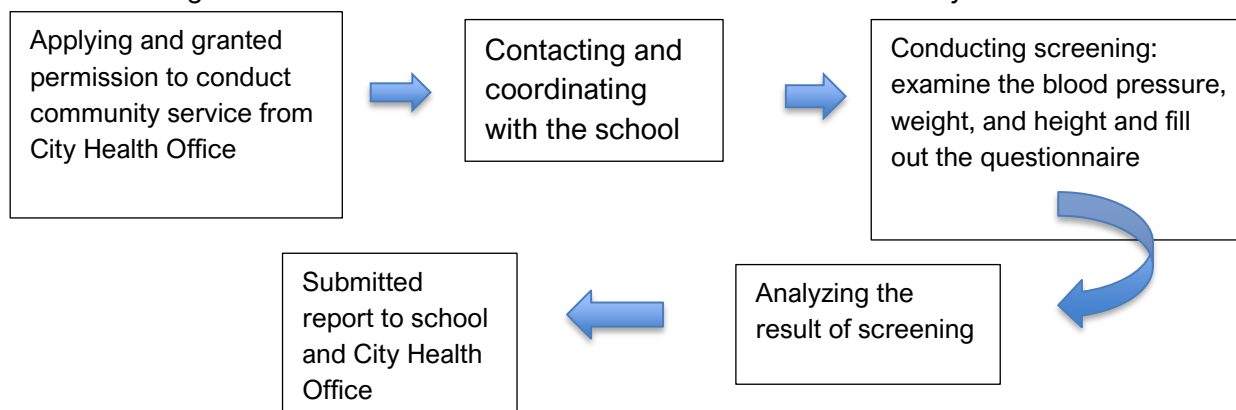


Figure 1. The flowchart of community service activities.

RESULTS AND DISCUSSION

Screening is considered part of health prevention activities that prevent further complications for people who have some disease or to increase awareness among people who have risk. Community service activities are carried out at one of the Senior High Schools in Padang. Screening was conducted on 98 students. This activity consisted of students' data collection and physical health examination. Physical health examination of students is carried out to determine the presence of NCD risk factors that students could experience. This community service activity is expected to increase students' awareness about NCD, which does not only occur in adulthood but can also occur in adolescents. Furthermore, through this activity, students are expected to be able to change their lifestyles. Community service was conducted in the Cimanggu district, Bogor, where health education and screening were provided to people with diabetes to improve knowledge and awareness of the foot condition of the patients (Roslianti et al., 2022).



Figure 2. Documentation of activities during community service among high school students.

Based on the screening results that have been done, information is obtained about the risk factors for NCD in students. Table 1 shows the results of the screening that was carried out on 98 students. The screening results were as follows: most students aged 16 were 54 people (55.1%), and most were women, namely 58 people (59.18%). Furthermore, the screening results showed risk factors owned by students which could lead to the development of NCD where as many as 77 students (78.57%) did not exercise regularly, 62 students (63.27%) had a habit of sleeping late at night, and 26 people (26.53%) were overweight.

Table 1. Distribution Frequency of Characteristics High School Students in the community service

Characteristic	Frequency	Percentage (%)
Aged		
15 years	2	2.04
16 years	54	55.10
17 years	39	39.80
18 years	3	3.06
Gender		
Male	40	40.82
Female	58	59.18
History of Family Disease		
Diabetes Mellitus (DM)	12	12.24
Characteristic	Frequency	Percentage (%)
Hypertension + DM	5	5.10
Hypertension	17	17.35
Cardiovascular Diseases	4	4.08
None	60	61.22
Smoking		
Yes	11	11.22
No	87	88.78

Exercise		
Regular	19	19.39
In-regular	77	78.57
Sleeping Late at Night		
Yes	62	63.27
No	36	36.73
Body Mass Index (BMI)		
Underweight	26	26.53
Normal	44	44.90
Overweight	26	26.53
Obesity	2	2.04
Blood Pressure		
Hypotension	12	12.24
Normal	68	69.39
Pre- hypertension	18	18.37

An exercise is a form of physical activity that accounts for 20-50% of energy expenditure. When someone exercises, there is burning or an increase in metabolism in the body, which balances metabolism (de Gouw et al., 2010). Low exercise causes metabolic imbalances in the body and is at risk of increasing body weight and obesity (Setiawati et al., 2019). This lifestyle impacts the possibility of heart disease, hypertension, diabetes, and stroke. If adolescents never do physical activity, they will be at risk of being obese or overweight.

The screening results also showed the presence of smoking habits in students. Although smoking habits among students are low, namely 11 people (11.22%), smoking habits among these students still need to be a concern. Smoking is a habit that is commonly encountered in everyday life. Smoking is one of the factors that can reduce HDL levels in the blood and increase LDL cholesterol levels. It also has a dose-response effect, which means that when younger you smoke, the greater the effect. If smoking behavior starts at a young age, it will be related to atherosclerosis, affecting a person's cholesterol level. A person who smokes is more susceptible to an increase in cholesterol levels than a person who does not smoke.

Also, screening conducted on students showed that 18 students (18.37%) had prehypertension. Although there has been a shift in the incidence of hypertension in adolescents, the diagnosis of hypertension in adolescents is still becoming a concern. At the same time, the detection of hypertension should be done early so as not to cause sustainable hypertension and reduce the risk of developing heart disease and the dangers of blood vessels in adulthood. Many factors contribute to the incidence of hypertension in adolescents. These factors include characteristics, nutritional status, intake of nutrients (intake of sodium, fat, consumption of vegetables and fruit, and sweetened foods/drinks), and lifestyles such as physical activity, smoking habits, and alcohol consumption. Unhealthy lifestyles are also risky for high school students.

Moreover, Students tend to experience stress which will harm their health. The high rhythm of learning because of the demands of the educational curriculum makes students learn more; this sometimes makes students stay up late to complete the assignments. Apart from studying, some students use their time late into the night to play games. This bad habit has a terrible effect on their health and could also impact their high blood pressure.

Furthermore, it has also been detected that there are some students (26.5%) who are overweight. Even though students are still in the growing period, they need to be aware of how to manage a balanced body weight, so they can manage their food intake and exercise properly. On the other hand, this screening revealed that some students were underweight. Parents should know that the condition of children underweight indicates inadequate nutritional needs. Inadequate nutritional needs can impact the incidence of anemia, which could impact children's health and decrease concentration (Indonesian Ministry of Health, 2020). In this community

service, hemoglobin (Hb) levels were not measured, so in the future, these results can be measured for the Community Health Service to follow up with Hb level checks for high school students and provide iron (Fe) tablets according to government programs.

In the future, to increase awareness among teenagers or adolescents, virtual or smartphone-based education would improve knowledge. Social media or using technology will be conducive to students' preferences. Community service has been held using zoom meetings to improve adolescents' knowledge about growth and development, resulting in significant improvement in knowledge (Arisani & Wahyuni, 2022).

CONCLUSION AND RECOMMENDATIONS

This community service is a screening activity for high school students. Based on the screening results, it was found that of 98 students, 77 students (78.57%) did not exercise regularly, 62 students (63.27%) had a habit of sleeping late, and 26 students (26.53%) were overweight. Furthermore, the screening results found that 18 students (18.37%) had prehypertension. These results indicate that there is a risk of developing NCDs in students. By earlier knowing of risk factors for NCDs, prevention and control could be done as early as possible.

ACKNOWLEDGEMENTS

This community service has been granted funding by the Faculty of Nursing, Universitas Andalas, with grant number: 95/UN16.13.D/XIII/KPT/2022.

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