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Research Article

The prevalence of non-communicable disease among high-risk population in Pattimura University

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ABSTRACT

Increasing the case of Non-Communicable Diseases (NCDs) can cause the biggest problems in the future. Preventive efforts and control of this condition are made through a screening approach for high-risk age groups. This study aimed to determine the prevalence of NCDs among lecturers and staff of high-risk populations at Pattimura University. This study is descriptive quantitative research with a cross-sectional approach conducted using a screening method. A total of 517 were involved in this study which was dominated by female sex (65%), stage 1 hypertension based on systolic blood pressure (36%), stage 2 hypertension based on diastolic blood pressure (30%), normal heart rate (98%), BMI obesity degree 2 (41%), central obesity or abdominal circumference more than normal (52%), normal blood sugar levels (81%), normal uric acid levels (73%), and normal cholesterol levels (58%). It means that the most prevalent NCDs in the population tend to be hypertension and obesity. Good management and education must control the risk factor to prevent morbidity and mortality.

Keywords: Non-Communicable Diseases (NCDs), screening, risk factors

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INTRODUCTION

Non-Communicable Diseases (NCDs) are chronic diseases be a global burden (Dahal, 2021), with no exception in Indonesia. Based on WHO – NCD Country Profile data in 2018, the proportional mortality in Indonesia was primarily cardiovascular diseases (WHO, 2018). It refers that incidence of NCDs should be a serious concern. Risk factors that increase the risk of NCDs include a poor diet, smoking, lack of physical activity, and being overweight or obese. Most of these conditions start in childhood and impact health over the course of a person's life (Long et al., 2021).

According to trend analysis, the prevalence of four or more NCD risk factors increases gradually over time. The prevalence of four or more PTM risk factors was 14.8% in 2003−2007 and increased to 44% in 2013−2017, an increase of about three times (44.0%). Similar trends were also observed for three and two risk factors. (Biswas et al., 2022). A study in 2023 showed that the inadequate lifestyle of university students can contribute to the occurrence of chronic noncommunicable diseases. In the physically inactive students, a high prevalence of diabetes mellitus (p=0.03) and high cholesterol (p<0.01) was observed. The results show a clear profile of NCD risk factors among university students

(Monteiro et al., 2023). A cross-sectional study in University of Indonesia concluded that the prevalence of NCD risk factors among university administrative employees was high. A total of 613 employees were enrolled. Men were predominant (54.8%), and about 36% of them work in shift as security personnel. About 66.7% were overweight or obese and 77.8% had hypertension. Thus, a behavioral intervention program to manage NCD risk factors at the university level is urgently needed according to the Health Promoting University framework (Widyahening et al., 2022).

Based on these studies, It is undeniable that the risk factors for non-communicable diseases are conditions that need to be considered and prevention is mandatory to tackle further complications. The daily routine of lecturers and staff at Pattimura University, coupled with instant lifestyles such as lack of control in food consumption, smoking habits, immobility, in addition to hereditary factors can be risk factors that cause NCDs. The lack of early detection of the risk of NCDs can increase the occurrence of mortality. Therefore, this study is intended to conduct screening so that it can detect the prevalence of NCDs in high-risk groups at Pattimura University. The benefits of this research is to perform early detection of non-communicable diseases risk factors and can be extended for monitoring, and counseling for the risk factors possessed by the employees.

METHODS

A cross-sectional study was conducted in October 2021. The samples are lecturer and staff of Pattimura University that is allowed to follow screening examination to detect NCDs' risk factors. The screening of NCDs's risk factors covers blood pressure, heart rate, body mass index, abdominal circumference, blood glucose, uric acid, and cholesterol. The examination was held in the Faculty of Medicine at Pattimura University, which involves medical students and doctors of the institution. A total of 517 people were enrolled in this research. The data were collected and analyzed descriptively using a frequency table to determine the prevalence of risk factors founded.

RESULTS AND DISCUSSION

A total of 517 people were involved as samples in this study from various faculties at Pattimura University. As for the characteristics of the sample, which was dominated by the female sex (65%), stage 1 hypertension based on systolic blood pressure (36%), stage 2 hypertension based on diastolic blood pressure (30%), normal heart rate (98%), BMI obesity degree 2 (41%), central obesity or abdominal circumference more than normal (52%), normal blood sugar levels (81%), normal uric acid levels (73%), and normal cholesterol levels (58%).

Table 1. Characteristic sample shows prevalence of NCDs

Category	**Total (n = 517)**
Gender	
Female	335
Male	182
Blood Pressure (Systolic)	
Normal	76
Pre-hypertension	113
Hypertension stage 1	185
Hypertension stage 2	143
Blood Pressure (Diastolic)	
Normal	107
Pre-hypertension	130
Hypertension stage 1	125
Hypertension stage 2	155
Heart Rate	
Bradycardia	2
Normal	505
Tachycardia	10
Hypertension stage 2	155
Body Mass Index (BMI)	
Underweight	14
Normal	207
Obesity Stage 1	83
Obesity Stage 2	213

Central Obesity (abdominal circumference)	
Normal	247
Obesity	270
Capillary Blood Glucose Test (not fasting)	
Normal	418
Hyperglycemia	99
Capillary Uric Acid Test	
Normal	378
Hyperuricemia	139
Capillary Blood Cholesterol Test	
Normal	301
Hyperlipidemia	216

Based on Table 1, female more dominantly involve in this screening. If we find relationship of gender and NCDs risk factor, literature shows that females are more likely to have NCDs compared with males. This finding is related to biological risk factors, including being overweight or obese, as well as elevated blood pressure, glucose, and cholesterol, which are seen in a higher percentage of women in older age groups (WHO, 2020). In blood pressure category, this study found that there are people with hypertension stage 1 also stage 2. Blood pressure classification by the Joint National Committee (JNC) is classified as normal blood pressure, prehypertension, hypertension stage 1 and hypertension stage 2 (Table 2).

Table 2. Blood pressure classification by JNC

Categori	**Systolic**	**Diastolic**
Normal	<120	<80
Pre-hypertension	120-139	80-89
Hypertension stage 1	140-159	90-99
Hypertension stage 2	>160	>100

The are many factors can affect higher blood pressure. Regardless of race or ethnicity, males generally have greater blood pressure than women for most of their lives. This sexual dimorphism in blood pressure is caused by changes in the hormonal milieu of the ovary and the testes, but the sex chromosomes also play a part. Peoples with hypertension may relate to gender, age, family history and genetics, lifestyle habits, medicines, or other medical conditions but not identified in this study.

In BMI category, this study finds there are people with obesity as the physiological risk factors. Nearly every aspect of health is impacted by obesity, from reproductive and pulmonary function to cognition and emotions. Obesity increases the risk of numerous deadly illnesses, such as diabetes, heart disease, and various types of cancer (Donkor et al., 2020). Maintaining a healthy weight is crucial for a long life. Early childhood and lifelong efforts to avoid obesity have the potential to significantly improve both personal and societal health, as well as lower the risk of developing NCDs (Arifin et al., 2022).

In blood glucose category, this study finds there are peoples with hyperglycemia. Hyperglycemia can induce diabetes, furthermore appropriate management of diabetes is associated with reduction in the risk of cardiovascular events (WHO, 2007).

Other aspect of NCDs are hyperlipidemia. Our study finds that there are people have higher cholesterol. Fatty food elevates cholesterol blood levels and promotes hypertension and cardiovascular disorders (Soliman, 2018); burnt food has evolved into a predictor and derived carcinogen of cancer (Anderson et al., 2012). The metabolism, gene mutation, and bone mineral density that cause NCDs are all impacted by preservatives, seasoned food, and soft drinks (Chiavarini et al., 2017). Finally, our study shows there are NCDs among civitas of Pattimura University with modifiable and non-modifiable risk factors that must be controlled to prevent the morbidity and mortality of NCDs.

CONCLUSION

Hypertension (diastolic) was found in 280 people, while a total of 328 had systolic hypertension. Based on BMI, there were 296 people had the risk factor. Hyperglycemia was found in 99 people, hyperuricemia in 139, and hyperlipidemia in 216. Based on our study, implementation of periodic health checks has to be carried out for all the employees of Pattimura University in particular to detect risk factors non-communicable diseases.There needs to be an

increase in education about the importance of preventing non-communicable diseases within the scope of Pattimura University.

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