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DESCRIPTIVE RESEARCH OF NON-COMMUNICABLE DISEASES AT THE INTEGRATED DEVELOPMENT POST (POSBINDU) KEMUNING PUSDIKARHANUD

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Abstract

Non-Communicable Diseases (NCDs) are one of the leading causes of death and illness in Indonesia, with a prevalence trend that continues to increase every year. This research aimed to provide a general overview of community health conditions related to NCDs in the Kemuning Integrated Health Post (Posbindu) area as a consideration in efforts to prevent and control NCDs within the working area of the Kemuning Posbindu, Pusdikarhanud. This research used a descriptive design with a quantitative approach involving secondary data from health screening activities at the Posbindu. The data used were from the year 2024 with a total population of 58 respondents, all of whom were included using a total sampling technique. The data collected included blood pressure, blood glucose levels, body mass index (BMI), uric acid, and cholesterol levels. The results of the research showed that blood pressure, blood glucose, uric acid, and cholesterol were still within normal limits. However, the most prevalent result for body mass index was overweight (BMI 23–29.9) in 67.2% of respondents. This finding raised concerns about the increased risk of non-communicable diseases. Therefore, the role of Posbindu was crucial as a means of early detection and public education in the efforts to prevent and control NCDs. Continuous interventions such as education , routine monitoring, and the promotion of a healthy lifestyle were necessary to reduce the incidence of NCDs in the community.

Keywords: Non-Communicable Diseases, Posbindu, blood pressure, random blood glucose, uric acid, cholesterol, BMI.

1. INTRODUCTION

Non-communicable diseases (NCDs) have become a major health issue worldwide, including in Indonesia. NCDs such as hypertension, diabetes, stroke, and cancer are significant causes of death and continue to rise in both developing and developed countries. According to data from the World Health Organization (WHO), NCDs accounted for nearly 71% of all global deaths in 2020 (WHO, 2021). In Indonesia, the prevalence of NCDs continues to rise due to changes in lifestyle, urbanization, and unhealthy dietary habits, resulting in a high number of sufferers. Therefore, the handling of NCDs requires special attention from the public health sector, including preventive efforts through early detection.

Posbindu (Integrated Development Post) is one of the healthcare facilities designed to provide early detection of non-communicable diseases. This program aims to monitor community health by offering regular health check-ups. During Posbindu activities, the public is given information about NCD risks and how to prevent them. This research aimed to provide an overview of the effectiveness of Posbindu in raising community awareness of NCD risks and how Posbindu contributes to efforts to reduce the incidence of NCDs in Indonesia (Ministry of Health, Republic of Indonesia, 2022).

Health education provided at Posbindu plays an important role in improving public understanding of NCD risk factors, such as poor diet, lack of physical activity, and smoking habits. As a means of public health education, Posbindu offers services ranging from blood pressure measurement and blood sugar testing to counselling on healthy living. Research by Wijayanti et al. (2020) shows that increased

public awareness through Posbindu activities significantly contributes to NCD prevention at the village level.

However, despite Posbindu's important role in early NCD detection, challenges still exist in its implementation. Several researchers have shown that access to Posbindu services is not evenly distributed, especially in remote areas. A lack of understanding of the importance of early detection and reluctance among the public to undergo routine check-ups are major obstacles to the program's effectiveness. This calls for further research to identify the factors influencing the success or failure of Posbindu programs in early detection of NCDs (Napitupulu, 2019). This research aims to provide a general overview of community health conditions related to non-communicable diseases (NCDs) in the Kemuning Posbindu area as a consideration for efforts to prevent and control NCDs within the working area of the Kemuning Integrated Health Post (Posbindu), Pusdikarhanud. This research uses a descriptive design with a quantitative approach involving secondary data from health screening activities at the Posbindu. The data used were from the year 2024 with a total population of 58 respondents, all of whom were included using a total sampling technique. It is expected that the results of this research can provide input for the development of better health policies and improve the quality of life of the community through effective NCD prevention efforts.

2. METHODOLOGY

This research used a quantitative method. The data collection technique applied was the use of secondary data. Secondary data were obtained by reviewing Posbindu activity reports, participant registration books, and NCD screening result recaps for the current year. The research process was carried out over three months, from March to June 2025. This research was conducted through several stages, starting with an initial survey to describe non-communicable diseases, followed by scientific publication in an accredited journal with an ISSN. The research instruments were tools or facilities used by the researcher to collect data to make the process easier and the results more accurate. The research instruments used in this research include a checklist sheet for NCD screening recap data, covering blood pressure, random blood glucose (RBG), abdominal circumference, and body mass index (BMI). In addition, a data extraction format was used, which includes identity data (age, gender), physical measurement results (height, weight), and basic laboratory examination results. Other instruments used were documentation of the Posbindu participant registration book and Posbindu activity reports. The total population that attended Posbindu activities during 2024 was 58 people, with total sampling applied for the sample calculation. The data analysis technique in this research was conducted using descriptive quantitative analysis to provide an overview of the characteristics and distribution of non-communicable diseases (NCDs) among participants of Posbindu Kemuning, Pusdikarhanud, based on the secondary data collected.

3. RESULTS

The Integrated Development Post (Posbindu) Kemuning is one of the activity units under the Air Defense Artillery Education Center (Pusdikarhanud), located in Batu, East Java. This Posbindu plays an important role in supporting preventive and promotive health programs, particularly in the early detection of non-communicable disease (NCD) risk factors within the military community, civil servants, and their families. Through routine activities such as blood pressure measurement, blood glucose and cholesterol testing, and healthy lifestyle education, Posbindu Kemuning serves as a frontline agent for promoting a healthy lifestyle in the military environment, where physical and mental readiness is crucial.

In addition to its role in disease detection, Posbindu Kemuning also has a strategic role in strengthening collaboration between military institutions and the surrounding community. By collaborating with health professionals from the Army Health Service and local public health centers, the Posbindu activities are not only directed at internal Pusdikarhanud personnel but also open to civilians in the surrounding area. This reflects the Indonesian Army's commitment to supporting national public health programs and fostering solidarity between the military and civilians. This initiative is

expected to become a sustainable health development model that is adaptive to modern health challenges

Gender

Table 1. Distribution of Respondents by Gender

Gender	Frequency	Percentage (%)
Man	14	24, 14
Woman	44	75, 86
Total	58	100,0

Gender is a biological factor that can influence the prevalence, types, and progression of non-communicable diseases (NCDs) in individuals. Various studies indicate that men and women have different risks and patterns of disease, influenced by hormonal, physiological, and social differences. Therefore, understanding how gender affects NCD vulnerability is important. The research found that the majority of respondents were women 44 individuals (75.86%) while 14 individuals (24.14%) were men.

Age

Table 2. Distribution of Respondents by Age Group

Age	Frequency	Percentage (%)
Young	34	58,6
Middle Age	22	37,9
Elderly	2	3,4
Total	58	100,00

The results showed that most respondents 34 individuals (58.6%) were under 45 years old. Respondents aged 45–59 accounted for 22 individuals (37.9%), and 2 individuals (3.4%) were aged 60–74. The youngest respondent was 24 years old, and the oldest was 62.

Age is a key risk factor influencing the onset of various non-communicable diseases. In general, the older a person becomes, the higher their risk for developing NCDs. This is due to physiological changes that occur with aging, which impact cardiovascular, metabolic, and immune systems. Natural aging processes are associated with organ function decline, reduced cell and tissue repair, and increased vulnerability to disease.

Other contributing factors include hormonal changes, especially during menopause for women and declining testosterone levels in men. Poor long-term lifestyle habits such as poor diet, physical inactivity, and smoking also exacerbate risk. According to WHO data, people over 60 are more than twice as likely to develop hypertension. Similarly, Widyastuti et al. (2021) found higher rates of type 2 diabetes and heart disease among the elderly. While age is a non-modifiable risk factor, appropriate interventions can help manage and reduce the impact of NCDs in older populations.

Body Mass Index (BMI)

Table 3. Distribution of Respondents by BMI

IMT	Frequency	Percentage (%)
Normal	12	20,7
Overweight	39	67,2
Obesity	7	12,1
Total	58	100,0

The majority of respondents were overweight (BMI 23–29.9), totaling 39 people (67.2%). Normal BMI was observed in 12 people (20.7%), and obesity (BMI >30) in 7 people (12.1%). BMI is a widely used anthropometric indicator to assess nutritional status by comparing weight (kg) and height squared (m^2). High BMI, especially in the overweight and obese categories, is scientifically linked to an increased risk of NCDs such as hypertension and diabetes mellitus. In Posbindu health screenings, BMI measurement is a standard procedure. It helps health workers identify individuals at high risk for NCDs, enabling early education, monitoring, and preventive-promotive interventions.

Blood Pressure

Table 4. Distribution of Respondents by Blood Pressure

Blood Pressure	Frequency	Percentage (%)
Normal	30	51,7
High-Normal	15	25,9
Stage 1 hypertension	11	19,0
Stage 2 hypertension	2	3,4
Total	58	100,0

Most respondents had normal blood pressure (30 people or 51.7%). A total of 15 individuals (25.9%) had high-normal pressure (systolic 130–139 mmHg and diastolic 80–84 mmHg), while 11 individuals (19%) had Stage 1 hypertension (systolic 140–159 mmHg and diastolic 85–89 mmHg), and 2 individuals (3.4%) had Stage 2 hypertension (systolic 160–179 mmHg and diastolic 100–109 mmHg). Hypertension is one of the most common NCDs in the community and is often asymptomatic (“silent killer”). If uncontrolled, it can lead to serious complications such as stroke and heart attacks. Blood pressure measurement is an essential component of routine screening at Posbindu, allowing for early education, lifestyle changes, and referrals if necessary.

Cholesterol

Table 5. Distribution of Respondents by Cholesterol Level

Cholesterol	Frequency	Percentage (%)
Normal	54	93,1
Borderline high levels	4	6,9
Total	58	100,0

Most respondents had normal cholesterol levels (54 people or 93.1%), while 4 respondents (6.9%) had borderline high levels. Cholesterol is a lipid naturally present in the body, essential for hormone production, cell membranes, and vitamin D synthesis. However, uncontrolled high cholesterol levels are a major NCD risk factor, particularly for cardiovascular diseases. Regular cholesterol screening at Posbindu supports early detection of hypercholesterolemia, especially in individuals with risk factors like obesity, high blood pressure, and sedentary lifestyles. Nutrition education, physical activity, and stress management are key community-level strategies.

Uric Acid

Table 6. Distribution of Respondents by Uric Acid Level

Uric Acid	Frequnecy	Percentage (%)
Normal	44	75,9
High	14	24,1
Total	58	100,0

The research found that most respondents had normal uric acid levels (44 people or 75.9%), while 14 people (24.1%) had elevated levels. Uric acid is the end product of purine metabolism, found in the body and in foods like organ meats, red meat, seafood, and high-fructose beverages. Normally, uric acid dissolves in blood and is excreted by the kidneys. Excess production or impaired excretion can lead to hyperuricemia. Measuring uric acid is an important component of community health screening at Posbindu. Early detection enables healthy lifestyle education, regular monitoring, and uric acid control through proper diet, physical activity, hydration, and weight management.

Random Blood Sugar (RBS)

Table 7. Distribution of Respondents by Random Blood Sugar (RBS)

RBS	Frequnecy	Percentage (%)
Normal	51	87,9

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Medium	4	6,9
Bad	3	5,2
Total	58	100,0

Most respondents had normal RBS levels (51 people or 87.9%). Borderline values (140–199 mg/dL) were found in 4 respondents (6.9%), and 3 respondents (5.2%) had high values (≥ 200 mg/dL). Random Blood Sugar (RBS) measures blood glucose levels at any time, regardless of the last meal. This test is often used for early screening of glucose metabolism disorders such as prediabetes and type 2 diabetes, especially in primary healthcare programs like Posbindu. Individuals with RBS > 140 mg/dL require further monitoring and education on healthy diet, regular physical activity, and the importance of regular health checkups. If levels reach ≥ 200 mg/dL, referral to a health facility is necessary for definitive diagnosis and medical treatment.

4. DISCUSSION

Body Mass Index

The results showed that the majority of respondents at the Kemuning Integrated Health Post (Posbindu) Pusdikarhanud had a Body Mass Index (BMI) in the overweight category, totaling 39 people (67.2%). Meanwhile, 12 respondents (20.7%) had a normal BMI, and 7 respondents (12.1%) were in the obesity category. The high proportion of respondents with overweight and obesity is a serious concern, considering that BMI is one of the widely used anthropometric indicators to assess a person's nutritional status based on the ratio between body weight (kg) and height (m^2) (Ministry of Health of the Republic of Indonesia, 2022).Various studies have shown that individuals with high BMI, especially those categorized as overweight and obese, have a higher risk of developing Non-Communicable Diseases (NCDs) such as hypertension, diabetes mellitus, heart disease, and other metabolic disorders (Ministry of Health Data and Information Center, 2023). These results align with previous research indicating a significant association between increased BMI and the incidence of NCDs in the community. Individuals with overweight and obesity have a 2 to 3 times higher risk of experiencing hypertension and abnormal blood sugar levels compared to individuals with normal BMI (Sari, N. L., Putri, D. R., & Wulandari, 2022). Screening activities at Posbindu, such as BMI measurement, are essential standard procedures. The BMI data obtained not only provide an overview of the community's nutritional status but also serve as a basis for health workers to identify individuals at high risk for NCDs. Thus, health education, regular monitoring, and targeted promotive and preventive interventions can be carried out to reduce the risk of NCDs in the Kemuning Posbindu Pusdikarhanud working area. The high prevalence of overweight and obesity found in this research may be due to several factors, including unhealthy eating patterns, low physical activity, and a lack of public awareness regarding the importance of maintaining an ideal body weight. Therefore, these findings emphasize the need to strengthen health education activities, promote healthy lifestyles, and actively involve the community in NCD prevention and control programs, especially in the Kemuning Posbindu area.

Blood Pressure

The results showed that the majority of respondents in the Kemuning Posbindu Pusdikarhanud working area had normal blood pressure, totaling 30 people (51.7%). However, 15 people (25.9%) had high-normal blood pressure with systolic ranges of 130–139 mmHg and diastolic 80–84 mmHg. In addition, 11 respondents (19%) were already in the stage 1 hypertension category (systolic 140–159 mmHg and diastolic 85–89 mmHg), and 2 respondents (3.4%) were in the stage 2 hypertension category (systolic 160–179 mmHg and diastolic 100–109 mmHg).The results indicate that although most respondents had normal blood pressure, a significant proportion were in the high-normal and hypertension categories, which are major risk factors for NCDs, particularly cardiovascular diseases such as stroke and heart attacks. Hypertension is often referred to as the "silent killer" because this condition generally does not show clear symptoms but can lead to serious complications if not properly detected and managed (Ministry of Health of the Republic of Indonesia, 2023).These findings align with the 2018 Basic Health Research (Riskesdas) data showing that the prevalence of hypertension in

Indonesia is relatively high, with many undiagnosed cases due to a lack of routine health examinations (Ministry of Health of the Republic of Indonesia, 2019). Therefore, the presence of Posbindu is highly important, as blood pressure measurement is a core part of Posbindu screening activities. This screening aims to detect individuals with high blood pressure or those at risk of hypertension early so that health education, promotion of a healthy lifestyle, and referral to advanced health facilities, if necessary, can be provided (Ministry of Health Data and Information Center, 2023).The high number of respondents with high-normal blood pressure and hypertension in this research may be influenced by several factors, including high-salt diets, low physical activity, overweight, stress, and smoking habits. This is supported by previous research indicating that these factors play a significant role in increasing blood pressure in the community (Widyaningrum, R. A., Purnamasari, R., & Setiawati, 2021).Thus, these findings emphasize the importance of the role of Posbindu in early detection and NCD prevention programs, particularly hypertension. Community education efforts related to healthy eating patterns, reducing salt intake, increasing physical activity, and regular blood pressure monitoring need to be continuously enhanced to reduce the risk of hypertension in the Kemuning Posbindu Pusdikarhanud working area.

Cholesterol

The results showed that most respondents in the Kemuning Posbindu Pusdikarhanud working area had normal cholesterol levels, with 54 people (93.1%) having total cholesterol levels below 200 mg/dl. Meanwhile, 4 people (6.9%) were in the high-risk threshold category, with total cholesterol levels between 200–239 mg/dl. Cholesterol is a type of fat (lipid) naturally present in the body and plays an essential role in various biological functions such as hormone production, cell wall structure, and vitamin D production. However, high and uncontrolled cholesterol levels, particularly total cholesterol above 200 mg/dl, have been proven to be major risk factors for NCDs, especially coronary heart disease and vascular disease (Ministry of Health of the Republic of Indonesia, 2023). These findings indicate that most respondents already have controlled cholesterol levels. Nevertheless, the 6.9% of respondents who fall into the high-risk threshold category require special attention, considering this condition can develop into hypercholesterolemia if not addressed promptly. Uncontrolled hypercholesterolemia can lead to the buildup of fatty plaques in blood vessels (atherosclerosis), increasing the risk of heart attacks and strokes (Ministry of Health Data and Information Center, 2023). Routine cholesterol level checks at Posbindu are an essential step in the early detection of hypercholesterolemia, especially for individuals with risk factors such as obesity, high blood pressure, unhealthy diets, and sedentary lifestyles. This activity aligns with national NCD prevention and control programs that emphasize the importance of routine community screening (Ministry of Health of the Republic of Indonesia, 2022).The results of this research are also consistent with previous research showing that lifestyle changes, such as a low-saturated-fat diet, increased fiber intake, regular physical activity, and stress management, are very effective in lowering cholesterol levels and preventing heart complications (Sari, D. P., & Putri, 2021).Thus, even though the proportion of respondents with high cholesterol is still relatively small, efforts to promote nutritional education, physical activity, and control of other risk factors must continue to be encouraged at the community level, especially in the Kemuning Posbindu Pusdikarhanud area, to prevent an increase in hypercholesterolemia cases and NCD complications in the future.

Uric Acid

The results showed that most respondents in the Kemuning Posbindu Pusdikarhanud working area had normal uric acid levels, totaling 44 people (75.9%), while 14 people (24.1%) had high uric acid levels (hyperuricemia).Uric acid is the end product of purine metabolism, a compound naturally present in the body and various types of food such as organ meats, red meat, seafood, and high-fructose beverages (Ministry of Health of the Republic of Indonesia, 2022). Under normal conditions, uric acid dissolves in the blood and is excreted by the kidneys through urination. However, an increase in uric acid production or impaired excretion can raise uric acid levels in the blood, resulting in a condition known as hyperuricemia (Ministry of Health Data and Information Center, 2023). Hyperuricemia is an important risk factor for metabolic diseases such as gout arthritis and may contribute to an increased risk of other NCDs such as hypertension, chronic kidney disease, and metabolic disorders (Sari, L. P., & Prasetyo, 2022). Therefore, even though most respondents had normal uric acid levels, the 24.1% with elevated uric acid levels require serious attention. Routine uric acid level checks at Posbindu are

an essential part of community health screening efforts. Early detection of individuals with high uric acid levels enables health education on lifestyle changes, including increased water consumption, limiting high-purine foods, increasing physical activity, and weight loss if necessary (Ministry of Health of the Republic of Indonesia, 2022). The results of this research are consistent with previous research indicating that dietary patterns, obesity, and lack of physical activity significantly contribute to increased uric acid levels in the community (Sari, L. P., & Prasetyo, 2022).Thus, these findings highlight the importance of the role of Posbindu in providing education and monitoring NCD risk factors, including uric acid levels, to raise community awareness and prevent the occurrence of more serious diseases in the future.

Random Blood Glucose (RBG)

The results showed that most respondents in the Kemuning Posbindu Pusdikarhanud working area had random blood glucose (RBG) levels in the normal category, totaling 51 people (87.9%) with RBG levels ranging from 80–139 mg/dl. Meanwhile, 4 people (6.9%) had RBG levels in the moderate category (140–199 mg/dl), and 3 people (5.2%) were in the poor category, with RBG levels ≥ 200 mg/dl.RBG is the blood glucose level measured at any time, regardless of the last meal. This test is often used in early screening to detect glucose metabolism disorders such as prediabetes and type 2 diabetes mellitus, particularly in primary health programs such as Posbindu (Ministry of Health of the Republic of Indonesia, 2023). The results of this research indicate that although most respondents had normal blood glucose levels, a group of individuals had elevated blood glucose levels in both the moderate and poor categories. This condition requires special attention because RBG levels ≥ 140 mg/dl can be an early indicator of glucose intolerance or undiagnosed diabetes mellitus (Ministry of Health Data and Information Center, 2023). High blood glucose levels, especially those reaching ≥ 200 mg/dl, are a strong indicator of the likelihood of type 2 diabetes mellitus, which is one of the NCDs with increasing prevalence in Indonesia. Undetected and poorly managed diabetes mellitus can lead to severe complications such as heart disease, stroke, vision problems, and kidney damage (Ministry of Health of the Republic of Indonesia, 2022). Routine RBG examinations at Posbindu are an important step in the early detection of NCDs in the community. Through these examinations, individuals with above-normal RBG levels can immediately receive education on the importance of a healthy diet, increased physical activity, stress management, and be encouraged to undergo further examinations at health facilities. For individuals with RBG levels ≥ 200 mg/dl, referral to advanced health facilities is crucial for accurate diagnosis and appropriate medical management (Ministry of Health of the Republic of Indonesia, 2023). Previous studies have also shown that risk factors such as obesity, lack of physical activity, high-sugar and high-fat diets, and a family history of diabetes significantly contribute to elevated blood glucose levels in the community (Putri, M. A., & Setiawan, 2021). Thus, these findings emphasize the critical role of Posbindu in community health screening and education to prevent and control diabetes mellitus and other glucose metabolism disorders.

5. CONCLUSION

Based on the results of the descriptive research conducted at the Integrated Health Post (Posbindu) Kemuning Pusdikarhanud, it could be concluded that although the majority of respondents had normal examination results, a significant proportion were found to have risk factors for Non-Communicable Diseases (NCDs), particularly related to overweight, high blood pressure, abnormal blood glucose levels, and elevated uric acid levels. Therefore, it was necessary to strengthen community education regarding the adoption of a healthy lifestyle, increased physical activity, dietary regulation, and routine health check-ups through Posbindu as part of early detection and prevention efforts for NCDs in the Kemuning Posbindu Pusdikarhanud area.

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