

SCREENING FOR POTENTIAL NON-COMMUNICABLE DISEASES IN THE PALU CITY AS A POST-DISASTER AREA

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Received: 09/10/2024

Revised: 23/10/2025

Accepted: 25/10/2025

Abstract. Non-communicable diseases have an impact on many aspects of life. Hyperuricemia is one of the non-communicable diseases. In addition to gout, anaemia is one of the problems experienced by many Indonesian people. Anaemia is a condition in which the number of red blood cells or hemoglobin concentration is less than the normal limit. The purpose of this service is to carry out uric acid and hemoglobin screening in the community in the Palu city area as a post-disaster area. The benefit of this community service activity is that the community can find out the levels of uric acid and hemoglobin from the community so that they can take steps related to the results of the examination. The method used is screening in the form of uric acid and hemoglobin examinations, and also personal counselling in the form of presentations related to the results of the examination and also follow-up suggestions. Participants in this service are people in the Palu city area.

Keywords: screening, hemoglobin, gout, disaster

Abstrak. Penyakit tidak menular berdampak pada banyak aspek kehidupan. Hiperurisemia merupakan salah satu penyakit tidak menular. Selain asam urat, anemia merupakan salah satu permasalahan yang banyak dialami oleh masyarakat Indonesia. Anemia merupakan suatu keadaan dimana jumlah dari sel darah merah atau konsentrasi hemoglobin kurang dari batas normal. Tujuan dari Pengabdian ini adalah untuk melaksanakan skrining asam urat dan hemoglobin pada masyarakat wilayah kota Palu sebagai daerah pasca bencana. Manfaat dalam kegiatan pengabdian masyarakat ini adalah masyarakat dapat mengetahui kadar asam urat dan juga hemoglobin dari masyarakat sehingga dapat mengambil langkah terkait dengan hasil pemeriksaan. Metode yang digunakan adalah skrining berupa pemeriksaan asam urat dan hemoglobin dan juga konseling pribadi berupa pemaparan terkait hasil pemeriksaan dan juga saran tindak lanjut. Peserta dalam pengabdian ini adalah masyarakat di wilayah kota Palu.

Kata kunci: skrining, hemoglobin, asam urat, bencana

How to Cite: Laba, S. B., Rau, M. J., Marselina, M., Royana, N. V., Meliyana, R. & Hazanah, U. (2025). SCREENING FOR POTENTIAL NON-COMMUNICABLE DISEASES IN THE PALU CITY AS A POST-DISASTER AREA. *Mitra Mahajana: Jurnal Pengabdian Masyarakat*, 6(3), 290-296. doi: <https://doi.org/10.37478/mahajana.v6i3.4835>

INTRODUCTION

Noncommunicable diseases are currently the leading cause of disability and death worldwide (CDC, 2023). According to the CDC (2021), 7 out of 10 people who die worldwide die from noncommunicable diseases, and 85% of these deaths occur in low- and middle-income countries. Noncommunicable diseases in low- and middle-income countries contribute to poverty, hinder economic growth, and place a burden on health systems (CDC, 2023). Indonesia is one such middle-income country.

Indonesia, as a developing country, is undergoing a disease transition, where non-communicable diseases continue to increase in prevalence, while communicable diseases persist (Roosihermatie, 2023). Hyperuricemia, also known as gout, is one of the non-communicable diseases that is prevalent among Indonesians due to the accumulation of purines (Hidayat, 2022). Purines are substances found in living organisms and are also produced from the destruction of cells in the body, either due to certain diseases or occurring normally, and are excreted through faeces or urine. However, due to the kidneys' inability to process these substances normally, purines accumulate in the body, and this excess purine causes gout or uric acid (Aulya et al., 2023). Usually, people with gout do not pay much attention to their condition.



This neglect leads to uncontrolled purine levels in the blood, which can cause damage to several organs such as the kidneys and heart, as well as damage to blood vessels (Astuti et al., 2022).

In addition to gout, anemia is one of the problems commonly experienced by Indonesians. Anemia is a condition in which the number of red blood cells or hemoglobin concentration is below normal levels. Hemoglobin functions to carry oxygen in the blood, and a lack of hemoglobin will certainly cause a lack of oxygen supply to the tissues, which can lead to several things such as fatigue, dizziness, nausea, and other symptoms (WHO, 2024).

According to data from the Ministry of Health (2022), it is known that in 2019 the rate of anemia in pregnant women was still at 48.9%. Anemia in pregnant women not only affects the mother but also the baby she is carrying. In addition to pregnant women, anemia is also dangerous for adolescent girls. During their productive years, adolescent girls experience menstruation and blood loss. Blood loss can cause dizziness and weakness, which can certainly interfere with a person's productivity (Zaimy et al., 2021).

In response to the high number of non-communicable diseases, the WHO (2023) states that early detection, screening, and prompt treatment are the appropriate steps to prevent non-communicable diseases.

METHODS

The techniques used in this community service include the Disease Screening Method, which is used as a method of early clinical detection of a disease using specified tools and materials. In addition, the Personal Counseling Method is also used to provide guidance and advice related to examination results or early detection. It is hoped that with personal counseling, the community can ask questions and also find out what actions may need to be taken in relation to the screening results. This activity was carried out in July 2024 in Palu City, Central Sulawesi, targeting all residents of Palu City who visited the Gor City Park in Palu, Central Sulawesi.

RESULTS AND DISCUSSION

The community service activity was held on July 12, 2024, from 8:00 a.m. to 11:00 a.m. The screening activity was attended by a community service team consisting of lecturers and students, Singgani Community Health Centre officials as the area supervisors, and the Palu City community. The examination was conducted incidentally by offering it to the community, both those who were selling goods and other members of the community who were participating in sports activities such as leisurely walks or jogging in Gor Palu Park.



Figure 1. *Screening activity offers to participants*

The offer was followed by directing residents who agreed to undergo screening to register first at the registration desk. Registration consisted of the participant's name and age based on their ID card. Participants were interviewed first to ascertain their condition and medical history to facilitate screening analysis.



Figure 2. *Participant registration by the community service team*

Participants were then directed to the next table for further examination. The examinations conducted were HB and uric acid tests. The HB test was performed using an HB testing device called Nesco, and the uric acid test was performed using a uric acid testing device called Easy Touch. The team wore complete PPE consisting of gloves and masks. This activity can be seen in Figure 3 below.



Figure 3. *Uric acid and hemoglobin level tests*

After the tests were conducted, the volunteer team recorded the results and screened the participants to ascertain their current health conditions. The questions covered the participants' lifestyles, previous health check results (if applicable), and any predisposition to disease.



Figure 4. Interviews with participants who have been examined

After the community service activities were carried out, the following distribution and frequency of service participants were obtained:

Respondent Characteristics

The characteristics of the respondents analysed in this study consisted of age, gender, and the highest level of education. The following is an overview of respondents based on age, as shown in Table 1:

Table 1. Distribution of respondents by age group

Age Group	f	%
17-25	15	30
26-35	10	20
36-45	8	16
46- 55	11	22
56-65	6	12

Table 1 shows that the largest number of respondents screened at Taman Gor were those aged 17-25 years, totalling 15 people (30%). Meanwhile, the smallest number of respondents were those aged 56-65 years, totalling 6 people (12%). The 17-25 age group falls into the category of adolescents and young adults. This group is generally still active in their activities because they are in their productive years. According to the Ministry of Health (2024), people in their productive years need to pay attention to their health to improve their quality of life and productivity. One way to maintain health is by exercising regularly.

The gender of respondents who were willing to be screened in the community service activity can be seen in the following table:

Table 2. Distribution of respondents by gender

Gender	f	%
Male	15	30
Female	35	70

The distribution of respondents by gender, as shown in Table 2, indicates that the majority of respondents were female, namely 35 people (70%). In this community service activity, it was found that more women participated in morning sports activities at Taman Gor. Most of them did not exercise or do their own activities but brought their friends or were in certain groups. In this regard, women tend to exercise to lose weight and maintain their body shape (Craft et al., 2014).

The distribution of respondents that was also recorded in this community service activity is the distribution of respondents based on gender, which can be seen in the following table:

Table 3. *Distribution of respondents based on last education*

Education	f	%
Did not complete elementary school	1	2
Completed elementary school/equivalent	4	25
Completed junior high school/equivalent	6	12
Completed senior high school/equivalent	23	46
Completed bachelor's degree/diploma	16	32

Table 3 explains that most of the respondents who participated in community service had a high school education or equivalent, namely 23 people (84%). This is because most of them were teenagers or young adults who were exercising with their friends. Based on research by Laba, Buchair & Sari (2023), education influences individuals' use of health services because the higher a person's level of education, the higher their use of health services.

Uric acid tests were conducted on 50 respondents, the distribution of which can be seen in the following table:

Table 4. *Uric acid test results*

Hasil Pemeriksaan	f	(%)
Hipourisemia	1	2
Normal	26	52
Hiperurisemia	23	46

Based on the results of uric acid tests, it was found that most respondents had normal uric acid levels, namely 26 people (52%), followed by 23 people (46%) with gout or hyperuricemia, and the lowest number was 1 person (2%) with hypouricemia. The high number of gout sufferers may be due to dietary patterns. Almost all respondents interviewed admitted that they tended to consume fast food (50%) and green vegetables (66%). Consumption of fast food tends to increase uric acid levels in the blood (Anies, 2018). In addition, one person was found to have hypouricemia or below-normal uric acid levels. This condition can be associated with diabetes mellitus, where in advanced DM patients undergoing hemodialysis, hyperuricemia indicates protein wastage, which is also associated with mortality (Lee et al., 2009).

Hemoglobin tests were also conducted on the respondents. The results of these tests can be seen in the following table:

Table 5. *Hemoglobin test results*

Examination Results	f	%
Low	9	18
Normal	41	82

Based on the examination results, it was found that most respondents had normal hemoglobin levels, namely 41 people (82%). Meanwhile, there were 9 people (18%) who had low hemoglobin levels or below the threshold. The normal threshold for men is 14-18 g/dl and for women it is 12-16 g/dl. Most respondents with normal hemoglobin levels in this study had normal levels partly due to their dietary patterns. Most respondents (76%) frequently consume animal protein that is high in iron. Iron deficiency is one of the health problems that still occur in developing countries and can increase the risk of maternal and child mortality (Geissler & Singh, 2011).

CONCLUSION

Community service to the people of Palu City was carried out on July 17, 2023. This activity was attended by 50 community members, a team of lecturers and students, and employees of the Singgani Community Health Centre. Based on the results of hemoglobin and uric acid screening, it was found that most residents in the Palu city area, 52%, did not suffer from gout, and 82% did not suffer from anaemia. The majority of those who attended the screening were aged 17-25 years (30%), female (70%), and had completed high school or equivalent (84%). Based on the above conclusions, the follow-up actions that can be taken are to maintain and develop screening activities to prevent non-communicable diseases (NCDs) in the community. These activities need to be carried out on a larger scale and regularly to support the early detection of NCDs.

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