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Original Article

# Cerdik: Screening for Non-Communicable Disease at The Amaory Landfill, Passo Benteng Karang Village

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## Abstract

Non-communicable diseases (NCDs) pose a significant global health challenge. Diabetes mellitus (DM) and hyperuricemia are among the most prevalent non-communicable diseases in Indonesia. Screening is a process to identify both pre- and post-diseases. The purpose of this community service is to detect non-communicable diseases early through blood glucose and hyperuricemia tests. The results of this screening activity indicate that some individuals still have abnormal blood glucose and uric acid levels. This screening is expected to facilitate the early detection of diabetes mellitus (DM) and hyperuricemia, enabling timely treatment and contributing to a healthier and more productive society.

Keywords: blood glucose; hyperuricemia; non-communicable diseases; Passo village.

## Introduction

Diabetes mellitus is a chronic disease that occurs when the pancreas does not produce enough insulin (Wulandari et al. 2023) or when the body cannot effectively use the insulin it produces (Dirjen PTM 2022). Diabetes Mellitus is one of the four priority non-communicable diseases.

One of the non-communicable diseases with a relatively high prevalence in Indonesia is Diabetes mellitus and hyperuricemia (Wukich et al. 2024). Diabetes mellitus is a degenerative disease characterised by above-normal blood glucose levels (Wang et al. 2020), which is caused by the loss of insulin hormone function in regulating normal blood glucose levels (Manggasa and Suharto 2022). Diabetes mellitus is a chronic disease that will be suffered throughout life, so the disease will continue to progress, which can eventually lead to complications (Yanti, Susilawati, and Sari 2024).

Hyperuricemia is an increase in uric acid levels in the blood. This hyperuricemia can lead to gouty arthritis, an inflammatory condition of the joints caused by the accumulation of uric acid (Sudayasa et al. 2020). Uric acid is formed as a metabolic waste product of purine-containing dietary proteins. Therefore, uric acid levels in the blood will increase if a person consumes a lot of meat or other foods high in purines (Jais et al. 2021). However, conditions can occur where uric acid production becomes excessive or its excretion through the kidneys is reduced. As a result, uric acid levels in the blood become high, a condition known as hyperuricemia. Blood glucose and uric acid testing are one method for early screening for diabetes and hyperuricemia.

Diabetes and hyperuricemia screening requires the participation of all parties, including government doctors, private sector doctors, and the community, to control diabetes and hyperuricemia (Firdaniansyah, A., Sulaiman, L., & Fathoni 2024). Most people are reluctant to undergo diabetes and hyperuricemia screening. The reasons for this reluctance vary, ranging from cost to the accessibility of screening sites, limited infrastructure, and time constraints. Therefore, community service activities are needed to facilitate this.

This community service activity was conducted at the final disposal site located in Amaory Puncak, Passo Village, Benteng Karang. The identification results are very important as input and consideration for the Community Service Team to determine the number of participants in the activities to be carried out, and in the form of checking blood glucose and uric acid levels in the general public who are visiting. The examination was carried out using a digital blood glucose and uric acid checker and after that, participants could consult with the community service team and also receive treatment if their blood glucose and uric acid exceeded normal limits (Feqqi et al. 2022).

## Method

The implementation method for this Community Service Program is as follows:

1. Preparation Stage
   a. Coordination
      1) Conducting observations and reviewing the activity location at the final disposal site located at Amaory Puncak, Passo Village, Benteng Karang. The identification results are crucial as input and consideration for the Community Service Team in determining the number of participants for the activity (Didah 2025).
      2) Delivering the activity schedule and venue
         Providing a time and venue for the activity and agreeing with the Community Service Team.
   b. Preparing Community Service Teaching Materials
      1) Preparing material on non-communicable diseases
         The material on non-communicable diseases consists of several topics, namely the definition of diabetes mellitus and gout, prevention, and control
      2) Preparing tools and materials for screening
         Tools and materials prepared include alcohol, lancets, blood glucose test strips, uric acid test strips, alcohol swabs, dry tissues, gloves, and waste containers.

3) Simulation of material

The simulation was conducted under the direction of the team leader as part of the team's preparation before the activity.

2. Implementation Stage

The activity began with an introduction to the participants for socialisation and screening for non-communicable diseases (NCDs), specifically Random Blood Glucose (RBC) and Uric Acid (UA). The method used in this activity was a lecture to increase participants' knowledge about NCDs and early detection of blood glucose and uric acid levels (Wijaya et al. 2024). The achievement indicators for the socialisation and screening of NCDs (GDS and AU) used random blood glucose and uric acid measuring instruments. To implement this activity, team capabilities were required based on their expertise. The team leader, Pollan Versilia Wuritimur, S.KM.,M.K.M., is a lecturer specialising in Epidemiology. This field of study is related to the socialisation and screening of NCDs (GDS and AU). The lecturer team members are Minnalia Soakakone, SKM., M.K.M., a lecturer specialising in Health Policy Administration (AKK), and Yohana Djurumana, S.Tr.Keb., M.Kes., a lecturer specialising in Maternal and Child Health (KIA). This field of study relates to the socialisation and screening of non-communicable diseases (NCDs) and uric acid among workers at the final disposal site located in Amaory Puncak. In addition to the two lecturers as team leaders and members, two students were also selected as non-lecturer members: Dian Sapulete and Dessy Sahusiwa. Both students are fifth-semester students in the Public Health Study Program, majoring in Health Promotion. Each is responsible for maintaining attendance records, documenting PkM activities, and utilising PkM activities as a practical learning process that demonstrates the application of their knowledge in addressing health issues in the community.

3. Monitoring and Evaluation Stage
   Monitoring and evaluation are conducted after the activity is completed, using the results of random blood glucose and uric acid tests. This field of study relates to the socialisation and screening of non-communicable diseases (NCDs) and uric acid among workers at the final disposal site located in Amaory Puncak.

## Results

**Table 1.** Participant Characteristics by Gender

| Gender | N | % |
|---|---|---|
| Men | 9 | 37 |
| Women | 15 | 63 |
| Total | 24 | 100 |

*Source: Primary Data*

Based on Table 1, the distribution of participants by gender is more dominant, with females at 15 (63%), compared to males.

**Table 2.** Characteristics of Participants Based on GDS and Uric Acid Test Results

| GDS | n | % |
|---|---|---|
| Low or High | 3 | 12.5 |
| Normal | 21 | 87.5 |
| Total | 24 | 100 |
| **Urid Acid Level** | **N** | **%** |
| Low or High | 12 | 50 |
| Normal | 12 | 50 |
| Total | 24 | 100 |

*Source: Primary Data*

Based on Table 2, the distribution of participants by GDS examination results shows that the majority of participants had normal examination results, with 21 (87.5%) compared to those with abnormal GDS examination results. The distribution of participants based on normal and abnormal Uric Acid (UA) examination results was the same, with 12 participants (50%) in each category.


**Figure 1**. Group Photo of Health Workers

**Figure 2.** Screening Implementation Process

**Figure 3.** Waste Disposal Site at the PkM Location

## Discussion

This community service activity is part of the efforts to implement the Community Movement (GERMAS) program, which aims to improve the quality of life. Participants were very enthusiastic and participated in the screening examination.

This activity aimed to screen for non-communicable diseases (NCDs), such as random blood glucose levels and uric acid levels, among workers at the Amaory Puncak waste disposal site. In general, 12.5% of workers at the Amaory Puncak waste disposal site experienced blood glucose levels exceeding the standard limit, indicating a potential risk of diabetes. Several factors, including a family history of diabetes, can cause this increase in blood glucose levels. Uric acid is the end product of the breakdown (catabolism) of purines from the body and food. Elevated uric acid levels can be caused by increased uric acid production by the body or insufficient uric acid excretion due to the kidneys' inability to excrete excess uric acid. Gout is typically diagnosed when uric acid levels exceed 0.9 mmol/L. Not all patients with hyperuricemia develop gout; only half of those with hyperuricemia develop the disease. Results showed that 50% of participants had abnormal uric acid levels.

The results of the non-communicable disease (NCD) screening conducted showed that some of the people of Negeri Ureng had blood glucose levels within normal limits (87%), the highest cholesterol levels (58%), and normal uric acid levels in men (23%) and high in women (32%) (Leiwakabessy et al. 2021).

The results of the random blood glucose (GDS) test showed that 17.91% of the male samples were normal and 2.98% were high, while 67.16% of the female samples were normal and 14.92% were high. The uric acid test revealed that 20.89% of the male samples were within normal range, while 70.14% of the female

samples were normal, and 8.95% were elevated. Therefore, the average uric acid level within the normal range was 91.04% and 8.95% of the levels were high (Sudayasa et al. 2020). Efforts to improve the quality of life and prevent non-communicable diseases must be sustained continuously (Diarti et al. 2023). By increasing routine health checks and screenings, especially for workers at final waste disposal sites, it is hoped that continuous implementation will improve health and quality of life, thereby reducing morbidity from non-communicable diseases (Wijayanti 2023).

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## Conflict of Interests Statement

The author declares that there is no conflict of interest associated with this publication.

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