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Education on Prevention and Control of Hypertension and Diabetes Mellitus for Pattients at Primary Health Care Center at Primary Healtj Center: A Community Service Program

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ABSTRACT
Hypertension and diabetes mellitus are major non-communicable diseases (NCDs) that pose a serious health burden, particularly among the elderly. This community service activity aimed to increase knowledge and awareness regarding prevention and control of these diseases among outpatients at the Bandung Community Health Centre, Tulungagung Regency. The activity was conducted on July 11, 2025, involving 40 participants selected based on SIMPUSTA records indicating a history or risk of hypertension and diabetes mellitus. Participants hypertension and random blood glucose checks before receiving direct health education. The educational session was delivered using verbal explanations and leaflets, focusing on symptoms, complications, and disease management. Results showed that 15% of participants had hypertension and 30% had uncontrolled blood sugar. These findings align with national trends and highlight the importance of regular screening and targeted education. This program demonstrated that simple interventions in primary care settings can effectively promote early detection and Improve chronic disease management, especially when supported by interactive and community-based health promotion strategies. However, this program did not include quantitative evaluation of the educational intervention, which limits the ability to measure its direct impact on participants knowledge and behavior.

Keywords **:** Community Health Centre, Diabetes Mellitus, Health Education, Hypertension, Non-Communicable Disease

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INTRODUCTION

As we age, organ function declines, making the elderly vulnerable to various diseases. In Indonesia, this challenge is becoming increasingly apparent, with the projected increase in the elderly population from 10.5% in 2020 to over 19% in 2045 (BPS, 2021). Unfortunately, this increase has not been matched by an adequate quality of life, with many elderly facing chronic health problems (Kemenkes RI, 2023).

Community Health Centres (Puskesmas) play a central role in addressing this issue through promotive and preventive programs such as Integrated Health Posts (Posyandu) and Elderly Polyclinics. These programs are designed to monitor health, provide education, and conduct early detection of non-communicable diseases (NCDs) common in the elderly.

The two most common co-occurring NCDs in the elderly are hypertension and diabetes mellitus (WHO, 2021). These two conditions are the leading causes of visits to primary healthcare facilities in Indonesia (BKPK, 2023). Hypertension and diabetes have serious consequences. Hypertension, known as the silent killer, can lead to serious complications such as stroke and kidney failure. Meanwhile, uncontrolled diabetes mellitus increases the risk of blindness, amputation, and premature death (Kemenkes RI, 2023). The relationship between the two is also significant, with diabetes exacerbating the effects of hypertension and increasing the risk of cardiovascular disease and stroke (ADA, 2023). The prevalence of hypertension in Indonesia continues to increase with age, reaching 65% in the age group over 65 (Warjiman et al., 2020). In East Java, the prevalence reached 36.3% in the population aged 18 years and older, equivalent to more than 11 million people. A similar situation occurs in the Bandung Community Health Centre (Puskesmas) area in Tulungagung Regency, where the main challenge is low public understanding and awareness of the dangers of NCDs and the importance of early detection (Anggraini & Rahayu, 2019). This high number of cases places a significant burden on Community Health Centre (Puskesmas) operations, from increased visits, longer waiting times, to pressure on healthcare workers. Limited human resources and facilities often result in suboptimal routine monitoring and patient adherence to therapy (Anindya & Handayani, 2020).

To address the root cause, namely low knowledge and awareness, community-based health education is a crucial strategy. This approach plays a crucial role in increasing understanding, encouraging attitude change, and motivating individuals to adopt a healthy lifestyle and adhere to treatment (Fintharisari et al., 2020).

Through this community service activity, it is hoped that participants will gain a better understanding of the prevention and control of hypertension and diabetes. This will enable them to play an active role in maintaining their own health and that of their community, ultimately aiming to reduce morbidity and complications at the community level (WHO, 2023).

METHOD

This community service activity was held at the Bandung Community Health Center on July 11, 2025, from 8:00–11:00 a.m. Western Indonesian Time (WIB) in Tulungagung Regency. The activity was conducted by the Kadiri University Community Service Team, consisting of lecturers and students from the Social Sciences Study Program (PSPA). Participants were outpatients at the Bandung Community Health Center, selected based on medical records from the Community Health Center Management Information System (SIMPUSTA), with the criteria being patients with a history or risk factors for hypertension and diabetes mellitus. A total of 40 participants attended the activity.

Prior to the activity, the implementation team obtained official permission from the Head of the Bandung Community Health Center. All participants provided voluntary informed consent to participate in the series of events, This was followed by a health examination by the Community Health Center medical team, including blood pressure measurements, random blood sugar tests, and a brief consultation with a doctor (PERKENI, 2021). Following the examination, participants participated in a health education session on the prevention and management of hypertension and diabetes mellitus. Health education was delivered interactively by a community service team comprised of lecturers and pharmacist students,

using educational leaflets to strengthen participants' understanding (Fintharasari et al., 2020). This health education program uses lecture and discussion methods to discuss the prevention and management of hypertension and diabetes. This method was chosen because it is effective in increasing public knowledge and awareness of non-communicable diseases (Notoatmodjo, 2018). This activity is also in line with the community-based health service approach recommended in the national NCD control program (WHO, 2023).

Evaluation of participant understanding was conducted through qualitative methods, namely interactive discussion and question-and-answer sessions held after the presentation. Through these sessions, the implementation team actively gauged participants' enthusiasm and understanding based on the questions asked and their responses.

However, it should be acknowledged that this activity had limitations, namely the lack of quantitative instruments such as pre-tests and post-tests. As a result, improvements in participant knowledge could not be measured statistically. Therefore, the evaluation of the activity's impact was only descriptive-qualitative based on observations during the event.

RESULTS

The community service activity was carried out on July 11, 2025 at the Bandung Community Health Centre, Tulungagung Regency, with 40 outpatients with a history of chronic diabetes mellitus and hypertension who were selected based on data from the Community Health Centre Management Information System (SIMPUSTA) at the Bandung Community Health Centre Pharmacy Installation. All participants underwent random blood pressure and blood sugar checks, which are part of the early detection of non-communicable diseases.

Tabel 1. Classification of Blood Pressure in Adults

Classification	**Blood pressure (mm Hg)**
Normal blood pressure	Less than 120/80
Increased blood pressure	120–129/less than 80
Stage 1 high blood pressure	130–139 (systolic blood pressure) or 80–89 (diastolic blood pressure)
Stage 2 high blood pressure	140 (systolic blood pressure) or higher 90 (diastolic blood pressure) or higher

Table 2. Blood Glucose Levels During

		Not DM	**Not Sure DM**	**DM**
Random Blood Glucose Levels	Venous Plasma	<100	100-199	>200
	Capillary blood	<90	90-199	>200

Table 3. Results of Participants' Blood Pressure and Blood Sugar Examination

Type of Examination	**Category**	**Number of people**	**Percentage (%)**
Blood pressure	Normal	34	85%
	Abnormal	6	15%
Random Blood Sugar	Under control	28	70%
	Uncontrolled	12	30%

Based on the examination results, 34 participants (85%) showed normal blood pressure, while 6 participants (15%) were detected with high blood pressure. These results are still within the national prevalence of hypertension in the adult population, which according to Riskesdas (2018), is 34.1%, although local prevalence may vary depending on the region and age of the respondents. (Ministry of Health, Republic of Indonesia, 2018) .

The results of the Health Education Evaluation for this activity were conducted qualitatively through observations of participant engagement during the discussion and Q&A sessions. The results showed:

1. Participation and Enthusiasm: The majority of participants (around 80%) demonstrated high levels of enthusiasm, as evidenced by the numerous questions they posed to the speakers.
2. Understanding Indicators: At the beginning of the session, participant questions tended to be basic, such as "What are the main causes of hypertension?" and "What foods are strictly prohibited?". After the material was presented, questions evolved to become more practical, such as "How should I manage my diet if I have hypertension and diabetes at the same time?" and "Is walking every morning enough?"
3. Increased Knowledge: At the end of the session, several participants were able to verbally re-explain in simple terms the importance of medication adherence and the relationship between diet and blood sugar control, indicating increased understanding.

The results of the blood sugar level examination showed that 28 participants (70%) were in a controlled condition, and 12 people (30%) had random blood sugar levels that exceeded the normal threshold. Research by Khoirunnisa *et al*., (2022) at the Depok Community Health Centre showed that approximately 27–35% of outpatients with risk factors had random blood sugar levels >200 mg/dL, indicating that the findings of this activity are still in accordance with national findings in a similar population.

Early detection through blood pressure and blood sugar checks at primary health care facilities such as community health centres (Puskesmas) is a crucial step in preventing complications from non-communicable diseases. Simple, routine checks have also been shown to improve patient adherence to treatment and disease control, as explained by Prasetya *et al*. (2021), who found that integrated screening and education can reduce the risk of complications by up to 25% in hypertensive and diabetic patients actively monitored in primary care. (Prasetya *et al*., 2021) . A key challenge identified was the limited knowledge of participants regarding the causes of hypertension and diabetes mellitus, requiring facilitators to provide additional explanations during the session.

DISCUSSION

This community service activity is a collaboration between a team of Pharmacy lecturers from Kadiri University, students of the Pharmacist Professional Study Program (PSPA), and undergraduate students of Kadiri University, in collaboration with the Bandung Community Health Centre, Tulungagung. The activity was carried out on Wednesday, July 11, 2025, with the main target being elderly patients with a history or risk of non-communicable diseases, especially hypertension and diabetes mellitus. The selection of participants was based on data obtained through the Tulungagung Regency Community Health Centre Management Information System (SIMPUSTA**)**, so that the interventions carried out were more targeted.

This examination is crucial for early detection, considering that hypertension is often referred to as *a silent killer* because it develops without obvious symptoms but has a significant impact on heart, kidney, and brain health (Yildiz, M., *et al* . 2020) . Similarly, diabetes mellitus,

which many sufferers are unaware of, can lead to chronic complications such as neuropathy, nephropathy, and retinopathy. (WHO, 2023a ,IDF, 2021) .

Based on the examination results, it was found that 15% of participants had abnormal blood pressure and 30% had uncontrolled blood sugar levels. This data aligns with the WHO (2023) report, which states that most diabetes patients are unaware of their condition until complications develop. (Pefbrianti, D., *et al* . 2022) . Therefore, examinations and education in primary care such as community health centres are crucial to encourage early detection and early disease management (Ministry of Health of the Republic of Indonesia, 2022) .

After the examination, participants attended an educational session conducted verbally (face-to-face) using a small group discussion method, supported by educational leaflets that facilitated understanding. The material presented included the definition, classification, symptoms, complications, and management of hypertension and diabetes mellitus, as well as the importance of adherence to treatment, especially in the elderly. This method has proven effective because direct counselling allows for interactive dialogue between participants and educators (Finthariasari *et al* ., 2020 , Notoatmodjo, 2018) . Leaflets also play an important role as media that can be taken home and reviewed at home. (Munawaroh & Nugroho, 2021) .

The enthusiasm of the elderly participants was evident in their active participation in the discussion and question-and-answer sessions. This indicates that the outreach program had a positive impact on increasing the knowledge and awareness of the elderly. Research by Arimbi *et al* . (2020) also stated that health education is a crucial factor in improving healthy behaviours, motivation, and medication adherence in elderly people with hypertension and diabetes.

Another factor contributing to the success of the program was the participation of health service participants in assisting with education and providing guidance. The role of participants has been shown to facilitate communication between healthcare workers and the community, as well as strengthen the program's sustainability at the community level (Sartik *et al*., 2017) . Furthermore, student involvement in this program served not only as educators but also as a direct learning tool regarding health communication, the promotional role of pharmacists, and a holistic approach to elderly patients (Herlina *et al.* , 2021) .

Prevention and control of hypertension and diabetes cannot rely solely on pharmacological treatment. Lifestyle changes through dietary modifications, exercise, stress management, and regular health check-ups are essential. Research shows that consistently adopting a healthy lifestyle for 4–6 months can reduce systolic blood pressure by up to 10 mmHg and significantly improve blood sugar control (Siswanjani & Mardiyono, 2018 , Setiawati *et al* ., 2020) . Health education, such as that conducted in this activity, has proven effective as a means of health promotion in the community, especially among the elderly population. With increasing life expectancy, structured, sustainable, and community-based education programs are crucial in efforts to reduce morbidity and complications from non-communicable diseases. Beyond providing immediate benefits in raising awareness and encouraging early detection, such programs also contribute to strengthening primary health care systems, enhancing patient self-management, and building a culture of preventive health at the community level. Therefore, it is recommended that these initiatives be integrated into routine health services, supported by continuous training for health workers, collaboration with local stakeholders, and periodic evaluation to ensure long-term sustainability and measurable impact.

Figure 1. Counselling on hypertension and diabetes in the community at the Bandung, Tulungagung community health centre.

CONCLUSION

Activity devotion to community conducted at the Bandung Health Centre, Tulungagung in form counselling health about hypertension and diabetes mellitus as well as inspection pressure blood and blood sugar has walk with good and get response positive from society. Although activity This No accompanied by with pretest and post-test evaluation, approach educational and interactive used has succeed build awareness, motivation, and change attitude public to importance control disease No infectious.

Participant show high enthusiasm in follow activity counselling and examination health, as well as convey need they Forget correct and easy information understood related Hypertension and diabetes. Simple tests such as blood pressure and blood sugar measurements are highly effective direct learning tools for increasing public understanding of their own health conditions.

Health education has proven potential in driving behavioural changes toward healthier lifestyles, particularly in managing blood pressure and blood sugar levels. Therefore, structured and periodic education programs at the primary health centre level are essential to ensure that communities continue to receive accurate information and develop habits of independent early detection.

REFERENCES

American Diabetes Association. (2023). Standards of Care in Diabetes—2023. *Diabetes Care*, *46*(Supplement_1), S1–S289.

Anggraini, D. E., & Rahayu, S. R. (2019). Edukasi PTM di Puskesmas: Strategi Promotif dalam Menurunkan Risiko Hipertensi dan Diabetes. *Jurnal Pengabdian Kesehatan*, *2*(1), 15–22.

Anindya, T. S., & Handayani, P. W. (2020). Dampak Kelebihan Beban Pelayanan pada Puskesmas Akibat PTM. *Jurnal Administrasi Kesehatan Indonesia*, *8*(2), 110–117.

Arimbi, M., Handayani, S., & Rahayu, N. (2020). Pendidikan Kesehatan sebagai Upaya Meningkatkan Motivasi Perilaku Sehat pada Masyarakat. *Jurnal Kesehatan Masyarakat2*, *8*(1), 63–68.

Badan Kebijakan Pembangunan Kesehatan. (2023). *Hasil Survei Kesehatan Indonesia (SKI) 2023*. Kementerian Kesehatan RI.

BPS. (2021). *Proyeksi Penduduk Indonesia 2020–2045*. https://www.bps.go.id/

Finthariasari, Y., Amalia, R., & Nugraheni, S. A. (2020). Pengaruh Edukasi terhadap Pengetahuan dan Kepatuhan Pasien Hipertensi dan DM. *Jurnal Promkes*, *8*(1), 25–32.

Herlina, D., Subekti, H., & Riyanti, D. (2021). Peran mahasiswa farmasi dalam edukasi kesehatan masyarakat di layanan primer. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*, *8*(3), 129–138.

IDF. (2021). *IDF Diabetes Atlas Tenth Edition*. International Diabetes Federation.

Kementrian Kesehatan Republik Indonesia. (2018). Laporan Nasional Riskesdas 2018. *Jakarta:Badan Penelitian Dan Pengembangan Kesehatan.*

Kasim, S. S., & Rosnah. (2025). Optimalisasi Layanan Posyandu Lanjut Usia (Lansia) Berbasis Edukasi Kesehatan : Studi di Kelurahan Kasupute Kabupaten Konawe. *PAMARENDA : Public Administration and Government Journal*, *5*(1), 156–164.

Kemenkes RI. (2022). *Pedoman Pencegahan dan Pengendalian PTM di Fasyankes Primer*. Direktorat P2PTM.

Khoirunnisa, A., Widodo, A., & Putri, R. D. (2022). Hubungan pemeriksaan gula darah sewaktu dengan status klinis pasien diabetes di Puskesmas Depok. *Jurnal Kesehatan Masyarakat*, *10*(1), 20–27.

Munawaroh, S., & Nugroho, H. (2021). Peran media leaflet dalam meningkatkan pengetahuan pasien hipertensi. *Jurnal Media Kesehatan*, *10*(2), 78–84.

Notoatmodjo, S. (2018). *Promosi Kesehatan dan Perilaku Kesehatan.* Rineka Cipta.

Pefbrianti, D., et al. (2022). Analisis Kesadaran Pemeriksaan Gula Darah Dini di Masyarakat. *Jurnal Kesehatan Masyarakat Indonesia*, *17*(1), 35–42.

Prasetya, A., Hartati, S., & Nugroho, W. (2021). Efektivitas pemeriksaan tekanan darah dan gula darah dalam skrining PTM di layanan kesehatan primer. *Jurnal Preventif Medika*, *6*(2), 88–95.

Kementerian Kesehatan RI. (2022). *Pedoman Manajemen Puskesmas*. Direktorat Jenderal Pelayanan Kesehatan.

Kementrian Kesehatan RI. (2023). *Profil Kesehatan Indonesia 2022*. Pusat Data dan Teknologi Informasi Kemenkes.

Sartik, S., Tjekyan, R. S., & Zulkarnain, M. (2017). Risk Factors and the Incidence of Hipertension in Palembang. *Jurnal Ilmu Kesehatan Masyarakat*, *8*(3), 180–191. https://doi.org/10.26553/jikm.2017.8.3.180-191

Setiawati, D., Oktaviani, R., & Widyaningsih, S. (2020). Pengaruh perubahan gaya hidup terhadap pengendalian tekanan darah dan gula darah pada penderita hipertensi dan diabetes melitus. *Jurnal Keperawatan Holistik*, *6*(1), 89–95.

Siswanjani, R., & Mardiyono, M. (2018). Pengaruh edukasi gaya hidup sehat terhadap tekanan darah pada penderita hipertensi. *Jurnal Kesehatan Komunitas*, *5*(2), 112–120.

Warjiman, D., Susilo, H., & Prasetyo, D. (2020). Distribusi Hipertensi Berdasarkan Usia dan Jenis Kelamin di Indonesia. *Jurnal Kesehatan Masyarakat*, *15*(1), 45–52.

World Health Organization. (2021). *Decade of Healthy Ageing: Baseline Report*. https://www.who.int/publications/i/item/9789240017900

World Health Organization. (2021). *Noncommunicable diseases*. https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

World Health Organization. (2023a). *Diabetes Fact Sheet*.

World Health Organization. (2023b). *Empowering individuals and communities in NCD prevention*. https://www.who.int/

Yildiz, M., et al. (2020). Hypertension and its silent complications. *Journal of Clinical Hypertension*, *22*(4), 650–656.