Community service health check-up for non-communicable diseases (NCDs) by KKN group 63 of 'aisyiyah university yogyakarta in padukuhan watugajah vi, sendangagung minggir village, sleman

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Abstract
Non-communicable diseases (NCDs) such as hypertension, diabetes mellitus, and hyperuricemia are major health problems in Indonesia with an increasing prevalence. The purpose of this community service activity is to conduct early detection of NCDs through free health checks and to raise public awareness of the importance of regular health checks. The activity was conducted in Padukuhan Watugajah VI, Sendangagung Minggir Village, Sleman, using a descriptive quantitative method through blood pressure, random blood sugar, and uric acid examinations using digital devices. A total of 38 participants aged 40-70 years participated in this activity. The examination results showed a prevalence of hypertension of 68.42% (26 participants), suspected diabetes of 5.26% (2 participants), prediabetes of 13.16% (5 participants), and hyperuricemia of 50.0% (19 participants). The high prevalence of NCDs in the community indicates the need for serious attention from the health system and sustainable early detection programs. This activity successfully raised public awareness about the importance of regular health check-ups and provided education on lifestyle modifications for the prevention of NCDs. Similar programs need to be carried out continuously with the support of local governments and health facilities.

Keywords: diabetes; early detection; hypertension; hyperuricemia; noncommunicable diseases

1. Introduction
Non-communicable diseases (NCDs) are the leading cause of death worldwide, including in Indonesia, which has seen a significant increase in cases in recent years. Three NCDs that are interrelated and pose a risk of serious complications are hypertension, diabetes mellitus, and hyperuricemia.

The results of the Basic Health Research (Riskesdas) in 2018 show that the prevalence of hypertension among people aged ≥18 years reached 34.1%, but only a small proportion were diagnosed. Meanwhile, type 2 diabetes was recorded at 2.0% and the prevalence of hyperuricemia was in the range of 12–20% of the population. Various factors contribute to the high incidence of NCDs, including unmodifiable factors such as age and genetics, as well as lifestyle factors such as diet, physical activity, smoking, and alcohol consumption. Therefore, regular health check-ups are crucial for early detection and prevention.

In Padukuhan Watugajah VI, Sendangagung Minggir Village, Sleman, Yogyakarta, public awareness of health checkups is still low. Many residents have never had a routine checkup due to limited access, lack of knowledge, and economic factors.

Kuliah Kerja Nyata (KKN) as a form of student service can be a solution to bridge the community with health services. Therefore, KKN Group 63 of 'Aisyiyah University Yogyakarta organized free health checkups, including blood pressure, blood sugar, and uric acid tests. This activity aims to determine the community's health condition while raising awareness about the importance of early detection of non-communicable diseases (NCDs) and providing useful health education.

2. Method

The activity was carried out using a descriptive quantitative approach through health examinations and simple surveys. The implementation methods included:

a. Coordination Preparation
   1) Coordination with village officials and community leaders
   2) Preparation of examination tools and materials
   3) Socialization of activities to the community
b. Implementation of Health Checks
   1) Blood pressure check using a digital tensiometer
   2) Random blood sugar check (GDS) using a glucometer
   3) Uric acid check using a digital uric acid meter
   4) Recording of participant demographic data

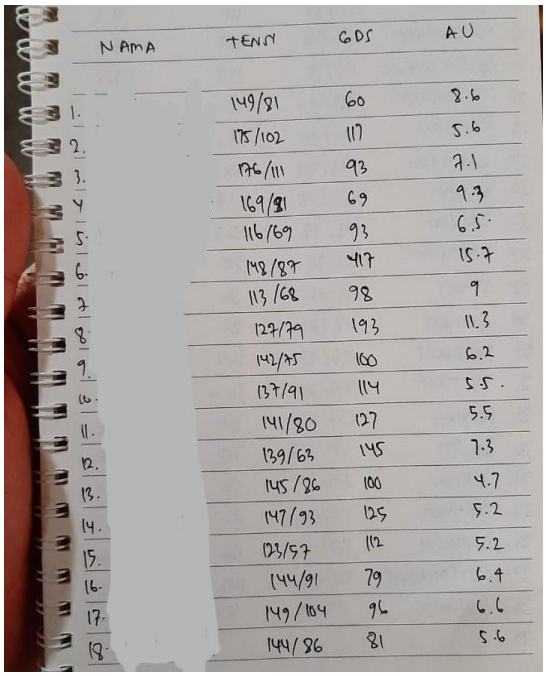
The participants were elderly residents of Padukuhan Watugajah VI who were willing to undergo health examinations.

The examination data were analyzed descriptively using simple statistics. The categorization of examination results was based on applicable clinical standards:

a. Blood pressure: Normal (<120/80 mmHg), Prehypertension (120-139/80-89 mmHg), Hypertension (≥140/90 mmHg)
b. Blood sugar: Normal (<140 mg/dL), Prediabetes (140-199 mg/dL), Diabetes (≥200 mg/dL)
c. Uric acid: Normal (Men <7.0 mg/dL, Women <6.0 mg/dL), High (Men ≥7.0 mg/dL, Women ≥6.0 mg/dL)

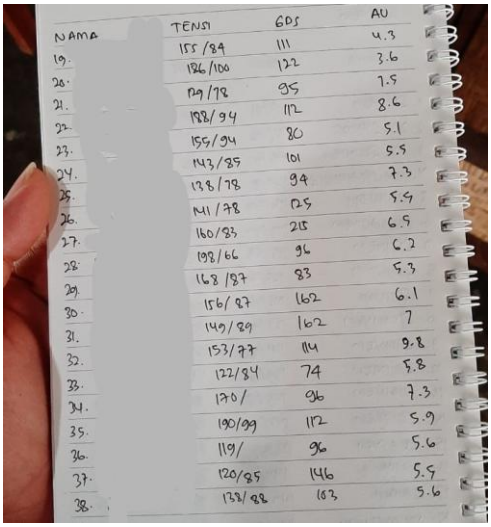
3. Results and Discussion

The health check-up was attended by 38 participants aged between 40 and 70 years old. People aged between 40 and 70 years old are at high risk of developing NCDs. The distribution of participants based on gender showed an imbalance, with the majority of participants being female.



NAMA	TENSI	GDS	AU
1.	149/81	60	8.6
2.	175/102	117	5.6
3.	176/111	93	7.1
4.	169/81	69	9.3
5.	116/69	93	6.5
6.	148/87	417	15.7
7.	113/68	98	9
8.	127/79	193	11.3
9.	142/75	160	6.2
10.	137/91	114	5.5
11.	141/80	127	5.5
12.	139/63	145	7.3
13.	145/86	100	4.7
14.	147/93	125	5.2
15.	123/57	112	5.2
16.	144/91	79	6.4
17.	149/104	96	6.6
18.	144/86	81	5.6

Figure 1. Examination Results 1



NAMA	TENSI	GDS	AU
19.	155/84	111	4.3
20.	136/100	122	3.6
21.	129/78	95	7.5
22.	198/94	112	8.6
23.	155/94	80	5.1
24.	143/85	101	5.5
25.	138/78	94	7.3
26.	141/78	125	5.4
27.	160/83	215	6.5
28.	198/66	96	6.2
29.	168/87	83	5.3
30.	156/87	162	6.1
31.	149/89	162	7
32.	153/77	114	9.8
33.	122/84	74	5.8
34.	170/	96	7.3
35.	190/99	112	5.9
36.	119/	96	5.6
37.	120/85	146	5.5
38.	138/88	163	5.6

Figure 2. Examination Results 2

Figure 3. Activity Photos

Figure 4. Activity Photos

3.1. Blood Pressure Test Results

Blood pressure test results showed a wide range of variation, with systolic pressure ranging from 79-218 mmHg and diastolic pressure ranging from 74-146 mmHg. Based on the JNC 8 classification, the distribution of test results is as follows:

a. Normal blood pressure (<120/80 mmHg): 3 participants (7.89%)
b. Prehypertension (120-139/80-89 mmHg): 9 participants (23.68%)
c. Hypertension (≥140/90 mmHg): 26 participants (68.42%)

Several factors that can affect blood pressure test results include age, physical activity prior to testing, caffeine consumption, and stress levels (Whelton et al., 2018). Education provided to participants with high blood pressure includes lifestyle modifications such as reducing salt intake, increasing physical activity, and stress management.

3.2. Blood Sugar Test Results

Blood sugar tests show a range of values between 74-215 mg/dL. The distribution of test results based on American Diabetes Association criteria is:

a. Normal (<140 mg/dL): 31 participants (81.58%)
b. Prediabetes (140-199 mg/dL): 5 participants (13.16%)
c. Suspected Diabetes (≥200 mg/dL): 2 participants (5.26%)

The prevalence of suspected diabetes found (13.16%) was much higher than the national prevalence of 2.0% based on the 2018 Riskesdas. This may be due to several factors, including: (1) the tests were conducted at random times, not while fasting, which may have resulted in higher readings; (2) the majority of participants were over 40 years of age; and (3) the lifestyle factors of the local community (Soelistijo et al., 2021).

Participants with high blood sugar results were educated on the importance of a balanced diet, regular exercise, and regular blood sugar monitoring. They were also advised to undergo further examination at the nearest health facility for confirmation of diagnosis.

3.3. Uric Acid Test Results

Uric acid tests show a range of values between 3.6-15.7 mg/dL. Based on normal uric acid values (men <7.0 mg/dL, women <6.0 mg/dL), the distribution of results is as follows:

a. Normal: 19 participants (50.00%)
b. High/Hyperuricemia: 19 participants (50.00%)

The results of the hyperuricemia prevalence examination found that 50% had high uric acid levels. The high prevalence of hyperuricemia can be attributed to a diet high in purines, insufficient water intake, and genetic factors.

Hyperuricemia is a major risk factor for gouty arthritis and may be associated with cardiovascular disease and chronic kidney disease (Zhang et al., 2019). Education provided includes a low-purine diet, increased water intake, and the importance of regular physical activity.

4. Conclusion

The community service activity of checking blood pressure, blood sugar, and uric acid levels in Padukuhan Watugajah VI, Sendangagung Village, was successfully carried out. Of the 38 participants who took part in the activity, 68.42% were found to have hypertension, 5.26% were suspected of having diabetes, and 50.0% had hyperuricemia.

The examination results indicate a high risk of non-communicable diseases (NCDs) in the community, which requires serious attention from the health system. This activity successfully raised community awareness about the importance of early detection and regular health check-ups. The health education provided is expected to encourage behavioral changes toward a healthier lifestyle. Programs like this need to be carried out continuously with support from the local government and local health facilities.

5. Acknowledgements

Thank you to Universitas 'Aisyiyah Yogyakarta for providing support in the implementation of the Kuliah Kerja nyata (KKN), to the Field Supervisors (DPL) for their guidance and direction, to the Head

of Watugajah VI Village and the village officials for their support and excellent facilitation, and to all the residents of Watugajah VI Village who actively participated and warmly welcomed us, enabling this community service activity to run smoothly and provide mutual benefits.

References

Boutayeb, A. (2021). The burden of non-communicable diseases in developing countries. *International Journal for Equity in Health*, 20(1), 18. https://doi.org/10.1186/s12939-020-01377-7

Chen, L., Magliano, D. J., & Zimmet, P. Z. (2012). The worldwide epidemiology of type 2 diabetes mellitus—present and future perspectives. *Nature Reviews Endocrinology*, 8(4), 228-236. https://doi.org/10.1038/nrendo.2011.183

Forouzanfar, M. H., Liu, P., Roth, G. A., Ng, M., Biryukov, S., Marczak, L., ... & Murray, C. J. (2017). Global burden of hypertension and systolic blood pressure of at least 110 to 115 mm Hg, 1990-2015. *JAMA*, 317(2), 165-182. https://doi.org/10.1001/jama.2016.19043

Kementerian Kesehatan RI. (2019). *Laporan Nasional Riset Kesehatan Dasar 2018*. Lembaga Penerbit Badan Penelitian dan Pengembangan Kesehatan.

Nugraheni, S. A., Pramono, D., & Nuraini, N. (2018). Faktor-faktor yang mempengaruhi pemanfaatan pelayanan kesehatan di Indonesia. *Jurnal Kesehatan Masyarakat*, 14(2), 195-204. https://doi.org/10.15294/kemas.v14i2.16643

Pratama, A. S., Setyawan, H., & Nugroho, P. S. (2020). Prevalensi dan faktor risiko hiperurisemia di Indonesia: Analisis data Riskesdas 2013. *Jurnal Penyakit Dalam Indonesia*, 7(3), 136-142. https://doi.org/10.7454/jpdi.v7i3.342

Rahman, F., Sulistyowati, E., & Fadillah, N. (2019). Implementasi program KKN dalam pemberdayaan masyarakat desa. *Jurnal Pengabdian Kepada Masyarakat*, 25(3), 123-130. https://doi.org/10.24114/jpkm.v25i3.14567

Saklayen, M. G. (2018). The global epidemic of the metabolic syndrome. *Current Hypertension Reports*, 20(2), 12. https://doi.org/10.1007/s11906-018-0812-z

Soelistijo, S. A., Novida, H., Rudijanto, A., Soewondo, P., Suastika, K., Manaf, A., ... & Zufry, H. (2021). *Konsensus pengelolaan dan pencegahan diabetes melitus tipe 2 di Indonesia 2021*. PB PERKENI.

Whelton, P. K., Carey, R. M., Aronow, W. S., Casey, D. E., Collins, K. J., Dennison Himmelfarb, C., ... & Wright, J. T. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA guideline for the prevention, detection, evaluation, and management of high blood pressure in adults. *Journal of the American College of Cardiology*, 71(19), e127-e248. https://doi.org/10.1016/j.jacc.2017.11.006

World Health Organization. (2020). *Noncommunicable diseases country profiles 2018*. World Health Organization.

Zhang, M., Zhu, X., Wu, J., Huang, Z., Zhao, Z., Zhang, X., ... & Wang, L. (2019). Prevalence of hyperuricemia among Chinese adults: findings from two nationally representative cross-sectional surveys in 2015-2016 and 2018-2019. *Frontiers in Immunology*, 12, 791983. https://doi.org/10.3389/fimmu.2021.791983

Zheng, Y., Ley, S. H., & Hu, F. B. (2018). Global aetiology and epidemiology of type 2 diabetes mellitus and its complications. *Nature Reviews Endocrinology*, 14(2), 88-98. https://doi.org/10.1038/nrendo.2017.151