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EDUCATION AND EARLY DETECTION OF NON-COMMUNICABLE DISEASES IN THE COMMUNITY OF NEGERI RUMAHKAY

EDUKASI DAN DETEKSI DINI PENYAKIT TIDAK MENULAR PADA MASYARAKAT NEGERI RUMAHKAY

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Abstract

Non-communicable diseases (NCDs) continue to represent an important public health issue, highlighting the need for preventive strategies that emphasize both knowledge enhancement and timely identification of health risks. Health education can serve as a practical approach to strengthening community awareness regarding the prevention and early identification of NCDs. This activity was conducted to assess changes in community knowledge concerning non-communicable diseases following health education and early detection activities in Negeri Rumahkay. A total of 10 participants were included, all of whom had complete pretest and posttest records. Knowledge levels were measured at two points, namely prior to and following the educational activity. The collected data were first assessed for normality using the Shapiro-Wilk test and subsequently examined using a paired t-test. The findings demonstrated an improvement in the participants' mean knowledge score, increasing from 77.00 before the intervention to 89.00 afterward. This corresponded to a mean increase of 12.00 points. The Shapiro-Wilk analysis indicated that the difference scores followed a normal distribution ($W = 0.885$; $p = 0.149$). Furthermore, the paired t-test identified a statistically significant difference between the pretest and posttest scores ($t(9) = 4.129$; $p = 0.003$; 95% CI = 5.43–18.57). The magnitude of the intervention effect was considered large, as indicated by a Cohen's d value of 1.31. Overall, the implementation of health education accompanied by early detection activities in Negeri Rumahkay was associated with a statistically significant improvement in community knowledge regarding non-communicable diseases.

Keywords : Non-Communicable Diseases, Health Education, Early Detection, Knowledge, Community.

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Abstrak

Penyakit tidak menular (PTM) masih menjadi salah satu persoalan kesehatan masyarakat sehingga diperlukan strategi preventif yang mencakup peningkatan pemahaman serta pelaksanaan deteksi secara lebih awal. Pemberian edukasi kesehatan dapat digunakan sebagai upaya untuk membangun kesadaran masyarakat terkait pentingnya pencegahan dan deteksi dini PTM. Kegiatan ini dilaksanakan dengan tujuan mengetahui peningkatan pengetahuan masyarakat mengenai penyakit tidak menular melalui pemberian edukasi kesehatan yang disertai kegiatan deteksi dini di Negeri Rumahkay. Sebanyak 10 orang berpartisipasi dalam kegiatan dan seluruh peserta memiliki data *pretest* serta *posttest* yang lengkap. Pengukuran pengetahuan dilakukan pada tahap sebelum dan setelah pemberian edukasi. Data selanjutnya diuji normalitasnya menggunakan Shapiro-Wilk dan dianalisis dengan uji *paired t-test*. Berdasarkan hasil analisis, nilai rata-rata pengetahuan peserta mengalami peningkatan, yaitu dari 77,00 sebelum edukasi menjadi 89,00 setelah edukasi. Dengan demikian, terjadi kenaikan rata-rata skor sebesar 12,00 poin. Hasil uji Shapiro-Wilk memperlihatkan bahwa data selisih skor memiliki distribusi normal (W = 0,885; p = 0,149). Selanjutnya, analisis menggunakan uji t berpasangan menghasilkan perbedaan yang bermakna antara nilai *pretest* dan *posttest* (t(9) = 4,129; p = 0,003; IK 95% = 5,43–18,57). Besarnya pengaruh intervensi juga tergolong tinggi berdasarkan nilai Cohen's d sebesar 1,31. Berdasarkan temuan tersebut, pelaksanaan edukasi kesehatan dan deteksi dini PTM di Negeri Rumahkay dapat dinyatakan efektif dalam meningkatkan pengetahuan masyarakat secara signifikan secara statistik.

Kata Kunci : Penyakit Tidak Menular, Edukasi Kesehatan, Deteksi Dini, Pengetahuan, Masyarakat.

1. INTRODUCTION

Non-communicable diseases (NCDs) represent a major global health challenge with a profound impact on the quality of life. These conditions can lead to long-term health issues, disability, and even death. Among the most prevalent NCDs are cardiovascular diseases, cancer, chronic respiratory diseases, and diabetes mellitus. Data from the World Health Organization (WHO) indicates that in 2021, NCDs contributed to approximately 43 million deaths—accounting for roughly 75% of all global deaths unrelated to the pandemic. This issue also places a significant burden on low- and middle-income countries (WHO, 2025).

Controlling NCDs is particularly challenging because, in many cases, the disease develops over a long period and may not present with clear symptoms in the early stages. Consequently, individuals may remain unaware of health issues until the disease has progressed further or caused complications. Several factors increase the likelihood of developing NCDs, including smoking, unhealthy dietary habits, low levels of physical activity, obesity, hypertension, and high blood glucose levels. Therefore, addressing NCDs requires a comprehensive approach—one that goes beyond treating established diseases to include prevention strategies and the early identification of risk factors within the community (Ranti, 2022; Muhsinah & Misbah, 2023).

Enhancing community involvement is a vital component of NCD prevention strategies. Providing health information and education can help the public recognize risk factors, understand signs and symptoms, and learn how to mitigate risks by adopting a healthier lifestyle. A sufficient level of knowledge is expected to foster an awareness of the importance of maintaining health, improving daily habits, and undergoing regular health check-ups. Education is also necessary to instill the understanding that non-communicable diseases (NCDs) do not only pose a risk to those already experiencing health complaints; they can also be present in individuals who appear healthy and have yet to exhibit any specific symptoms (Muhsinah & Misbah, 2023).

Prevention can be further strengthened through the implementation of early detection for NCD risk factors. Basic, relatively simple assessments—such as measuring blood pressure, weight, and height; calculating body mass index (BMI); measuring waist circumference; and checking blood

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glucose levels—can provide preliminary information regarding an individual's health status. Identifying risk factors early on allows for appropriate follow-up, which may include providing additional information, counseling on behavioral changes, or recommending further medical evaluation at a healthcare facility if screening results indicate conditions that require attention (Ranti, 2022; Journal of Community Engagement in Health, 2021).

Various community service programs have demonstrated that combining health education with early detection activities can support efforts to prevent and control NCDs. Ranti (2022) reported that educational initiatives—complemented by training on NCD risk factor screening for Posbindu (integrated non-communicable disease monitoring post) volunteers—enhanced both the volunteers' understanding and their ability to conduct risk factor assessments. Similar findings regarding the improvement of participants' capacity were reported by Zuraidah et al. (2021), who observed an increase in knowledge and skills following training on the early detection of NCD risks, although the change in knowledge did not reach statistical significance.

The results of these various activities indicate that providing information about non-communicable diseases (NCDs) is most effective when accompanied by direct health screenings. Through this approach, the community not only gains an understanding of these diseases and their associated risk factors but also learns about their own baseline health status. Muhsinah and Misbah (2023) reported on the implementation of screenings combined with health education for the residents of Telaga Biru Village, an initiative designed to improve awareness while encouraging the utilization of *Posbindu PTM* (community-based NCD monitoring posts). Consequently, the integration of health education and early detection can be viewed as a promotive and preventive strategy that enables individuals to actively participate in maintaining and monitoring their own health.

2. RESEARCH METHOD

This community service activity was held in Rumahkay Country and was aimed at the general public as the target group. To assess changes in participants' knowledge after receiving education about non-communicable diseases (NCDs), a pre-experimental method with a one group pretest-posttest design was used. The analysis involved 10 participants who had complete measurement data before and after education.

The activity stage begins with carrying out a pretest to obtain an initial picture of the participant's level of knowledge. Next, participants were given educational material regarding PTM, then measurements were taken again via posttest. Apart from educational activities, examinations are also carried out as part of early detection of NCD risk factors. The examination includes measuring blood pressure, blood sugar levels, cholesterol, uric acid, body weight and height. Data regarding the level of participants' knowledge was obtained through questionnaires which were filled out at two stages, namely before and after providing education. The difference in the results of the two measurements is used to assess changes in participants' knowledge.

Data analysis was carried out through descriptive and inferential approaches. Descriptive analysis was used to describe participants' knowledge scores before and after the intervention. Next, the Shapiro-Wilk test was applied to test the normal distribution of the difference values between pretest and posttest scores. If the assumption of normality is met, the average difference between the two measurements is analyzed using a paired t-test with a confidence level of 95% and a statistical significance level of $p < 0.05$.

3. RESULT AND DISCUSSION

An educational and early detection program for non-communicable diseases (NCDs) was implemented in Negeri Rumahkay, with members of the general public participating. The program was designed not only to enhance participants' understanding of NCDs but also to provide preliminary insights into their health status by screening for various risk factors. Among all the participants, 10

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individuals provided complete pre-test and post-test data, which were then used to analyze changes in their level of knowledge.

The activities began with the completion of a pre-test questionnaire. This stage was intended to establish a baseline of the participants' knowledge prior to receiving educational material on NCDs. The scores obtained at this initial stage served as a point of comparison for the results measured after the educational session had been conducted.



Figure 1. Filling out the pretest questionnaire

In the next stage, participants receive health education materials covering various aspects of non-communicable diseases (NCDs). The content includes a foundational understanding of NCDs, factors that increase the risk of developing such diseases, actionable preventive measures, and the importance of regular health check-ups for early detection.



Figure 2. Implementation of Educational Activities for Participants

Once the material has been presented, participants complete a post-test questionnaire. This assessment is conducted to determine changes in knowledge levels following the educational session. The post-test results are then compared with the pre-test scores to observe the shift in knowledge for each participant.

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Figure 3. Filling out the posttest questionnaire

In addition to educational activities, health screenings are conducted as part of efforts for the early detection of risk factors for non-communicable diseases (NCDs). These screenings include measurements of blood pressure, blood sugar levels, cholesterol, uric acid, body weight, and height. The data obtained from these screenings provide an initial overview of the participants' health status and help identify risk factors that may require further attention or follow-up.



Figure 5. Implementation of Early Detection Activities

Based on the measurement results, the mean knowledge score prior to the educational intervention (pretest) was 77.00, with a standard deviation (SD) of 19.47. Following the intervention, the mean score increased to 89.00, with an SD of 15.24. This represents an average increase of 12.00 points, corresponding to an improvement of approximately 15.58% from the baseline score. Regarding individual changes, 8 participants showed an increase in their knowledge scores, while 2 participants obtained the same score in both measurements. No participants experienced a decrease in their scores following the educational intervention. The comparison of pretest and posttest scores, the mean knowledge scores before and after the intervention, and the results of the descriptive statistical analysis are presented in Table 1, Table 2, and Figure 6.

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Table 1. Pretest and Posttest Score Data of Participants

NO PESERTA	NILAI PESERTA	
	Pretest	*Posttest*
1	90.00	100.00
2	80.00	90.00
3	100.00	100.00
4	80.00	90.00
5	80.00	100.00
6	80.00	90.00
7	90.00	100.00
8	30.00	50.00
9	60.00	90.00
10	80.00	80.00

Table 2. Descriptive Statistics for Knowledge Scores

VARIABEL	N	RERATA	SIMPANGAN BAKU	GALAT BAKU RERATA
Pretest	10	77.00	19.47	6.16
Posttest	10	89.00	15.24	4.82
Selisih (*Pretest-Posttest)*	10	12.00	9.19	2.91



Figure 6. Mean Student Knowledge Scores Before and After Education

To determine the appropriate statistical analysis method, a normality test was first conducted on the differences between the pretest and posttest scores. The Shapiro-Wilk test yielded a W-value of 0.885 with a p-value of 0.149, indicating that the difference data follow a normal distribution. Based on these results, the analysis proceeded using a paired t-test. The test revealed a significant difference in mean knowledge scores between the measurements taken before and after the educational intervention, with $t(9) = 4.129$, $p = 0.003$, and a 95% confidence interval (CI) of 5.43–18.57. In addition to statistical significance, a Cohen's d value of 1.31 indicates that the educational intervention had a large effect on improving participants' knowledge. The complete statistical test results are presented in Table 3.

Table 3. Mean Knowledge Scores of Participants Before and After Education

Pasangan	Rerata Selisih	SB	GB	IK 95%	*t*	df	*p*
Posttest – Pretest	12,00	9,19	2,91	5,43–18,57	4,129	9	0,003

The implementation of education and early detection for non-communicable diseases (NCDs) in Negeri Rumahkay has resulted in a positive shift in the participants' level of knowledge. Measurements indicate that the average knowledge score rose from 77.00 before the educational

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intervention to 89.00 afterward—an average increase of 12.00 points. A paired t-test analysis confirms that this change is statistically significant ($p = 0.003$). Furthermore, a Cohen's d value of 1.31 suggests a large effect size. These findings demonstrate that health education has the potential to be an effective strategy for enhancing public understanding of NCDs.

The improvement in participants' knowledge can be attributed to the information provided during the educational process. The material covered helped participants identify various types of NCDs, understand risk factors, and learn about preventive measures that can be integrated into daily life. Such an increase in understanding is crucial, given that some NCDs may progress without distinct symptoms in their early stages. Consequently, individuals might remain unaware of their own risk factors until symptoms emerge or the condition develops into a more serious health issue. Therefore, providing education on NCDs should be accompanied by efforts to raise awareness regarding the importance of regular health monitoring and check-ups.

These results align with findings reported by Ranti (2022) regarding the implementation of education and screening training for NCDs among health volunteers. That study showed that, following the educational intervention, 80% of the volunteers reached a "good" level of knowledge. Beyond knowledge, the volunteers also demonstrated improved proficiency in assessing vital signs and conducting anthropometric measurements. These outcomes suggest that combining the dissemination of information with practical training in screening procedures can strengthen the capacity of community members or health volunteers to identify NCD risk factors.

Another equally vital aspect of NCD control is the implementation of early detection. In the activities conducted in Negeri Rumahkay, risk factor detection was carried out through a series of assessments, including measurements of blood pressure, blood sugar levels, cholesterol, uric acid, body weight, and height. These assessments provide preliminary information regarding participants' health status and help identify potential risk factors associated with cardiovascular diseases and metabolic disorders. A similar approach was reported by Muhsinah and Misbah (2023), whose initiative integrated health screening, education on non-communicable diseases (NCDs), and support for *Posbindu* (integrated community-based health posts) to enhance public awareness and participation in health screenings.

Findings from Zuraidah et al. (2021) further underscore the importance of this approach. Training provided to *Posbindu* volunteers in their study improved their knowledge and skills in the early detection of NCDs, including blood pressure and blood sugar monitoring, as well as the calculation of body mass index. Although the observed changes in knowledge did not reach statistical significance, the results nonetheless suggest that combining education with practical screening skills can be a vital component of NCD prevention strategies. Consequently, the activities implemented in Negeri Rumahkay align with the promotive and preventive principles frequently employed in various community service programs.

While the results are positive, there are several limitations to consider when interpreting the findings of this activity. The analysis included only 10 participants, and no control group was used; therefore, the observed changes in knowledge scores cannot be compared against a group that did not receive the education. Furthermore, knowledge was assessed only before and immediately after the intervention, leaving it unclear whether the gains in knowledge are sustained over the long term or if they lead to changes in health-related behaviors. Another limitation is that the health screening results have not been presented as a descriptive analysis showing the proportion of participants whose results fell within the normal range versus those outside the reference values. Consequently, the interpretation of these outcomes should take into account the number of participants, the evaluation design, and the specific characteristics of the activity conducted.

4. CONCLUSION

The implementation of education and early detection for non-communicable diseases (NCDs) in Negeri Rumahkay yielded positive results in terms of increasing participants' knowledge. This is

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evidenced by the change in the average knowledge score, which rose from 77.00 in the pre-test to 89.00 in the post-test. Analysis indicates that this change is statistically significant, with a p-value of 0.003. In addition to improved knowledge, the health screening activities—which included measurements of blood pressure, blood sugar levels, cholesterol, uric acid, body weight, and height—served as an initial step in identifying NCD risk factors within the community.

Based on these findings, integrating health education with early detection screenings can be adopted as part of a promotional and preventive strategy to enhance public health awareness and encourage NCD prevention efforts. Such activities should be conducted on a regular and continuous basis, involving the community and collaborating with local healthcare facilities.

In future iterations, health screening results should not merely be communicated to participants; they should also be accompanied by an explanation of what the results mean and what follow-up steps can be taken—particularly for participants whose results fall outside the reference ranges. Furthermore, the scope of participation should be expanded to ensure that the findings provide a more representative overview. Long-term monitoring is also necessary to determine whether the gains in knowledge are sustained and whether the education provided effectively fosters behavioral changes that contribute to NCD prevention.

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