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A Health Promotion Model Based on Muhammadiyah Student Cadres for Non-Communicable Disease Prevention at Universitas Muhammadiyah Mahakarya Aceh

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ABSTRACT

Background: Non-communicable diseases (NCDs) are a major public health problem and are associated with modifiable behavioral risk factors. Higher education institutions provide a strategic setting for promoting NCD prevention behaviors from an early age through student-based health promotion. Objective: This study aimed to analyze the effectiveness of a health promotion model based on Muhammadiyah student cadres in preventing NCDs among students of the Faculty of Health Sciences, Universitas Muhammadiyah Mahakarya Aceh. Methods: This quantitative study employed a one-group pretest–posttest design. A total of 30 students participated in measurements before and after the implementation of the health promotion model. The NCD prevention instrument consisted of eight statements. Data were analyzed using the Shapiro–Wilk normality test and a paired-samples t-test. Results: The mean NCD prevention score increased from 6.70 at pretest to 8.37 at posttest, with a mean difference of 1.67 points. The Shapiro–Wilk test indicated that the distribution of difference scores was normal ($W = 0.935$; $p = 0.066$). The paired-samples t-test yielded $t(29) = 6.774$, with $p < 0.001$ and a 95% confidence interval (CI) of 1.163–2.170. The effect size, measured using Cohen's dz, was 1.237, indicating a large effect. Conclusion: The health promotion model based on Muhammadiyah student cadres was effective in improving NCD prevention scores among students. This model has the potential to serve as a health promotion and disease prevention strategy to strengthen the implementation of healthy campus initiatives within Muhammadiyah and Aisyiyah Higher Education Institutions (PTMA).

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INTRODUCTION

Non-communicable diseases (NCDs) have become one of the major challenges facing global public health. The World Health Organization (WHO) reported that NCDs were responsible for at least 43 million deaths in 2021, accounting for approximately 75% of all deaths not related to the COVID-19 pandemic. Cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases are among the leading types of NCDs. Their major modifiable risk factors include tobacco use, physical inactivity, unhealthy diets, harmful alcohol consumption, and exposure to air pollution. These figures highlight the importance of prevention strategies that focus on behavioral modification and the early identification of health risks (WHO, 2025).

Indonesia also faces a substantial burden of NCDs. The 2023 Indonesian Health Survey (Survei Kesehatan Indonesia) reported that the prevalence of hypertension among adults aged 18 years and older was 30.8%, based on direct blood pressure measurements. This finding warrants particular attention because hypertension is often asymptomatic, meaning that many individuals may be unaware of their condition. Therefore, health promotion, screening activities, and improved health literacy are essential across various settings, including higher education institutions (Ministry of Health of the Republic of Indonesia, 2023).

University students occupy a strategic position in NCD prevention because higher education represents a critical period during which lifestyle habits are formed and may persist into adulthood. Dietary habits, physical activity, sedentary behavior, sleep patterns, stress management, and smoking are among the key factors that deserve attention during this stage of life. Studies examining NCD risk factors among university students indicate that young adults remain vulnerable and require appropriate health promotion and prevention strategies. Accordingly, campus-based health interventions should not merely increase knowledge but also encourage students to adopt practical preventive behaviors (Wijaya et al., 2024).

Higher education institutions offer favorable conditions for implementing sustainable health promotion programs. These include well-organized communities, academic facilities, student networks, and opportunities to integrate health promotion into the Tri Dharma Perguruan Tinggi (the three pillars of higher education: education, research, and community service) and student activities. For example, the implementation of an Integrated NCD Prevention and Control Post (Posbindu PTM) at the Faculty of Public Health, Universitas Diponegoro, demonstrated that a healthy campus program can serve as a platform for both early detection and health promotion. However, its implementation still requires improvements in communication, resource availability, facilities, standard operating procedures, and program dissemination (Nurdhin, 2024).

Student health cadres offer an alternative strategy for expanding the reach of health education on campus. Shared age groups, academic experiences, and peer networks give student cadres considerable potential to serve as peer communicators. Their roles may include delivering health information, encouraging positive health behaviors, directing fellow students

to appropriate health examinations, and supporting health promotion and disease prevention activities within their scope of competence. Findings from community-based Posbindu cadre empowerment programs suggest that training and mentoring can improve cadres' knowledge and skills in health education and early NCD detection (Aini et al., 2024).

The potential of student cadres as health education facilitators can be understood through the concept of peer education. This approach positions students as facilitators and agents of change among their peers. Similarities in age and social experience can make health messages easier to understand and accept (Rosanti et al., 2025). Peer education also encourages communication between individuals with comparable social backgrounds, allowing health information to be delivered in language and through examples that are more relevant to the target audience's ways of thinking and social context (Nurlaela & Rasmaniar, 2023). Kurniasih and Suryadi (2023) further explain that peer education promotes participatory, two-way communication, allowing participants to engage more openly in discussions than they might during conventional one-way health education sessions. These characteristics support the potential advantages of student cadres as communicators of NCD prevention messages on campus, where close peer networks may reduce social distance between those delivering and receiving health information.

Beyond communication, strengthening cadre capacity is important for sustaining community-based NCD prevention programs. Mahmudah and Tahir (2024) emphasize that structured education for young cadres can contribute to stronger community-based health management rather than merely producing short-term improvements in knowledge. Health promotion therefore needs to extend beyond one-way information delivery toward a broader empowerment process. Through this approach, individuals are encouraged to recognize health risks, make informed behavioral choices, and obtain social support from their surrounding environment. Education and early detection are essential components of integrated health promotion and preventive approaches to NCD control. Strengthening cadre capacity can also support program continuity, as cadres serve as key facilitators of communication and mobilization among target populations (Kumalasari et al., 2023).

A cadre-based health promotion model is consistent with the PRECEDE–PROCEED framework, which emphasizes behavioral change through the interaction of predisposing, enabling, and reinforcing factors. Health promotion is therefore not limited to raising awareness or transferring knowledge; it also involves facilitating behavioral changes within a target population. Combining the PRECEDE–PROCEED framework with the Health Belief Model may support health behavior change by addressing both program planning and individuals' beliefs about health risks (Malinda, 2024). This theoretical perspective provides a basis for understanding student cadre-based interventions as more than conventional health education. Instead, they can serve as an empowerment strategy intended to strengthen knowledge, risk awareness, and preventive behaviors related to NCDs.

Within Muhammadiyah and 'Aisyiyah Higher Education Institutions (Perguruan Tinggi Muhammadiyah dan 'Aisyiyah, or PTMA), student cadre-based health promotion has distinctive institutional characteristics. In addition to carrying out practical health promotion activities, student cadres are encouraged to embody values of social responsibility, community empowerment, and collective well-being. These institutional values create opportunities to develop health promotion initiatives that align with Muhammadiyah's identity and mission. This approach is consistent with the need to optimize students' contributions to NCD prevention in higher education settings (Suryaningsih & Rodiyatun, 2026).

A distinctive aspect of student cadres within PTMA is the integration of practical health promotion activities with the Islamic values embedded in the institution's identity. A'la Al, Dewi, Azhezinova, and Farid (2026) explain that Islam views health holistically, encompassing physical, mental, and spiritual well-being. Accordingly, health promotion and disease prevention are consistent with the principles of maqashid al-shariah, particularly the protection of life (hifz al-nafs). This perspective provides a relevant institutional and ethical foundation for understanding the role of Muhammadiyah student cadres not only as providers of health information but also as advocates for social responsibility and community care.

Despite growing interest in community-based NCD prevention and healthy campus initiatives, evidence regarding the effectiveness of health promotion models specifically based on Muhammadiyah student cadres remains limited. Previous studies have largely focused on community health cadres, cadre capacity building, or the implementation of general campus health promotion programs. The integration of peer education, student empowerment, and Muhammadiyah institutional values into a health promotion approach specifically targeting NCD prevention among university students has received comparatively little attention. In particular, empirical evidence on changes in students' NCD prevention scores before and after the implementation of such an intervention remains insufficient. This research gap highlights the need to evaluate student cadre-based health promotion within a Muhammadiyah higher education setting.

The novelty of this study lies in the implementation and evaluation of a health promotion model based on Muhammadiyah student cadres within the Faculty of Health Sciences, Universitas Muhammadiyah Mahakarya Aceh. Rather than focusing solely on community-based cadres or general campus health promotion activities, this study examines the role of student cadres as peer educators in NCD prevention within a Muhammadiyah higher education institution. It also evaluates changes in students' NCD prevention scores before and after the intervention. By examining this approach within the PTMA context, the study provides institution-specific empirical evidence that may inform the development of student-led health promotion strategies in higher education.

Accordingly, this study aimed to evaluate the effectiveness of a health promotion model based on Muhammadiyah student cadres in improving NCD prevention scores among students of the Faculty of Health Sciences,

Universitas Muhammadiyah Mahakarya Aceh. The study hypothesized that students' NCD prevention scores would differ significantly before and after the implementation of the health promotion model.

METHOD

This study employed a quantitative approach using a quasi-experimental design with a one-group pretest–post test arrangement. This design was selected to evaluate changes in NCD prevention scores among the same participants before and after the health promotion intervention. The study involved a single group without a comparison or control group. Consequently, although changes in scores following the intervention could be observed, the design could not fully eliminate the potential influence of external factors, such as measurement effects, the passage of time, or other health-related experiences occurring during the study period.

The sample size was determined through power analysis using G Power software version 3.1.9.7 for a two-tailed paired-samples t-test. The analysis specified a significance level (α) of 0.05, statistical power (1 − β) of 0.80, and a large anticipated effect size (Cohen's d = 0.8), based on findings from previous peer education-based health promotion interventions involving university students. The calculation indicated a minimum required sample of 15 participants. To accommodate potential dropout, improve estimation precision, and enhance statistical stability, the study recruited 30 participants. This sample size also met the commonly cited threshold of 30 observations associated with the Central Limit Theorem and was considered adequate for the planned parametric analysis.

The study was conducted at the Faculty of Health Sciences, Universitas Muhammadiyah Mahakarya Aceh, Indonesia. A total of 30 students participated in the study. Participants were selected using purposive sampling based on predefined inclusion criteria. Eligible participants were actively enrolled students at the Faculty of Health Sciences, willing to participate, able to complete both the pretest and posttest, and available to attend all intervention sessions.

The health promotion model based on Muhammadiyah student cadres was implemented through educational activities and peer-to-peer communication focusing on NCD prevention. The intervention covered basic knowledge of NCDs, identification of modifiable risk factors, healthy dietary practices, increased physical activity, healthy daily habits, smoking prevention, stress management, the importance of early health screening, and practical preventive measures relevant to university students. Student cadres served as communication facilitators and encouraged their peers to participate in the health promotion activities. The intervention was intended to improve students' awareness of NCD risk factors and strengthen their engagement in preventive health behaviors.

NCD prevention was assessed using an instrument consisting of eight statements. Each participant's total score was calculated by summing the scores of all eight items. A separate instrument containing 10 statements was used to document the implementation of the health promotion model and

participants' perceptions of the model, in accordance with the study protocol. All participants completed a pretest before the intervention, received the health promotion intervention, and subsequently completed a post test using the same NCD prevention instrument. The primary outcome analyzed in this study was the total NCD prevention score measured before and after the intervention.

Univariate analysis was used to describe the pretest and post test scores. The normality of the difference scores between the post test and pretest measurements was assessed using the Shapiro–Wilk test. The test yielded a p-value of 0.066, indicating no statistically significant departure from normality at the 0.05 significance level. A paired-samples t-test was subsequently performed to compare the mean pretest and post test scores. Statistical significance was set at $\alpha = 0.05$. Effect size was calculated using Cohen's dz to quantify the magnitude of the within-participant change in NCD prevention scores.

The health promotion intervention was implemented through four main components: NCD education, healthy behavior promotion, disease prevention, and peer support. Student cadres acted as peer educators, communicators, motivators, and facilitators to encourage participation and reinforce preventive health behaviors. The activities, roles of student cadres, and expected outcomes of each component are presented in Table 1.

Table 1. Components of the Muhammadiyah Student Cadre-Based Health Promotion Model

Component	Activities	Role of Student Cadres	Expected Outcomes
NCD education	Delivering educational materials on NCDs and their risk factors	Peer education facilitators	Improved understanding of NCDs
Healthy behaviors	Discussing healthy diets, physical activity, sedentary behavior, smoking, and stress management	Communicators and motivators	Increased awareness of healthy behaviors
Prevention	Promoting preventive practices and encouraging health screening	Participation facilitators	Improved engagement in preventive practices
Peer support	Providing feedback and reinforcing healthy behaviors	Peer supporters	More consistent adoption of healthy behaviors

RESULT AND DISCUSSION

Table 2. Distribution of Respondents' Characteristics (n = 30)

Characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	8	26.7
	Female	22	73.3
	Total	30	100.0
Age (years)	19	9	30.0
	20	12	40.0
	21	6	20.0
	22	3	10.0
	Total	30	100.0
Current semester	Semester 2	10	33.3
	Semester 4	14	46.7
	Semester 6	6	20.0

The study included 30 students. Most respondents were female (73.3%), while males accounted for 26.7%. Regarding age, the largest proportion of respondents was 20 years old (40.0%), followed by those aged 19 years (30.0%), 21 years (20.0%), and 22 years (10.0%). In terms of academic level, nearly half of the respondents were in semester 4 (46.7%), followed by semester 2 (33.3%) and semester 6 (20.0%).

Table 3. Descriptive Statistics of NCD Prevention Scores Before and After the Intervention

Measurement	n	Mean	Median	SD	Min	Max
Pretest	30	6.70	7.00	1.119	5	9
Posttest	30	8.37	9.00	1.066	7	10

The descriptive analysis showed an increase in the mean NCD prevention score from 6.70 (SD = 1.119) before the intervention to 8.37 (SD = 1.066) after the intervention. The median score also increased from 7.00 to 9.00. The minimum score rose from 5 to 7, while the maximum score increased from 9 to 10. Overall, these findings indicate an improvement in NCD prevention scores following the implementation of the health promotion model based on Muhammadiyah student cadres.

Table 4. Normality Test of Pretest–Posttest Difference Scores

Variable	Shapiro–Wilk W	p-value	Decision
Posttest–pretest difference	0.935	0.066	Normally distributed

The Shapiro–Wilk test was performed to assess the normality of the difference scores between the posttest and pretest measurements. The results showed a Shapiro–Wilk statistic of 0.935 with a p-value of 0.066. Since the p-value was greater than 0.05, the difference scores did not

significantly deviate from a normal distribution. Therefore, the normality assumption was considered satisfied, supporting the use of a paired-samples t-test for the subsequent analysis.

Table 5. Paired-Samples t-Test Results for NCD Prevention Scores

Variabel	Mean Pre	Mean Post	Δ Mean	t	df	p-value	95% CI Δ
NCD prevention score	6,70	8,37	1,67	6,774	29	<0,001	1,163–2,170

The paired-samples *t*-test yielded $t(29) = 6.774$, with $p < 0.001$. The mean difference of 1.67 points fell within the 95% confidence interval (CI) of 1.163–2.170. Since the *p*-value was below 0.05, the null hypothesis was rejected, indicating a statistically significant difference in NCD prevention scores before and after the intervention. The effect size, measured using Cohen's $dz = 1.237$, also indicated a large effect. The students' NCD prevention scores increased following the implementation of the Muhammadiyah student cadre-based health promotion model, with the mean score rising from 6.70 to 8.37, representing an increase of 1.67 points. The paired-samples *t*-test confirmed that this difference was statistically significant ($t(29) = 6.774$, $p < 0.001$). The magnitude of the effect was substantial, as indicated by Cohen's dz of 1.237. This finding suggests that the intervention was associated with a considerable improvement in NCD prevention scores among the participating students.

Although the statistical analysis demonstrated a significant difference ($p < 0.001$), the effect size of Cohen's $dz = 1.237$ falls within the very large effect category. This indicates that the observed increase of 1.67 points, equivalent to 16.7% of the maximum score on a 0–10 scale, represents a substantial change that exceeds the conventional threshold for a large effect (Lakens, 2013). A recent study by Özaydın and Akın (2024) reported that preventive interventions among university students with large effect sizes (Cohen's $dz > 0.80$) were associated with clinically measurable reductions in obesity risk factors at a six-month follow-up. This finding provides additional context for considering the potential health relevance of substantial improvements in prevention-related scores. However, improvements in questionnaire scores should not automatically be interpreted as evidence of actual clinical benefits.

Furthermore, the concept of the minimal clinically important difference (MCID), defined as the smallest change considered meaningful and beneficial to participants, suggests that changes of 1.0–2.0 points in health behavior scores on a 0–10 scale are often associated with improved adherence to healthy lifestyle recommendations (Tursilowati et al., 2024). Accordingly, the 1.67-point increase observed in this study falls within this proposed range of potentially meaningful change. Nevertheless, this interpretation should be approached cautiously, particularly in light of the intention–behavior gap, which refers to the discrepancy between individuals' intentions and their actual behaviors. The instrument used in this study measured constructs

related to knowledge, attitudes, and intentions rather than objective clinical parameters such as blood pressure or body mass index. Therefore, further studies involving long-term follow-up and objective health indicators are needed to determine whether the observed improvement in scores translates into sustained behavioral changes and measurable health benefits.

These findings are consistent with the fundamental principles of health promotion, which emphasize empowering individuals and communities to manage the determinants of their own health rather than merely providing information. This process involves strengthening individuals' ability to make informed health decisions while fostering supportive environments that facilitate healthy behaviors. Because many NCD risk factors, including unhealthy dietary habits, physical inactivity, inadequate early detection, and tobacco use, are modifiable, this approach is particularly relevant to NCD prevention (Nurmala, 2023).

The improvement in NCD prevention scores also supports previous findings suggesting that strengthening the capacity of health cadres can contribute positively to NCD prevention programs. Tursilowati et al. (2024), for example, reported that mentoring Posbindu cadres improved their knowledge and skills, while Mustajab et al. (2024) emphasized the role of training in strengthening cadre competencies. Both studies highlight the importance of structured preparation in enabling cadres to perform their roles effectively in health education and early disease detection. In the present study, student cadres served as facilitators of health information and peer engagement, potentially helping students understand and respond to NCD prevention messages more effectively.

University students have particular advantages as health cadres because their close peer networks can reduce the social distance between those delivering and receiving health messages. They also understand the academic environment and everyday experiences of their peers, allowing health education materials to be adapted to the target population's actual needs. This is particularly important because university students may be exposed to NCD risk factors such as insufficient physical activity, sedentary behavior, unhealthy dietary habits, and other lifestyle-related risks that can develop during their years of study (Wijaya et al., 2024).

Implementing this model at the Faculty of Health Sciences also has strategic value because students in this setting have a foundational understanding of health that may help prepare them to promote a healthy lifestyle among their peers. Nurdhin (2024), in a study of Posbindu PTM at the Faculty of Public Health, Universitas Diponegoro, similarly demonstrated that the university environment offers a promising setting for NCD prevention interventions. However, successful implementation depends on adequate resources, facilities, organizational structures, and program dissemination. A student cadre-based model may help address some of these challenges by establishing peer educators who communicate directly with the target population and encourage participation in preventive activities.

The findings are also consistent with Kumalasari et al. (2023), who identified early detection and health education as essential components of

promotive and preventive approaches to NCD control. Although university students may not yet exhibit a high clinical risk of NCDs, they are at a critical stage in the development of long-term lifestyle habits. Promoting prevention during early adulthood may therefore help shift the focus from treatment alone toward the early identification and management of modifiable risk factors. However, the effectiveness of such an approach depends not only on students' awareness but also on their ability to translate preventive intentions into consistent daily practices.

Despite the substantial effect size observed in this study, the findings should be interpreted with caution. The *one-group pretest–posttest* design did not include a control group; therefore, the observed increase in scores cannot be attributed exclusively to the health promotion model. Other factors may have contributed to the improvement, including familiarity with the questionnaire through repeated administration, exposure to health information from other sources, or changes in circumstances during the study period. Accordingly, the findings support the conclusion that NCD prevention scores improved following the intervention among the participating students, but they do not establish definitive causal evidence that the model alone produced the observed change.

The relatively small sample of 30 students also limits the generalizability of the findings. Although the results are promising for the Faculty of Health Sciences, Universitas Muhammadiyah Mahakarya Aceh, they cannot be directly generalized to all Muhammadiyah and 'Aisyiyah Higher Education Institutions (PTMA). Future research should involve larger samples, include a control or comparison group, and incorporate longer follow-up periods. The assessment of behavioral changes would also be strengthened by objective indicators, such as body mass index, blood pressure, waist circumference, dietary patterns, smoking status, and physical activity levels. These measures would help determine whether improvements in prevention scores are accompanied by sustained behavioral changes and measurable health outcomes. Within the broader Muhammadiyah movement, this model has the potential to be developed further as part of a campus-based health promotion strategy. Student cadres can serve not only as channels for disseminating health information but also as facilitators of health awareness, social responsibility, and peer empowerment. Program sustainability could be strengthened through collaboration with campus health services, Al-Islam and Kemuhammadiyahan activities, student organizations, and healthy campus initiatives. The model may also be adapted for implementation in other faculties or PTMA institutions, taking into account local resources, institutional arrangements, and student characteristics.

From a practical perspective, these findings highlight the need for a more structured student cadre development system. Key elements include transparent recruitment, continuous training, standardized health promotion modules, educational materials, faculty supervision, activity documentation, and competency assessment. Sustainability should be considered from the planning stage because student cadre programs may lose momentum when

members graduate if clear succession and regeneration mechanisms are not established. Institutionalizing program governance within the university, rather than relying solely on individual cadre initiatives, may help maintain continuity and support the long-term integration of student-led health promotion into campus health programs.

CONCLUSION

The findings suggest that a student cadre-based health promotion approach has the potential to support non-communicable disease prevention in higher education settings. Involving students as health promotion agents may strengthen healthy campus initiatives through a participatory approach that is closely aligned with the needs of the target population. However, the findings should be interpreted cautiously because the study did not include a control group and involved a relatively small sample. Future studies should employ stronger research designs, including controlled experimental studies, and recruit larger, more diverse samples to assess the consistency of the findings, strengthen external validity, and improve the generalization of the results to broader university student populations.

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REFERENCES

A'la Al, A., Dewi, E. A., Azhezinova, F., & Farid, M. M. (2026). Hidup sehat dalam perspektif Islam: Integrasi nilai spiritual dalam pendekatan kesehatan masyarakat. Sujud: Jurnal Agama, Sosial dan Budaya, 2(2), 1365–1371. https://doi.org/10.63822/8d69rz67.

Aini, F. H. Q., Lukman, M., & Juniarti, N. (2024). Pemberdayaan kader dalam deteksi dini penyakit tidak menular (PTM) sebagai optimalisasi Posbindu di Kelurahan Kota Wetan, Kabupaten Garut. SENTRI: Jurnal Riset Ilmiah, 3(9), 4394–4403.

Kemenkes RI. (2023). Survei Kesehatan Indonesia (SKI) 2023: Hasil utama. Badan Kebijakan Pembangunan Kesehatan.

Kumalasari, I., dkk. (2023). Edukasi dan deteksi dini sebagai upaya promotif dan preventif dalam pengendalian penyakit tidak menular. Pelita Masyarakat, 5(1), 52–61. https://doi.org/10.31289/pelitamasyarakat.v5i1.10387.

Kurniasih, E., & Suryadi, I. (2023). Peer education dalam promosi kesehatan reproduksi remaja. Health Promotion Journal of Indonesia, 8(4), 299–307.

Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for t-tests and ANOVAs. Frontiers in Psychology, 4, 863.

Mahmudah, U., & Tahir, M. (2024). Pemberdayaan kader remaja melalui edukasi gizi untuk mencegah stunting. Journal of Health Empowerment, 7(3), 182–190.

Malinda, R. (2024). Implementasi model PRECEDE-PROCEED dalam promosi kesehatan perilaku hidup bersih sehat (PHBS). PubHealth Jurnal Kesehatan Masyarakat, 2(4). https://doi.org/10.56211/pubhealth.v2i4.526.

Mustajab, A. A., dkk. (2024). Pelatihan meningkatkan pengetahuan dan keterampilan kader Posbindu PTM. Jurnal Kreativitas Pengabdian Kepada Masyarakat, 7(10), 4616–4625.

Nurdhin, L. A. (2024). Analisis implementasi Posbindu PTM dalam program kampus sehat di Fakultas Kesehatan Masyarakat Universitas Diponegoro. Jurnal Riset Kesehatan Masyarakat, 4(4). https://doi.org/10.14710/jrkm.2024.25602.

Nurlaela, E., & Rasmaniar, R. (2023). Balanced nutrition training for adolescent girls as peer educators on improving behavior among senior high school students for stunting prevention. Jurnal Kesehatan Manarang, 9(2), 120–128.

Nurmala, I. (2023). Promosi kesehatan. Airlangga University Press.

Özaydın, T., & Akın, B. (2024). The effect of preventive nursing interventions on reduction of obesity risk in university students: A randomized controlled trial. Journal of Pediatric Nursing, in press.

Suryaningsih, & Rodiyatun. (2026). Transformasi Kapasitas Kader: Pendampingan Berbasis Komunitas untuk Deteksi Penyakit Tidak Menular. APMa Jurnal Pengabdian Masyarakat, 6(2), 123–132. https://doi.org/10.47575/apma.v6i2.852.

Rosanti, N. D., dkk. (2025). Peer education: Strategi efektif penguatan manajemen kesehatan remaja dalam pencegahan stunting di Politeknik Negeri Madura. Jurnal Kesehatan Masyarakat Mulawarman, 7(2), 60–65.

Tursilowati, S., dkk. (2024). Pendampingan kader Posbindu Penyakit Tidak Menular (PTM) efektif meningkatkan pengetahuan dan keterampilan kader. LINK, 20(2), 92–100. https://doi.org/10.31983/link.v20i2.12303.

Wijaya, N., dkk. (2024). Faktor-faktor risiko penyakit tidak menular pada mahasiswa Program Studi Pendidikan Dokter Gigi Universitas Sam Ratulangi. PREPOTIF: Jurnal Kesehatan Masyarakat, 8(3), 5346–5351. https://doi.org/10.31004/prepotif.v8i3.36285.

WHO. (2025). Noncommunicable diseases. World Health Organization.