



Article Title

The Effect of CERDIK-Based Leaflet Health Education on the Knowledge Level of Hypertensive Patients in a Primary Health Center

Author(s)

A. Ulfiana Fitri*

Universitas Negeri Makassar, Indonesia // ulfiana.fitri@unm.ac.id

*Corresponding Author

Nabila Gita Salsabila

Universitas Negeri Makassar, Indonesia / gitasalsabilanabila@gmail.com

Irwandi Rachman

Universitas Negeri Makassar, Indonesia / irwandi.rachman@unm.ac.id

How to cite:

Fitri, A. U., Salsabila, N. G., & Rachman, I. (2026). The Effect of CERDIK-Based Leaflet Health Education on the Knowledge Level of Hypertensive Patients in a Primary Health Center. *SiGn Journal of Public Health*, 5(1), 1-13. <https://doi.org/10.37276/sjph.v5i1.721>



This work is licensed under a [CC BY-4.0 License](https://creativecommons.org/licenses/by/4.0/)

ABSTRACT

Hypertension is a growing global health issue, triggered by poor self-management and patient non-adherence to treatment due to a knowledge deficit. At the primary care level, such as Tamamaung Public Health Center, high morbidity rates indicate the urgency for targeted health promotion strategies. Although educational approaches are frequently implemented, the integration of the national CERDIK message into specific print media for outpatients remains highly limited. This study aimed to analyze the effect of CERDIK-based leaflet education on the knowledge level of hypertensive patients at Tamamaung Public Health Center. A pre-experimental, one-group pretest-posttest design without a control group was employed, involving 30 respondents selected through an accidental sampling technique. Data collection was conducted in three stages (pretest, posttest 1, and posttest 2) using a structured questionnaire, and the data were analyzed using the nonparametric Wilcoxon Signed Ranks Test. The results demonstrated that the educational intervention was highly effective in significantly increasing knowledge scores at posttest 1 ($p < 0.001$; mean difference=30.83). Although the long-term evaluation revealed a significant decrease in information retention ($p = 0.003$; mean difference=7.83), the final achievement at posttest 2 remained significantly higher ($p < 0.001$; mean difference=23.00) than in the baseline condition. In conclusion, the educational intervention utilizing the printed CERDIK leaflet had a highly positive effect on the patients' cognitive understanding. These findings suggest the need for message reiteration and continuous monitoring at the community level to mitigate memory decay and facilitate more effective patient lifestyle modifications.

Keywords: CERDIK; Education; Hypertension; Knowledge; Leaflet.

INTRODUCTION

According to [WHO \(2025\)](#), the global number of adults aged 30 to 79 living with hypertension reached approximately 1.4 billion by 2024, with over two-thirds of cases occurring in low- and middle-income countries. This non-communicable disease often develops asymptotically. However, the condition has a fatal impact as one of the leading causes of global mortality. This situation is exacerbated by epidemiological facts indicating that around 44% of patients are unaware of their condition, only 44% receive diagnosis and treatment, and a mere 23% can control their blood pressure. These conditions have compelled those who aim to achieve a 33% reduction in hypertension prevalence by 2030 through strengthening primary healthcare services and improving public understanding of disease prevention ([Wolde et al., 2022](#); [Pardoel et al., 2023](#)).

This global burden aligns with Indonesia's national health situation, which shows a consistently rising prevalence. Makassar City is recorded as the area with the highest number of hypertension cases at the provincial level, reaching 290,247 cases ([Pujiningrum et al., 2024](#)). Based on 2024 data from the Makassar City Health Office, Tamamaung Public Health Center (*Puskesmas Tamamaung*) is among the top eight healthcare facilities with the highest case management burden, serving 10,336 patients. This high morbidity rate indicates that high blood pressure remains a public health issue requiring serious attention. [Susanti et al. \(2022\)](#) explicitly asserted

that patient non-adherence to treatment is heavily influenced by the level of basic awareness regarding the risks of long-term disease complications.

The success of blood pressure-lowering therapy relies heavily on patient literacy regarding lifestyle modification guidelines. Adequate medical knowledge at the individual level serves as the primary foundation for establishing medication adherence behavior. Clinical understanding deficits trigger recurrent relapse rates among high-risk population groups (Huma et al., 2024). Therefore, enhancing patients' cognitive aspects is a priority target for healthcare workers in primary facilities to support the effectiveness of clinical treatment and patients' quality of life (Sartika & Fauziah, 2024; Islam et al., 2025).

Based on previous literature, health promotion through a structured education system is the most effective preventive measure to improve public knowledge (Pengsin & Meyasa, 2025; Susanti & Istiningsih, 2025). A core program initiated by the Ministry of Health of the Republic of Indonesia (MoH RI) is the *CERDIK* behavior, a national campaign for non-communicable disease prevention that stands for regular health check-ups (*Cek kesehatan berkala*), eliminating smoking (*Enyahkan asap rokok*), regular physical activity (*Rajin aktivitas fisik*), a healthy and balanced diet (*Diet sehat dengan gizi seimbang*), adequate rest (*Istirahat cukup*), and stress management (*Kelola stres*). Previous research has demonstrated that delivering health education requires alternative instructional media, such as booklets or electronic devices, to simplify complex medical information (Masnah & Daryono, 2022; Maulianti & Herdhianta, 2022). The appropriate selection of media is confirmed to have a positive impact on patient awareness, ensuring that the information is well-received (Hasjuni & Hamdan, 2024).

Furthermore, a review of prior research indicates that, amid the development of digital technology, the use of folded printed sheets or leaflets retains an empirical advantage for presenting information concisely, clearly, and comprehensibly, allowing repeated reading by elderly patients. Explicitly, research conducted by Nurfadhila et al. (2024) and Wijaya and Yuswantina (2024) demonstrated that education delivered via Leaflet can significantly improve patients' basic understanding of their disease. However, literature reviews also reveal a scientific gap, wherein previous studies have not specifically integrated the national health guidelines in the form of the *CERDIK* framework into physical leaflet instruments for outpatient services. This condition underscores the urgency of testing the effectiveness of specialized print media that integrate prevention content.

This gap in implementing specific educational programs evidently occurs within the working area of Tamamaung PHC. Amidst the high burden of managing tens of thousands of hypertension cases, health promotion strategies targeting patient cognition during medical visits have not been comprehensively managed.

The implementation of printed instruments based on the *CERDIK* healthy behavior framework has not been optimally and evenly applied to patients. Scientific testing at this locus is urgently needed to precisely assess the extent to which leaflet media can mitigate patients' cognitive deficits.

This study aims to analyze the effect of *CERDIK*-based leaflet education on the knowledge level of hypertensive patients at Tamamaung PHC. Specifically, the test is conducted by identifying respondents' knowledge levels before the intervention, measuring their knowledge levels after media exposure, and testing the significance of the difference between the two measurement points. The results of this study are expected to provide theoretical benefits as literature for developing health promotion models in non-communicable disease cases. In practice, these research outputs can serve as operational evaluation materials for primary healthcare facilities to improve patient adherence by providing appropriate instructional media.

METHOD

This study employed a pre-experimental, one-group pretest-posttest design without a control group ([Notoatmodjo, 2018](#)). The selection of this design was based on ethical considerations, ensuring that all patients in the primary healthcare facility had an equal right to receive standardized education. The research was conducted in the working area of Tamamaung PHC, Makassar City. This location was selected due to the high burden of hypertension cases in the area, which required direct and targeted health interventions.

Sampling was conducted using an accidental sampling method, yielding 30 respondents. To maintain the accuracy of the results and reduce bias, strict selection criteria were established. The inclusion criteria comprised active hypertensive patients ranging from adulthood to old age who were able to communicate well and were willing to participate in all stages of the study. Conversely, the exclusion criteria included patients with severe disease complications or cognitive decline.

Primary data collection was conducted using a structured questionnaire to assess patients' knowledge of disease management ([Sugiyono, 2019](#)). This questionnaire was specifically designed based on the six indicators of the *CERDIK* behavior presented in the leaflet media. Prior to its administration to the respondents, the questionnaire underwent validity and reliability testing, ensuring its accuracy as a measurement tool. The questionnaire assessment results were subsequently categorized into good, fair, and poor knowledge levels.

In addition to primary data, this study collected secondary data from medical records and the local public health center's demographic profile. These secondary data were used to verify the accuracy of patients' diagnoses before inclusion in the

sample. Furthermore, medical record notes were used to map the respondents' characteristics, including gender, age, educational level, and employment status, serving as supplementary material for the analysis in the discussion section.

The primary data collection process was conducted sequentially in three stages. The first stage involved administering an initial questionnaire (pretest) to determine respondents' baseline knowledge levels prior to receiving the information. The second stage was the provision of the intervention, comprising health education and the distribution of the *CERDIK* leaflet, which was immediately followed by the completion of a second questionnaire (posttest 1) to assess the immediate increase in knowledge. The third stage involved administering a follow-up questionnaire (posttest 2) after a specified time interval to evaluate respondents' long-term retention of the provided material.

The collected data were then processed using statistical software (Dahlan, 2020). Univariate analysis was used to describe the percentages of demographic characteristics and the respondents' knowledge levels at each stage. For the bivariate analysis, the data were initially tested for normality using the Shapiro-Wilk test, considering the sample size was less than 50 individuals. Because the normality test results indicated that the data were not normally distributed, hypothesis testing for the differences in knowledge scores between stages was conducted using the nonparametric Wilcoxon Signed Ranks Test with a significance threshold of $p < 0.05$.

RESULTS

This study obtained primary data from 30 hypertensive patients at Tamamaung PHC. The measurement of respondents' knowledge levels was conducted in three stages. These consisted of a pre-intervention measurement (pretest), a measurement immediately after the intervention (posttest 1), and a follow-up measurement (posttest 2). The results from all measurement stages were tabulated and presented sequentially, starting with demographic characteristics, then the distribution of knowledge categories, and concluding with the results of the statistical significance tests.

The demographic characteristics of the respondents included gender, age, educational level, and employment status. The detailed frequency distribution of these characteristics is outlined in Table 1.

Table 1. Frequency Distribution of Respondent Characteristics at Tamamaung Public Health Center

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	8	26.70
Female	22	73.30

Characteristics	Frequency (n)	Percentage (%)
Age		
40 – 50 years	1	3.30
51 – 60 years	6	20.00
> 60 years	23	76.70
Educational Level		
Primary School	1	3.30
Junior High School	4	13.30
Senior High School	15	50.00
Higher Education	10	33.30
Employment Status		
Employee	2	6.70
Retired	5	16.70
Farmer	2	6.70
Unemployed/Housewife	19	63.30
Military/Police	2	6.70

Source: Primary Data, 2025.

As shown in Table 1, the majority of the respondents were female (n = 22; 73.30%). Regarding age, most respondents were in the > 60 years age group (n = 23; 76.70%). Regarding educational attainment, half of the respondents were senior high school graduates or equivalent (n = 15; 50.00%). Based on employment status, the largest group consisted of unemployed respondents or housewives (n = 19; 63.30%).

Data on the respondents' knowledge levels regarding *CERDIK*-based hypertension management were measured periodically. The shift in the number of respondents across the good, fair, and poor knowledge categories from the pretest to the second posttest stage is presented in Table 2.

Table 2. Distribution of Respondents' Knowledge Levels Before and After Education

Knowledge Level	Pretest		Posttest 1		Posttest 2	
	n	%	n	%	n	%
Good	4	13.30	24	80.00	20	66.70
Fair	11	36.70	6	20.00	10	33.30
Poor	15	50.00	0	0.00	0	0.00
Total	30	100.00	30	100.00	30	0.00

Source: Primary Data, 2025.

Table 2 illustrates the shift in respondents' knowledge levels across the three measurement stages. At the pretest, half of the respondents had a poor knowledge level (n = 15; 50.00%). Following the initial education delivery at posttest 1, no

respondents remained in the poor category, and the majority shifted to the good knowledge category ($n = 24$; 80.00%). During posttest 2, 20 respondents (66.70%) had a good knowledge level, while the remainder fell into the fair category ($n = 10$; 33.30%).

Statistical analysis was used to examine mean scores and the significance of changes in knowledge scores across measurement stages. The results of the difference tests using the Wilcoxon Signed Ranks Test method are presented in Table 3.

Table 3. Results of the Significance Test for Differences in Respondents' Knowledge between Measurement Stages

Measurement Variables	Mean	Mean Difference	p-value
Pretest vs Posttest 1			
Pretest	52.17	30.83	0.000
Posttest 1	83		
Pretest vs Posttest 2			
Pretest	52.17	23	0.000
Posttest 2	75.17		
Posttest 1 vs Posttest 2			
Posttest 1	83	7.83	0.003
Posttest 2	75.17		

Source: Primary Data, 2025.

Based on Table 3, the comparison between the pretest and posttest 1 demonstrated an increase in the mean knowledge score by 30.83. This increase was supported by a *p-value* of = 0.001, which is well below the 0.05 threshold. The comparison between the pretest and posttest 2 also recorded a significance value of $p < 0.001$, with a mean score increase of 23.00. Conversely, the comparison between posttest 1 and posttest 2 revealed a decrease in the mean score difference of 7.83, with a significance value of $p = 0.003$.

DISCUSSION

The initial measurement (pretest) results showed that half of the total respondents (50.00%) were in the poor knowledge category. This comprehension deficit was closely linked to the research subjects' profile, which was dominated by the elderly group (76.70%) and respondents with unemployed or housewife status (63.30%). Gradual physical decline with advancing age, combined with limited independent access to medical information in the home environment, served as the primary cause of the patients' low understanding prior to the intervention. These demographic and clinical findings align with various empirical literatures affirming that old age and informal employment status are major risk factors for patient non-

adherence due to minimal exposure to preventive information ([Ayu et al., 2022](#); [Susanti et al., 2022](#); [Wolde et al., 2022](#); [Pardoel et al., 2023](#); [Huma et al., 2024](#); [Islam et al., 2025](#); [Putri et al., 2025](#)).

This initial knowledge deficit was resolved to a measurable extent following the first stage of the educational intervention. The comparative test results between the pretest and posttest 1 demonstrated a 30.83-point increase in the mean score, with a significance value of $p = 0.000$. Descriptively, this achievement was marked by the absence of respondents in the poor category (0.00%) and an absolute dominance in the good knowledge category (80.00%). This immediate increase proved that structured information exposure could directly stimulate patients' understanding. This statistical fact corroborates previous research findings that health programs in primary care facilities have a high success rate in improving patient comprehension ([Bangun & Silalahi, 2022](#); [Marbun & Hutapea, 2022](#); [Ritonga et al., 2024](#); [Fauziah, 2025](#)).

The achievement of the score in this first measurement stage was strongly supported by the educational instrument used, namely the *CERDIK*-based leaflet. This printed media offers technical advantages, including presenting information in a concise visual format, a text structure that does not overburden patients' reading capacity, and the ability to be taken home for repeated reading. Furthermore, simplifying hypertension prevention messages into the *CERDIK* acronym facilitated information absorption, making it easier for the lay public to remember. This technical argument is supported by the findings of [Nurfadhila et al. \(2024\)](#) and [Wijaya and Yuswantina \(2024\)](#), which confirm that integrating unified messages into physical print media is highly effective in tangibly stimulating patients' cognitive reception.

The effectiveness of printed leaflets was also demonstrated to be strongly comparable to other educational approaches. For comparison, [Masnah and Daryono \(2022\)](#) and [Tahan et al. \(2024\)](#) highlighted the success of improving adherence through family accompaniment methods and denser booklets, whereas [Maulianti and Herdhianta \(2022\)](#) demonstrated the feasibility of using e-leaflets among adolescent groups. Despite the rapid development of digital technology, print media maintained their position as the most practical, efficient, and appropriate means to meet the needs of outpatients at public health centers who require fast, direct information.

Although the first-stage evaluation showed satisfactory results, the follow-up measurement at posttest 2 revealed an information decay phenomenon. The difference test results between posttest 1 and posttest 2 showed a statistically significant decrease in the mean difference of 7.83 ($p = 0.003$). This shift was also reflected in the percentage of the good knowledge category, which shrank to 66.70%. This decline is a natural phenomenon of human memory, in which the absence of repeated exposure to

information causes patients to lose some of the details they previously understood. In accordance with the postulate of [Paczkowska et al. \(2021\)](#), transitioning from short-term knowledge to long-term memory always requires continuous repetition and reinforcement.

The phenomenon of reduced memory capacity at the follow-up measurement stage showed a strong physical correlation with respondents' age characteristics. The majority of research subjects in the elderly age group have natural limitations in storing complex new information for an extended period. These physical limitations make medical information conveyed through leaflets susceptible to fading over time unless accompanied by routine monitoring. Based on the analysis by [Subari et al. \(2024\)](#), constraints in the older patient group represent a major complicating factor in maintaining memory stability, thus demanding continuous service innovations.

Nevertheless, despite the memory decline between the final two measurement phases, the combined evaluation from the pretest to posttest 2 still demonstrated a statistically significant final result. There was a mean difference of 23.00 with a significance value of $p = 0.000$, indicating that the leaflet intervention still yielded significant memory retention for patients overall. This retained comprehension must be promptly translated into concrete actions within the community setting. As recommended by [Trihartuty et al. \(2022\)](#), established knowledge must ultimately lead to the implementation of lifestyle changes, such as engaging in low-intensity physical activity, to stabilize patients' blood pressure.

Despite the significant findings, this study identifies methodological limitations that affected the research's accuracy. The use of a pre-experimental design without a control group meant the researchers could not definitively isolate external factors that might have concurrently influenced the patients' knowledge levels during the measurement intervals. Furthermore, selecting subjects through accidental sampling limited the generalizability of these findings to a broader population. Therefore, it is highly recommended that future studies employ a true experimental design with a control group to isolate the causal effect of leaflets on improving adherence among hypertensive patients.

CONCLUSIONS AND SUGGESTIONS

This study demonstrated that education using the *CERDIK* leaflet was highly effective in improving hypertensive patients' knowledge at Tamamaung PHC. At baseline, the majority of patients, particularly the elderly and those without formal employment, possessed a poor understanding of how to manage their disease. However, the provision of concise, visual information in this leaflet was shown to address this deficit. This condition was evidenced by a significant surge in scores

immediately after education delivery, with the majority of patients transitioning from poor to good comprehension levels.

Although this leaflet proved highly effective initially, follow-up monitoring revealed that elderly patients tended to forget portions of the information over time. A noticeable decline in memory occurred during the interval following the initial provision of material. Nevertheless, compared with baseline conditions prior to education, the patients' knowledge level at the final evaluation remained significantly higher. This fact confirms that the *CERDIK* leaflet remains an appropriate health promotion tool suitable for routine use in primary healthcare centers.

Based on these findings, it is highly recommended that primary healthcare centers integrate the *CERDIK* leaflet as a mandatory supplementary medium for outpatients. However, delivering this education is insufficient if it relies solely on a single initial encounter. Healthcare workers must routinely reiterate these health messages and directly monitor patient progress. These continuous reminder efforts are crucial to mitigate information decay in the long term. This sustainable approach is expected to help patients not only acquire knowledge but also tangibly transform their lifestyle habits toward better health.

For future research, the limitations of this study offer essential lessons. Future researchers are advised to employ more robust methodologies, such as incorporating a control group, to assess the causal effect of education more accurately. Furthermore, involving a larger sample size with a random sampling technique is highly necessary to enhance the generalizability of the results. Future studies should also not be limited to measuring knowledge levels but should directly monitor tangible impacts, such as daily medication adherence rates and records of patients' blood pressure reductions.

REFERENCES

- Ayu, D., Sinaga, A. F., Syahlan, N., Siregar, S. M., Sofi, S., Zega, R. S., Rusdi, A., Annisa, A., & Dila, T. A. (2022). Faktor-Faktor yang Menyebabkan Hipertensi di Kelurahan Medan Tenggara. *Jurnal Kesehatan Masyarakat*, 10(2), 136-147. <https://doi.org/10.14710/jkm.v10i2.32252>
- Bangun, S., & Silalahi, E. L. (2022). The Effectiveness of Health Education on Increasing Patient Knowledge about Hypertension in Kutalimbaru Village, Deli Serdang Regency. *Journal La Medihealtico*, 3(6), 535-540. <https://doi.org/10.37899/journallamedihealtico.v3i6.763>
- Dahlan, M. S. (2020). *Statistik untuk Kedokteran dan Kesehatan: Deskriptif, Bivariat, dan Multivariat, Dilengkapi Aplikasi Menggunakan SPSS*. Epidemiologi Indonesia.

- Fauziah, N. (2025). The Service Capacity of Posyandu Cadres in Stunting Mitigation Programs: A Qualitative Literature Review. *SIGn Journal of Public Health*, 4(2), 129-148. <https://doi.org/10.37276/sjph.v4i2.724>
- Hasjuni, W., & Hamdan, D. F. (2024). The Effect of Video-Based Health Education on Improving Students' Knowledge of Helminthiasis Prevention. *SIGn Journal of Public Health*, 3(2), 45-56. <https://doi.org/10.37276/sjph.v3i2.658>
- Huma, S., Bijrani, S. A., Wassan, S. M., Ahmed, J., Puri, P., & Puri, D. (2024). Exploring Hypertension Knowledge and Identifying Determinants of Inadequate Knowledge among Non-Hypertensive Adult Pakistanis: Inadequate Knowledge among Non-Hypertensive Adult. *Pakistan Journal of Health Sciences*, 5(8), 103-109. <https://doi.org/10.54393/pjhs.v5i08.1926>
- Islam, M. M., Hossain, M. S., Rahman, M. M., Nakamura, R., & Sato, M. (2025). Healthy Lifestyle Knowledge and Age at Hypertension Diagnosis: A Primary Health Care Based Survey in Bangladesh. *Journal of Human Hypertension*, 39, 448-456. <https://doi.org/10.1038/s41371-025-01019-3>
- Marbun, W. S., & Hutapea, L. M. N. (2022). Penyuluhan Kesehatan pada Penderita Hipertensi Dewasa Terhadap Tingkat Pengetahuan Hipertensi. *Jurnal Keperawatan Silampari*, 6(1), 89-99. <https://doi.org/10.31539/jks.v6i1.4170>
- Masnah, C., & Daryono, D. (2022). Efektivitas Media Edukasi Booklet dalam Meningkatkan Dukungan Keluarga dan Kepatuhan Pengobatan Penderita Hipertensi. *Jurnal Ilmu Kesehatan Masyarakat (The Public Health Science Journal)*, 11(3), 213-222. <https://doi.org/10.33221/jikm.v11i03.1237>
- Maulianti, H. A. N., & Herdhianta, D. (2022). Pengaruh Edukasi Menggunakan Media E-Leaflet Terhadap Pengetahuan dan Sikap Pencegahan Hipertensi pada Remaja. *Jurnal Kesehatan Siliwangi*, 3(1), 12-18. <https://doi.org/10.34011/jks.v3i1.1037>
- Notoatmodjo, S. (2018). *Metodologi Penelitian Kesehatan*. PT. Rineka Cipta.
- Nurfadhila, N., Wahab, M., & Mae, M. (2024). The Influence of Health Education Using Regional Language Leaflets on the Level of Knowledge of Hypertension Sufferers in Lambanan Village, Mamasa Regency. *Jurnal Kesehatan Komunitas*, 10(3), 517-523. <https://doi.org/10.25311/keskom.vol10.iss3.2035>
- Paczkowska, A., Hoffmann, K., Kus, K., Kopciuch, D., Zaprutko, T., Ratajczak, P., Michalak, M., Nowakowska, E., & Bryl, W. (2021). Impact of Patient Knowledge on Hypertension Treatment Adherence and Efficacy: A Single-Centre Study in Poland. *International Journal of Medical Sciences*, 18(3), 852-860. <https://doi.org/10.7150/ijms.48139>
- Pardoel, Z. E., Lensink, R., Postma, M., Win, H. H., Swe, K. H., Stein, C., Febrinasari, R., Hanh, H. M., Koot, J. A. R., Landsman, J. A., & Reijneveld, S. A. (2023). Knowledge on Hypertension in Myanmar: Levels and Groups at Risk. *Open Research Europe*, 2, 1-22. <https://doi.org/10.12688/openreseurope.14415.2>

- Pengsin, N. A. H., & Meyasa, O. (2025). Determinants of Breast Self-Examination Practices Among Female Vocational High School Students. *SIGn Journal of Public Health*, 4(1), 40-54. <https://doi.org/10.37276/sjph.v4i1.679>
- Pujiningrum, A. R. S., Majid, A., Rini, I., Harisa, A., & Yodang, Y. (2024). Demonstrasi Physical Exercise pada Lansia Hipertensi di Wilayah Kerja Puskesmas Tamalanrea Jaya Kota Makassar. *Jurnal Abdimas Kesehatan (JAK)*, 6(3), 560-568. <https://doi.org/10.36565/jak.v6i3.822>
- Putri, L. J., Arisani, G., & Fauziah, N. (2025). Determinants of Basic Immunization Completeness among Infants: An Analysis of Maternal Socio-Demographics, Knowledge, Attitudes, and Practices. *SIGn Journal of Public Health*, 4(1), 55-69. <https://doi.org/10.37276/sjph.v4i1.680>
- Ritonga, E. P., Silaban, N. Y., & Sagala, D. S. P. (2024). Edukasi Tentang Hipertensi Kepada Masyarakat di Kelurahan Payah Pasir Kecamatan Medan Marelán. *Jurnal Ilmiah Pengabdian Kepada Masyarakat*, 3(2), 82-87. <https://doi.org/10.52943/ji-somba.v3i2.1682>
- Sartika, Y. A., & Fauziah, N. (2024). Analysis of Maternal Anxiety Levels in Breastfeeding Practices at Primary Healthcare Facilities during the Pandemic Transition. *SIGn Journal of Public Health*, 3(2), 57-70. <https://doi.org/10.37276/sjph.v3i2.659>
- Subari, S., Sulaiman, S., & Karjono, K. (2024). The Relationship Knowledge and Attitudes of Patients in Preventing Hypertension Recurrence. *Bioscientist: Jurnal Ilmiah Biologi*, 12(2), 1555-1568. <https://doi.org/10.33394/bioscientist.v12i2.12340>
- Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Alfabeta.
- Susanti, S., Bujawati, E., Sadarang, R. A. I., & Ihwana, D. (2022). Hubungan Self Efficacy dengan Manajemen Diri Penderita Hipertensi di Puskesmas Kassi-Kassi Kota Makassar Tahun 2022. *Jurnal Kesmas Jambi*, 6(2), 48-58. <https://doi.org/10.22437/jkmj.v6i2.20540>
- Susanti, S., & Istiningsih, T. (2025). Determinants of Low Utilization of Integrated Health Posts (Posyandu) in Tumbang Samba: The Role of Age, Educational Level, Knowledge, and Motivation. *SIGn Journal of Public Health*, 4(1), 26-39. <https://doi.org/10.37276/sjph.v4i1.678>
- Tahan, T., Nasution, S. Z., & Siregar, F. L. S. (2024). Pengaruh Edukasi Keluarga Terhadap Pengetahuan Keluarga dan Kepatuhan Penderita Hipertensi. *Journal of Telenursing (Joting)*, 6(2), 1797-1804. <https://doi.org/10.31539/joting.v6i2.10513>
- Trihartuty, T., Lestari, P., & Ulfiana, E. (2022). Aerobics Low Impact terhadap Tekanan Darah pada Penderita Hipertensi. *Journal of Telenursing (Joting)*, 4(2), 477-487. <https://doi.org/10.31539/joting.v4i2.2668>
- WHO. (2025, September 25). *Hypertension*. World Health Organization. <https://who.int/news-room/fact-sheets/detail/hypertension>
-

- Wijaya, L. A., & Yuswantina, R. (2024). Pengaruh Pemberian Edukasi Menggunakan Media Leaflet. *Journal of Holistics and Health Sciences*, 6(1), 64-72. <https://doi.org/10.35473/jhhs.v6i1.402>
- Wolde, M., Azale, T., Demissie, G. D., & Addis, B. (2022). Knowledge about Hypertension and Associated Factors among Patients with Hypertension in Public Health Facilities of Gondar City, Northwest Ethiopia: Ordinal Logistic Regression Analysis. *PLoS ONE*, 17(6), 1-10. <https://doi.org/10.1371/journal.pone.0270030>