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RESEARCH ARTICLE

Hypertension knowledge, preventive behaviors, and primary care integration among patients at Medan Johor Community Health Center

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ABSTRACT

Background: Hypertension is a non-communicable disease that can lead to serious complications if not managed properly. Patients' knowledge level is hypothesized to influence their preventive behaviors, particularly within the context of Primary Care Integration (Integrasi Layanan Primer, ILP) implemented at community health centers. This study aimed to determine the relationship between knowledge level and preventive behaviors for hypertension complications among patients in the ILP program at Medan Johor Community Health Center.

Method: A quantitative survey design was used. Data were collected in April–May 2026 using printed questionnaires. The population comprised 7,648 hypertension patients, with a sample of 99 respondents determined using the Slovin formula and purposive sampling. Univariate and bivariate analyses (Chi-square test) were performed.

Results: Most respondents were aged 55–64 years (53.5%), female (69.7%), had senior high school education (59.6%), and were housewives (62.6%). The majority had good knowledge (72.7%) and good preventive behaviors (90.9%). The Chi-square test showed a p-value of 0.669 ($p > 0.05$), indicating no significant relationship between knowledge level and preventive behaviors for hypertension complications in this population.

Conclusion: Although most hypertensive patients had good knowledge and good preventive behaviors, knowledge was not significantly associated with preventive behavior in the context of ILP implementation. Other factors such as family support, motivation, and healthcare access may play more influential roles.

Keywords: hypertension, knowledge, preventive behavior, complication prevention, primary care integration

Introduction

Hypertension is a leading non-communicable disease and a major cause of death and disability worldwide. According to the latest European Society of Cardiology (ESC) guidelines, hypertension is a primary risk factor for cardiovascular disease, stroke, kidney failure, and premature death, remaining a global health challenge.[1] More than one billion people live with hypertension, with most cases occurring in low- and middle-income countries where blood pressure control remains low.[1] Complications from hypertension impose a substantial burden on health systems and patients' quality of life, making prevention and control a priority in primary health care.[1,2]

In Indonesia, hypertension continues to be a major public health problem with high prevalence. Hypertension often presents without symptoms, leading many patients to remain unaware of their condition

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until complications arise. This situation underscores the need to improve public knowledge about hypertension, its risk factors, and complication prevention through sustained health behavior change.[3] Good knowledge about hypertension helps individuals understand the importance of medication adherence, blood pressure control, dietary regulation, physical activity, and regular health check-ups.[4]

Knowledge is one factor that can influence health behavior. However, hypertension preventive behavior is not determined solely by knowledge; it is also affected by motivation, family support, experience, access to health services, and the individual's ability to self-manage the disease.[5] A review by Konlan & Shin[2] showed that successful hypertension control is strongly influenced by self-care management, including medication adherence, blood pressure monitoring, physical activity, and healthy eating. Therefore, improving knowledge must be accompanied by a health service system that supports sustained behavior change.

To strengthen primary health care, the Indonesian government has implemented Primary Care Integration (*Integrasi Layanan Primer*, ILP), which focuses on promotive, preventive, curative, rehabilitative, and palliative services integrated across the life cycle. ILP aims to improve access and quality of primary health care, ensuring that the community receives comprehensive and continuous services. In hypertension control, ILP plays an important role through screening, health education, risk factor monitoring, routine medication, and patient support to prevent complications.[6] In Medan City, hypertension remains a health concern requiring special attention. Data from Medan Johor Community Health Center show that 7,648 hypertensive patients received health services. This indicates that hypertension is still a health problem requiring sustained control efforts through improved public knowledge and health behaviors.

Although various hypertension control programs have been implemented through the ILP approach, information on the relationship between knowledge level and preventive behaviors for hypertension complications within the ILP context is limited. Therefore, this study aimed to determine the relationship between knowledge level and preventive behaviors for hypertension complications in relation to the Primary Care Integration (ILP) program at Medan Johor Community Health Center.

Method

This quantitative study used a survey design to examine the relationship between knowledge level and preventive behaviors for hypertension complications among patients participating in the Primary Care Integration (ILP) program at Medan Johor Community Health Center. The study was conducted at Medan Johor Community Health Center, Medan City, from April to May 2026.

The population comprised all hypertensive patients receiving services at Medan Johor Community Health Center in 2024, totaling 7,648 individuals. The sample size of 99 respondents was calculated using the Slovin formula with a 10% margin of error. Nonprobability purposive sampling was used, selecting respondents based on predefined criteria.

Data were collected using printed questionnaires administered directly to respondents. The instrument consisted of three sections: respondent characteristics, knowledge about hypertension and complication prevention (16 items), and preventive behaviors for hypertension complications (Likert scale items). Knowledge was categorized as good (score 13-16), moderate (9-12), or poor (≤8). Preventive behavior was categorized as good (40-52), moderate (32-39), or poor (≤31). Secondary data were obtained from health service documentation.

Data underwent editing, coding, scoring, entry, tabulation, and cleaning using SPSS. Univariate analysis described frequency distributions and percentages. Bivariate analysis used the Chi-square test with a 95% confidence level ($\alpha = 0.05$) to examine the relationship between knowledge and preventive behavior. Results were presented in frequency tables, percentages, and cross-tabulations.

Results

A total of 99 hypertensive patients participated. The majority were aged 55-64 years (53.5%), female (69.7%), had senior high school education (59.6%), and were housewives (62.6%) (Table 1). Most respondents had good knowledge about hypertension and its complication prevention (72 respondents, 72.7%), while 27 (27.3%) had poor knowledge. Most also demonstrated good preventive behavior (90 respondents, 90.9%), with only 9 (9.1%) showing poor preventive behavior (Table 2).

Table 1. Distribution of respondent characteristics (N=99)

Characteristic	Category	Frequency (n)	Percentage (%)
Age	45-54 years	18	18.2
	55-64 years	53	53.5
	65-74 years	28	28.3
Sex	Male	30	30.3
	Female	69	69.7
Education	Elementary	10	10.1
	Junior high	20	20.2
	Senior high	59	59.6
	College	10	10.1
Occupation	Housewife	62	62.6
	Employed	23	23.2
	Retired	14	14.1

Table 2. Distribution of knowledge and preventive behavior (N=99)

Variable	Category	Frequency (n)	Percentage (%)
Knowledge	Good	72	72.7
	Poor	27	27.3
Preventive behavior	Good	90	90.9
	Poor	9	9.1

Among the 72 respondents with good knowledge, 66 (91.7%) had good preventive behavior and 6 (8.3%) had poor preventive behavior. Among the 27 respondents with poor knowledge, 24 (88.9%) had good preventive behavior and 3 (11.1%) had poor preventive behavior. The Chi-square test yielded a p-value of 0.669 ($p > 0.05$), indicating no significant relationship between knowledge level and preventive behavior for hypertension complications in this population (Table 3).

Table 3. Relationship between knowledge and preventive behavior (N=99)

Knowledge	Preventive Behavior: Good n (%)	Preventive Behavior: Poor n (%)	Total	p-value
Good	66 (91.7)	6 (8.3)	72	0.669
Poor	24 (88.9)	3 (11.1)	27	
Total	90 (90.9)	9 (9.1)	99	

Discussion

Hypertension is a non-communicable disease requiring long-term control to prevent complications such as stroke, coronary heart disease, heart failure, and kidney failure. Knowledge and health behavior are often considered important factors determining the success of complication prevention. This study found that most respondents had good knowledge about hypertension and good preventive behavior. This may be influenced by respondent characteristics dominated by older age groups, who tend to interact more frequently with health services and thus receive more information about hypertension management. Additionally, the implementation of the Primary Care Integration (ILP) program at Medan Johor Community Health Center allows patients to receive health education, routine check-ups, and continuous monitoring, which can improve understanding and awareness of the importance of preventing hypertension complications.

The good knowledge level among respondents can be explained by the theory that knowledge is acquired through learning, experience, education, and exposure to information from the environment. The more frequently a person receives health information, the better their ability to understand their disease. Most respondents had secondary or higher education, making it easier for them to receive and understand health information from health workers. This finding is consistent with Sulastri et al.[4] who reported that most hypertensive patients had good knowledge about hypertension and its complication prevention. Similar results were found by Harjo et al.[7] showing that respondents with good knowledge outnumbered those with low knowledge. These findings indicate that health education programs delivered by health facilities can improve public understanding of hypertension.

The good preventive behavior among most respondents indicates awareness of actions that support blood pressure control. Health behavior is influenced not only by knowledge but also by personal motivation, family support, illness experience, access to health services, and the role of health workers in providing support. Among hypertensive patients who have undergone long-term treatment, experience with disease

risk often becomes a driver of healthy lifestyle behavior. This finding aligns with Harjo et al.[7] and Sulastri et al.[4] who found that most hypertensive patients had good preventive behavior. This suggests that preventive behavior can develop through experience and habituation performed consistently in daily life.

This study found no significant relationship between knowledge level and preventive behavior for hypertension complications ($p = 0.669$). This finding indicates that health behavior is not solely influenced by knowledge but also by other factors such as motivation, family support, individual experience, access to health services, and support from health workers.[2,5] Successful hypertension control is more strongly determined by self-management abilities, including medication adherence, dietary control, physical activity, and independent blood pressure monitoring.[8,9] This result is also supported by Elahi et al.[10] who stated that hypertension management is influenced by multidimensional factors, including socioeconomic conditions, access to health services, treatment adherence, and the available health service system. Therefore, even if a person has good knowledge about hypertension, preventive behavior may not be optimal if not supported by these factors.

Conversely, this finding differs from Sulastri et al.[4] and Harjo et al.[7] who reported a significant relationship between knowledge level and preventive behavior or attitudes. These differences may be due to variations in respondent characteristics, sample size, research instruments, study settings, or health service programs. In this study, the proportion of respondents with good preventive behavior was very high (90.9%), resulting in limited data variation and making statistical relationships difficult to detect. Additionally, routine health education provided through primary care services may have led respondents with different knowledge levels to demonstrate similarly good preventive behaviors.

The implementation of the Primary Care Integration (ILP) program at Medan Johor Community Health Center likely contributed to the high level of preventive behavior among respondents. Through an integrated service approach, patients receive health education, routine monitoring, counseling, and continuous follow-up. This approach aligns with the recommendations of the European Society of Cardiology and the European Society of Hypertension, which emphasize primary care focused on prevention, early detection, and sustainable hypertension management.[1,11]

This study provides valuable insight into the relationship between knowledge and preventive behavior in the context of an integrated primary care program. However, several limitations must be acknowledged. First, the cross-sectional design cannot establish causal relationships between knowledge and preventive behavior. Second, data relied on self-reported questionnaires, which are subject to recall and social desirability bias. Third, the study was conducted at a single community health center with a limited sample size, limiting generalizability to all hypertensive patients in Medan City or other regions. Fourth, only knowledge was examined as a potential correlate of preventive behavior; other factors such as family support, motivation, medication adherence, duration of hypertension, and healthcare access were not analyzed. Future studies should include larger, multi-site samples and explore additional determinants of preventive behavior.

Medan Johor Community Health Center should continue to strengthen health education, counseling, and routine monitoring for hypertensive patients to maintain good preventive behaviors. Given that knowledge alone did not predict behavior, interventions should also target motivation, family involvement, and practical self-management skills. Primary care integration programs should include regular assessment of patient self-care capacity and provide tailored support. Future research should investigate the role of ILP components (e.g., frequency of counseling, home visits, peer support) in shaping preventive behaviors.

Conclusion

This study found that most hypertensive patients at Medan Johor Community Health Center had good knowledge about hypertension and good preventive behaviors for complication prevention. However, no significant relationship was found between knowledge level and preventive behavior ($p = 0.669$). Preventive behavior is influenced by multiple factors beyond knowledge, including family support, motivation, experience, healthcare access, and the role of health workers within the Primary Care Integration (ILP) program. The health center should continue health education and monitoring while also addressing other behavioral determinants.

References

1. McEvoy JW, McCarthy CP, Bruno RM, Brouwers S, Canavan MD, Ceconi C, et al. 2024 ESC Guidelines for the management of elevated blood pressure and hypertension. Eur Heart J. 2024 Oct 7;45(38):3912–4018.

2. Konlan KD, Shin J. Determinants of Self-Care and Home-Based Management of Hypertension: An Integrative Review. Glob Heart. 2023 Mar 20;18(1):16.
3. Anshari Z. Komplikasi hipertensi dalam kaitannya dengan pengetahuan pasien terhadap hipertensi dan upaya pencegahannya. J Penelit Keperawatan Med. 2020 Apr 30;2(2):54–61.
4. Sulastri N, Hidayat W, Lindriani. Hubungan Tingkat Pengetahuan tentang Hipertensi dengan Perilaku Pencegahan Terjadinya Komplikasi Hipertensi. J Keperawatan Florence Nightingale. 2021 Dec 29;4(2):89–93.
5. Hanum S, Puetri NR, Marlinda M, Yasir Y. Hubungan antara pengetahuan, motivasi, dan dukungan keluarga dengan kepatuhan minum obat pada penderita hipertensi di Puskesmas Peukan Bada Kabupaten Aceh Besar. J Kesehat Terpadu (Integrated Heal Journal). 2019 Jun 1;10(1):30–5.
6. Kementerian Kesehatan Republik Indonesia. Keputusan Menteri Kesehatan (KMK) Nomor HK.01.07/MENKES/2015/2023 tentang Petunjuk Teknis Integrasi Layanan Primer. Jakarta: Kementerian Kesehatan Republik Indonesia; 2023.
7. Harjo MS, Setiyawan S, Rizqie NS. Hubungan tingkat pengetahuan tentang hipertensi dengan sikap dalam pencegahan komplikasi hipertensi pada lansia peserta PROLANIS UPT Puskesmas Jenawi Karanganyar. PLACENTUM J Ilm Kesehat dan Apl. 2019 Aug 28;7(2):34.
8. Bilger M, Koong AYL, Phoon IKY, Tan NC, Bahadin J, Bairavi J, et al. Wireless Home Blood Pressure Monitoring System With Automatic Outcome-Based Feedback and Financial Incentives to Improve Blood Pressure in People With Hypertension: Protocol for a Randomized Controlled Trial. JMIR Res Protoc. 2021 Jun 9;10(6):e27496.
9. Stewart SJF, Moon Z, Horne R. Medication nonadherence: health impact, prevalence, correlates and interventions. Psychol Health. 2023 Jun 3;38(6):726–65.
10. Elahi A, Ali AA, Khan AH, Samad Z, Shahab H, Aziz N, et al. Challenges of managing hypertension in Pakistan - a review. Clin Hypertens. 2023;29(1).
11. Kreutz R, Brunström M, Burnier M, Grassi G, Januszewicz A, Muiesan ML, et al. 2024 European Society of Hypertension clinical practice guidelines for the management of arterial hypertension. Eur J Intern Med. 2024 Aug;126:1–15.