THE EFFECTIVENESS OF THE "NGAYDAUTIEN" HEALTH EDUCATION PROGRAM ON KNOWLEDGE AND PRACTICES OF PATIENTS WITH HYPERTENSION 2023 - 2024

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Adopting a healthy lifestyle can prevent or delay the onset of hypertension and significantly reduce cardiovascular risk. The objectives of this study were (1) to describe the current knowledge and behaviors of patients with hypertension and (2) to assess the impact of the "Ngaydautien" health education program on patients' knowledge and behaviors compared to standard treatment. A cohort study was conducted on 200 patients at three study sites: Hanoi Medical University Hospital, Gia Lai General Hospital, and Mien Dong 7c Hospital. After six months, the "Ngaydautien" education group showed a significant improvement in overall knowledge scores (p < 0.001), particularly in the domains of general understanding and lifestyle management. Knowledge related to blood pressure monitoring and target blood pressure improved as well, though the change was not statistically significant. Medication adherence also improved significantly in the "Ngaydautien" education group (p = 0.0078).

Keyword: Hypertension, "Ngaydautien" program, hypertension knowledge, medication adherence.

I. INTRODUCTION

Hypertension is a significant global health issue, impacting about 31.1% of adults, or roughly 1.39 billion people, and causing 9.4 million deaths each year.[1] Uncontrolled hypertension heightens the risk of serious complications, including cardiovascular diseases, chronic kidney disease, and premature mortality.[2-4] It also worsens mental health conditions, such as depression, particularly in those with cardiovascular issues or a history of stroke.[5,6]

Lifestyle modifications are critical for preventing and managing hypertension, with

governments and industries playing key roles in promoting and facilitating these changes.[7] Such modifications not only lower blood pressure and enhance hypertension management but also improve overall cardiovascular and general health.[8,9]

However, implementing and sustaining lifestyle changes is challenging, as many individuals live in environments that hinder healthy living. Additionally, clinicians often lack adequate training to support patients in adopting healthy behaviors.[10] A study by Almas A, Godil SS, Lalani S, Samari ZA, and Khan AH in Karachi, Pakistan, found that better knowledge of hypertension correlates with improved disease management. Yet, awareness among patients, especially in low-income communities,

is often insufficient, making effective blood pressure control difficult.[11]

The "Ngaydautien" program, launched in 2016, aims to support patients with hypertension, diabetes, and angina by providing early diagnosis and promoting self-management. Combining online and in-person counseling, the program covers essential areas like medication usage, risk factor management, and evidence-based medical knowledge. Sessions, led by certified nurses, typically last 30 minutes to 1 hour. Despite its effectiveness, challenges include limited resources and patient engagement. This study aims to assess the program's impact on patients' knowledge and behaviors compared to standard care, with a focus on its relevance and potential for broader implementation in Vietnam.[12] Therefore, we conducted this study with the following objectives: (1) to describe the current state of knowledge and behaviors of newly diagnosed hypertension patients, and (2) to evaluate the impact of the "Ngaydautien" health education program on patients' knowledge and behaviors compared to standard treatment.

II. MATERIALS AND METHODS

1. Subjects

The study included 200 patients with hypertension, divided into two groups:

- Group 1: 100 hypertensive patients who are not currently receiving treatment and participated in the Ngaydautien education program.

- Group 2: 100 hypertensive patients who are not currently receiving treatment and received standard health education counseling.

Inclusion criteria

- Aged of at least 18 years.

- Diagnosis of grade 1 or grade 2 hypertension.

- Naive of treatment:

+ Newly diagnosed hypertension and without treatment with antihypertensive effect for at least 3 months.

+ Previously diagnosed but without treatment with antihypertensive effect for at least 3 months.

- Patients' follow-up within the scope of the current medical practice and in the same health centre during the 6-month period.

- Patients were required to be monitored within the current medical practice setting and at the same healthcare center throughout a 6-month follow-up period.

Exclusion criteria

- Previously attended to the Ngay Dau Tien educational program for HBP management.

- Plan to be hospitalized for other medical conditions during the next 6 months.

- Plan to move/relocate during 6-month follow-up.

- Have a severe disease (i.e. cirrhosis, end-stage renal disease, etc.).

- Are unlikely to cooperate in the study.

- Group 2 patients who wish to participate in the Ngaydautien education program.

2. Methods

Study Design

This is a cohort study.

Sample Size and Sampling Method

Based on the study by **Tran (2018)**, the sample size was calculated using the formula for comparing two independent proportions in a cohort study, with $p_1 = 0.803$, $p_2 = 0.534$, α = 0.05 (95% confidence level), and β = 0.05 (95% power).[13] The result indicated that at least 73 participants were required per group (total of 146 participants). In practice, we enrolled 100 patients in each group (total of 200 patients).

Study Location and Duration

The study was conducted at the outpatient

clinics of three hospitals: Hanoi Medical University Hospital, Gia Lai General Hospital, Mien Dong 7C Hospital, and the Ngaydautien education counseling corner (located near the outpatient clinic) from April 2023 to June 2024.

Study Procedure

Data Collection Techniques and Tools

- Techniques: Data on demographics, knowledge, and practices regarding hypertension (HTN) were collected via direct interviews conducted by trained interviewers. Data on height, weight, blood pressure, and diagnoses were recorded through physical examinations performed by physicians and nurses at the study sites.

- Tools: Interview questionnaire, including: a general demographic information form and a questionnaire to assess knowledge and practices regarding hypertension (based on the HELM Knowledge Scales).

- Equipment: height and weight scales, blood pressure monitors, and data recording forms (both paper and electronic formats).

HELM Knowledge Scale Questionnaire

The HELM Knowledge Scales questionnaire, designed by Marilyn M. Schapira, MD, MPH, and colleagues, consists of 14 questions to assess patients' knowledge. The questionnaire evaluates three main domains: General knowledge about hypertension (3 questions), Lifestyle and medication use (8 questions), and Target blood pressure and monitoring (3 questions). Scoring: Each correct answer is awarded 1 point, with incorrect answers receiving no points. The 14 points are calculated separately for each domain, with the score for each domain being the total points from the patient's responses to the questions in that domain.[14]

Assessment of Hypertension Knowledge

Knowledge about hypertension was assessed using the HELM Knowledge Scales questionnaire. Each correct answer by the study participant was awarded 1 point; incorrect answers received 0 points. Scores were calculated separately for each domain. The score for each domain was the total number of correct answers provided by the participant for the questions within that specific domain.

Hill-Bone Medication Adherence Scale (HB-MAS)

This 9-item scale is widely applied to various chronic diseases and conditions for self-assessing medication adherence. Each item can be self-answered or recorded by an interviewer in less than 5 minutes, making each item clinically useful.[15] Based on the total score, adherence levels are classified as follows: 9 to 21 points: Poor adherence; 22 to 27 points: Moderate adherence; 28 to 36 points: good adherence. This scale was validated by Hanoi Medical University Hospital in June 2024.

The data were processed and analyzed using SPSS software version 25.0. Biostatistical methods were applied to compare differences and analyze relationships:

Chi-square test and Fisher's Exact test were used for categorical variables. For comparisons before and after the "Ngaydautien" education, the McNemar test was applied.

T-test was used for comparing two normally distributed continuous variables, and Mann-Whitney U test for two non-normally distributed continuous variables. ANOVA was used to compare multiple mean values. For comparisons before and after the "Ngaydautien" education, a paired T-test was used for normally distributed variables, and the Wilcoxon test was used for non-normally distributed variables.

Statistical significance was set at $p < 0.05$.

3. Research ethics

The research has been approved by the

Ethics Committee of Hanoi Medical University. The collected information is ensured to be kept confidential. The research results are used solely for scientific purposes, serving community healthcare.

III. RESULTS

1. General characteristic and changes in hypertension knowledge

Table 1. General baseline characteristic of participants

		Ngaydautien Education	Routine care	p
Age (n, %)	18 - 39	9 (9)	8 (8)	0.95
	40 - 59	56 (56)	58 (58)	
	> 60	35 (35)	34 (34)	
Gender (n,%)	Male	55 (55)	56 (56)	1
	Female	45 (45)	44 (44)	
BMI (n, %)	Underweight	3 (3)	1 (1)	0,945
	Normal	65 (65)	73 (73)	
	Overweight	24 (24)	22 (22)	
	Obesity	8 (8)	4 (4)	
Hypertension Diagnosis Status (n, %)	New diagnosis	84 (84)	82 (82)	0,876
	Previously diagnosed but not on mediction	16 (16)	18 (18)	
Smoking history (n, %)	None	20 (20)	23 (23)	0,872
	Current smoker	63 (63)	61 (61)	
	Former smoker	17 (17)	16 (16)	
Alcohol consumption history (n, %)	None	41 (41)	39 (39)	0,424
	Current drinker	51 (51)	57 (57)	
	Former drinker	8 (8)	4 (4)	
Physical activity (n, %)	Sedentary	13 (13)	9 (9)	0,319
	Light	40 (40)	53 (53)	
	Moderate	43 (43)	35 (35)	
	Heavy	4 (4)	3 (3)	
Salt Intake (n, %)	Low	25 (25)	17 (17)	0,341
	Moderate	47 (47)	55 (55)	
	High	28 (28)	28 (28)	
Systolic BP (mmHg)		155,39 ± 9,47	154,4 ± 7,73	0,548
Diastolic BP (mmHg)		93,08 ± 8,21	90,77 ± 7,93	0,054

	Ngaydautien Education	Routine care	p
Mean BP (mmHg)	113,80 ± 7,09	111,986 ± 6,28	0,125
Grade 1 Hypertension (n, %)	44	51	0,396
Grade 2 Hypertension (n, %)	56	49	
HELM score			
General Knowledge	1,21 ± 0,715	1,29 ± 0,591	0,39
Lifestyle and Medication	3,52 ± 1,251	3,54 ± 1,218	0,908
Blood pressure monitoring	1,36 ± 0,823	1,29 ± 0,856	0,55
Total	6,09 ± 1,793	6,12 ± 1,833	0,907

There were no statistically significant differences between the two groups.

Table 2. "Ngaydautien" Education Contents

	(%)
Consultation content	
Hypertension knowledge	100%
Complications of hypertension	93%
Dietary advice	91%
Dietary advice	68%
Treatment management	58%
Complications of diabete	19%
Management of hypotension symptoms	17%
Other issues	15%
Consultation Duration	
< 30 minutes	96%
30 minutes – 1 hour	4%

The percentages of patients receiving information about diet (91%), hypertension knowledge (100%), exercise (68%), and complications of hypertension (93%) show that the program effectively covered essential and critical knowledge about hypertension.

Regarding consultation time: Most patients in the "Ngaydautien" education group received consultations under 30 minutes (96%), reflecting the program's efficiency in delivering important information in a short time.

Table 3. Changes in Knowledge Scores After 6 Months

Domain	Ngaydautien Education (baseline)	Ngaydautien Education (after 6 months)	P value (Group 1)	Routine care (Baseline)	Routine care (after 6 months)	p value (Group 2)	p value (after 6 months between 2 groups)
General Knowledge	1,21 ± 0,715	2,16 ± 0,838	< 0,001	1,29 ± 0,591	1,37 ± 0,646	0,287	< 0,001
Lifestyle and Medication	3,52 ± 1,251	4,03 ± 1,381	0,006	3,54 ± 1,218	3,61 ± 1,205	0,635	0,023
Blood pressure monitoring	1,36 ± 0,823	1,43 ± 0,946	0,553	1,29 ± 0,856	1,35 ± 1.086	0,617	0,579
Total	6,09 ± 1,793	7,62 ± 2,335	<0,001	6.12 ± 1.833	6.33 ± 2.045	0,307	< 0,001

For the "**Ngaydautien" Education group**, general knowledge, lifestyle, and medication knowledge scores increased significantly after 6 months (p = 0.000 and p = 0.006), indicating that the "Ngaydautien" health education program helped improve knowledge substantially. However, blood pressure monitoring and target knowledge did not show significant change (p = 0.553). For the **routine care group**, although there was a slight improvement, no statistically significant change was observed in the knowledge domains (p > 0.05).

2. Changes in Medication Adherence Scores After 6 Months

Table 4. Medication Adherence Scores After 6 Months

	Ngaydautien Education Group	Routine Care Group	p value
Hill Bone score after 6 months	34,99 ± 2,95	34,49 ± 1,90	0,0078

In the health counseling group, the medication adherence score for the "Ngaydautien" education group increased from 34.49 ± 1.90 to 34.99 ± 2.95 (p = 0.0078), indicating that the education program improved medication adherence.

IV. DISCUSSION

In this study, three hospitals from different regions of Vietnam-Hanoi Medical University Hospital (urban setting), Gia Lai General Hospital (central region), and Mien Dong 7C Hospital (southern region)-were involved. These hospitals provide diverse healthcare environments, which contributed to the variability in patient characteristics, such as age, socioeconomic background, and access to healthcare resources. The "Ngaydautien"

program significantly improved overall knowledge, particularly in general hypertension awareness and lifestyle management (p < 0.001), likely due to comprehensive counseling covering disease pathology (100% of patients), complications (93%), and diet (91%), delivered efficiently in short sessions (96% under 30 minutes). However, no significant improvement was observed in blood pressure monitoring knowledge (p = 0.553), possibly due to limited practical training or access to home monitoring devices, a common barrier in resource-constrained settings.[16] Similarly, Le's (2022) study at Hanoi Medical University Hospital found knowledge improved from 20% to 36% after three months, but blood pressure monitoring skills remained unchanged.[22] This consistency suggests Ngaydautien excels in foundational education but requires enhanced practical components.

Medication adherence, assessed via the Hill-Bone scale, significantly improved in the Ngaydautien group (p = 0.0078), likely due to personalized counseling emphasizing treatment importance. This mirrors Ampofo et al. (2020), who found verbal education modestly improved adherence (d = 0.18, p < 0.04).[18] In contrast, Le's study focused on lifestyle behaviors, noting only reduced alcohol consumption (p = 0.027) with no significant changes in smoking or physical activity after three months.[17] While the six-month follow-up period in the current study successfully demonstrated a significant improvement in adherence, it also reminds us that longer interventions are required to achieve sustained behavioral change. This finding is consistent with the broader scientific consensus, as illustrated by the work of Clark et al., and underscores the importance of investing in long-term support mechanisms to ensure that short-term benefits translate into long-term health benefits.[19]

Limitations include the short six-month follow-up, insufficient to assess clinical outcomes like blood pressure control, and limited counseling on comorbidities like diabetes (19% coverage). Le's three-month study faced similar constraints.[17] Resource limitations, such as access to home blood pressure monitors, further hindered monitoring skills, as noted in Vietnamese hypertension studies.[16] Future interventions should extend duration, incorporate hands-on monitoring training, and integrate digital tools, as Katz et al. (2024) demonstrated improved adherence with mobile apps.[20]

V. CONCLUSION

The "Ngaydautien" program effectively enhances hypertension knowledge and medication adherence, outperforming usual care, with results consistent across rural and urban settings. However, its limited impact on blood pressure monitoring skills underscores the need for practical training and resource support. Extending intervention duration and incorporating digital tools could enhance sustainability and clinical impact, positioning "Ngaydautien" as a valuable tool for hypertension management in Vietnam.

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