The Influences of Social Determinants of Health on Health-Related Quality of Life in People with Hypertension: A Cross-Sectional Study

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Abstract: Hypertension is a significant public health issue worldwide, including in Thailand, and its prevalence is expected to continue increasing. The inability to control blood pressure among people with hypertension has a negative impact on both physical and mental aspects, causing negative consequences on health-related quality of life. This cross-sectional study explored factors influencing the health-related quality of life among people living with hypertension, guided by the Social Determinants of Health framework. Convenience sampling was used to obtain 183 people with essential hypertension, who attended follow-up visits at the general medicine clinic, outpatient department in a super-tertiary hospital in Central Thailand. Data were collected using several instruments, including a Personal Information Questionnaire and Health records, the short form of the Spanish Hypertension Quality of Life Questionnaire, the short version of the European Health Literacy Survey, the Neighborhood Scales, the Adherence to the Dietary Approaches to Stop Hypertension Diet Consumption Questionnaire, the Family Support Questionnaire, and the Barriers to Receiving Care Questionnaire. The data were analyzed using descriptive statistics and stepwise multiple regression analysis.

The findings indicated that all participants (100%) had a good health-related quality of life. Health literacy, neighborhood resources, and barriers to receiving care together contributed to 22.1% of the variance explained in health-related quality of life in people with hypertension. Barriers to receiving care had the highest predictive power, followed by neighborhood resources, and health literacy. Thus, nurses should promote health literacy by encouraging people to obtain information from accurate and reliable sources, recognize the importance of using adequate resources in their neighborhood for their illness, and identify obstacles to accessing treatment to promote a healthy quality of life in people with hypertension.

Keywords: Essential hypertension, Health literacy, Health-related quality of life, Neighborhood resources, Social determinants of health

Received 21 March 2025; Revised 21 July 2025; Accepted 22 July 2025

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https://doi.org/10.60099/prijnr.2025.274445

Introduction

Hypertension (HT) is a chronic non-communicable disease (NCD) and a leading global public health concern, including in Thailand. Worldwide, approximately 1.28 billion adults between the ages of 30 and 79 are affected by hypertension, with two-thirds residing in low- and middle-income countries. Notably, 46% of those with the condition are unaware they have it, and only 21% manage to control their blood pressure effectively.[1] With an aging global population, the burden of comorbidities among people with hypertension (PW-HT) is increasing.

Effective management of hypertension focuses on achieving proper blood pressure (BP) control, which is generally defined as maintaining levels below 140/90 mmHg, lowering systolic pressure by at least 10 mmHg, or decreasing diastolic pressure by 5 mmHg or more. These targets are clinically significant, as achieving them is associated with a 15% reduction in all-cause mortality, a 35% decrease in stroke occurrence, and a 20% lower risk of developing coronary artery disease.[2]

In Thailand, data from the 2023 national health reporting system of the Ministry of Public Health indicated that approximately 14 million individuals have been diagnosed with hypertension. However, only about half of these patients (7 million) have actively sought treatment within the healthcare system. Among those receiving care, around 2.8 million have not achieved adequate blood pressure control.[3] Similarly, a cross-sectional study conducted among 143 PW-HT in Northeast Thailand found that 37.8% had uncontrolled hypertension.[4] These findings underscore that despite the availability of modern pharmacological therapies, a considerable proportion of patients continues to experience suboptimal treatment outcomes.

Although effective BP control is known to improve HRQoL, a substantial proportion of people with hypertension still fails to reach optimal BP targets.[4,5] Such outcomes suggest that factors beyond pharmacological management, such as psychosocial, behavioral, and healthcare system-related elements, may play a pivotal role in disease management. The persistent gap between clinical care and effective disease control highlights the need to explore determinants that influence HRQoL among people with hypertension, especially within the specific context of the Thai healthcare system.

Literature Review and Conceptual Framework

This study was guided by the World Health Organization's Conceptual Framework for the Social Determinants of Health (SDH). According to this framework, socioeconomic and political contexts manifest broadly as structural determinants (e.g., education, income, occupation, gender, and social class) that influence intermediary determinants (e.g., psychosocial circumstances, behavioral and biological factors, and the health system attributes), which have a direct impact on an individual's health outcomes.[6]

In this study, emphasis was placed on intermediary determinants, as they reflect individuals' lived experiences and directly influence HRQoL. This included health literacy, economic stability—perceived income sufficiency, neighborhood resources, adherence to the DASH (Dietary Approaches to Stop Hypertension) diet, family support, and access to care (barriers to receiving care). Although not explicitly listed in theWHO's 2010 framework, health literacy can be conceptualized as a key intermediary determinant, as it reflects an individual's ability to engage with health information and services and is influenced by the health system's responsiveness. Similarly, perceived income sufficiency, a subjective evaluation of one's financial adequacy, captures the psychosocial dimension of economic conditions and is shaped by social and cultural expectations.

The World Health Organization (WHO) describes HRQoL as how individuals view their place in life, considering their cultural background, personal values, goals, expectations, and concerns. This concept is

a subjective and multidimensional aspect of people's lives that is influenced by their physical health, emotional and social relationships, socioeconomic status, surrounding environment, and life satisfaction.[7] Previous research shows that the inability to control blood pressure levels can negatively affect a person's physical and mental health.[8] Studies conducted in various countries, including Ethiopia, India, and Iran, report that people with hypertension experience an average of at least 14 unhealthy days per month, and an inability to control blood pressure (BP) negatively affects both physical and mental health.[9-11] These social and contextual determinants of HRQoL in Thailand remain underexplored.

Few studies in Thailand have comprehensively explored how intermediary determinants affect the HRQoL of people with hypertension.[12-14] To address this gap, this study applied the WHO's SDH framework to investigate the associations between six intermediary determinants—health literacy, perceived income sufficiency, neighborhood resources, adherence to the DASH diet, family support, and barriers to receiving care—and HRQoL among Thai people with hypertension. Understanding these relationships can inform the development of effective, equity-driven nursing interventions that extend beyond pharmacological treatments.

Health literacy is a key intermediary determinant reflecting one's ability to engage in health information and navigate healthcare systems. According to Nutbeam,[15] knowledge, cognitive skills, and analytical abilities attained through education can influence an individual's motivation and ability to seek out, understand, and use health information effectively to support and maintain good health. Health literacy encompasses not only reading and understanding health information but also involves critical thinking, effective communication, and the ability to navigate complex healthcare systems.[15] Limited health literacy has consistently been associated with negative health consequences, including lower HRQoL, longer hospitalizations, and increased mortality.[16] In Thailand, a study in northeastern Thailand reported that individuals with greater health literacy had a significantly higher quality of life.[12] This present study extends the existing research by examining health literacy within the SDH framework to understand its influence on HRQoL among Thai people with hypertension.

Perceived income sufficiency refers to a subjective assessment or self-perception of one's ability to meet basic living expenses and maintain emergency savings, reflecting one's financial resilience.[17] While some studies among low-income older adults found a significant association between adequate income and better quality of life,[18] others showed no association.[19] These inconsistent findings highlight the influence of varying economic and social contexts. Therefore, this study aimed to investigate how perceived income sufficiency affects HRQoL among individuals with hypertension in Thailand, with the goal of elucidating the role of financial perception in chronic disease management.

Neighborhood resources refer to an individual's perception of neighborhood environment that supports healthy behaviors, such as having accessible spaces for walking and exercise, as well as availability of healthy food sources.[20] A supportive neighborhood environment has been linked to better HRQoL, as documented in several studies.[21,22] However, most evidence comes from high-income countries where the physical, cultural, and social landscapes differ considerably from those in Thailand, and such evidence remains limited in the Thai context, especially among individuals living with chronic conditions like hypertension. This study aimed to fill this gap by exploring the impact of perceived neighborhood resources on the HRQoL among Thai people with hypertension.

Adherence to the DASH diet refers to dietary behaviors that align with nutritional guidelines aimed at reducing hypertension. It involves consuming a balanced diet of protein-rich foods, vegetables, and fruits, while reducing fatty meats and sodium. Following the DASH diet regularly has been found to significantly decrease

blood pressure[24] and reduce the risk of cardiovascular disease.[25] However, research examining its relationship with HRQoL remains limited in Thailand. Given that dietary behaviors are shaped by cultural, socioeconomic, and environmental factors, this study examines the influence of adherence to the DASH diet on HRQoL among hypertensive patients in Thailand.

Family support refers to the perceived support provided by family members in encouraging, advising, and assisting with the preparation of DASH-compliant meals, thereby helping patients adopt healthier lifestyles and follow medical advice to optimize treatment outcomes. Previous research has indicated that strong family support is associated with better HRQoL. For instance, a cross-sectional study of 200 people with hypertension in Central China found a statistically significant positive relationship between family support and HRQoL.[27] However, not all studies report consistent findings. Research involving certain adult and elderly populations found no significant correlation between family support and HRQoL.[28] These conflicting results suggest that the role of family support may vary depending on cultural and contextual factors. Given the centrality of family in Thai culture, where family plays a central role in caregiving, this study examined how family support influences HRQoL among PW-HT in Thailand.

Barriers to receiving care refer to an individual's perceived challenges in accessing and utilizing healthcare services. These barriers may include long travel distances, inconvenient clinic hours, lengthy waiting times, and high out-of-pocket expenses, collectively discouraging timely treatment and ongoing disease management.[29] The ability to overcome these barriers is associated with better health outcomes and improved HRQoL.[30] For instance, factors such as transportation difficulty, long waiting times, and treatment costs have been identified as significant obstacles to receiving care in various settings.[31] Therefore, this study focused on perceived barriers to receiving care within the context of tertiary hospitals in Thailand, where high patient volumes, long waiting times, and system-level constraints may affect timely care and treatment adherence.

In conclusion, while international studies support the influence of social determinants on HRQoL among hypertensive patients, research in Thailand remains limited. Existing studies often overlook the interplay of multiple social and environmental factors, as well as the differences in social, economic, cultural, environmental, health policy, and dietary cultural contexts. By applying the WHO's SDH framework, this study investigates how these intermediary determinants affect HRQoL among people with hypertension in Thailand. Findings will inform the development of culturally-relevant and equity-driven nursing interventions and recommendations for public health policy.

Research Hypothesis

Health literacy, perceived income sufficiency, neighborhood resources, adherence to the DASH diet, family support, and barriers to receiving care can predict HRQoL in persons with hypertension.

Methods

Study Design: This study employed a descriptive cross-sectional design, adhering to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines to inform this report.

Sample and Setting: The study population consisted of male and female patients aged 20 and above who had been clinically diagnosed with essential hypertension and were receiving care at the Outpatient Department of a hospital in Bangkok, Thailand. The service is available from 8:00 AM to 4:00 PM. The sample was selected from the population using convenience sampling, based on the following inclusion criteria: treatment with antihypertensive drugs for at least 6 months, the ability to consume food orally, and the ability to communicate in the Thai language through speaking, listening, reading, and writing. The exclusion criteria were secondary hypertension, diagnosis with

schizophrenia and with a mental relapse, comorbidities with severe symptoms such as advanced cancer or end-stage renal failure, age of 60 years and up with cognitive impairment assessed by the Mini-Cognitive assessment instrument (Mini-Cog) Thai version with a score of less than 3 points.

Sample Size: The sample size was determined through an a priori power analysis using the G*Power program (Version 3.1.9.4). For the multiple regression analysis (F-test under the linear multiple regression: fixed model, R^2 deviation from zero), the parameters included a type I error (α) of 0.05, statistical power ($1-\beta$) of 0.90, 6 independent variables, and the effect size (f^2) of 0.099. The effect size was estimated based on a prior systematic review study,[32] which reported a statistically significant association between health literacy and quality of life among individuals with hypertension. The variables used were correlated with a value of 0.30 ($r = 0.30$); r^2 was calculated at 0.09 and used to determine the sample size of 183 participants.

Ethical Consideration: This study was approved by the Human Research Ethics Committee, Faculty of Nursing, Mahidol University (COA No. IRB-NS2023/819.1411) and the Faculty of Medicine, Chulalongkorn University. (COA No.0096/2024). The researcher invited prospective subjects and asked for consent to participate in the research. The participants acknowledged the information and voluntarily participated in the research, as outlined in the research process established by the research ethics committees from both universities. Furthermore, the researchers ensured the anonymity of participants and maintained the confidentiality of all data collected. Participants' personal information and responses were treated as confidential and utilized solely for research purposes, in compliance with ethical standards for data protection. The researchers ensured the protection of participants' rights, confidentiality, and voluntary participation throughout the process.

Research Instruments: Permission to use the instruments was obtained before data collection. Cronbach's alpha coefficient was examined in a trial with 30 patients who met the same inclusion criteria as those in the main study. The questionnaires were examined for content validity index (CVI), with the short version of the quality-of-life questionnaire in hypertension (MINICHAL) = 1, the barriers to receiving care questionnaire = 1, and agreement was made for participants in the experimental group to assess the reliability of the study instruments as follows:

The research instruments consisted of two parts: an assessment instrument for primary cognitive screening and seven data collection instruments.

Screening Instrument

The Mini-Cognitive Assessment Instrument (Mini-Cog, Thai version) was used for primary cognitive screening in patients with hypertension aged 60 years and above. The instrument was created by Borson et al. and subsequently translated into Thai by Tongsakul et al.[33] Patients who scored three points or higher were included in the participant group.

Data Collection Instruments

The Demographic Data and Clinical Questions in the study covered sex, age, marital status, level of educational, occupation, treatment entitlements, monthly income, cohabitants, cooking, smoking history, alcohol consumption history, duration of diagnosis with hypertension, duration of the antihypertensive medication administration, drug names, drug dose, comorbidities, blood pressure levels, weight, height, and body mass index (BMI). For the perceived income sufficiency, participants were asked about their income, which was categorized into two groups: sufficient and insufficient. These categories were then converted into dummy variables, where sufficient was assigned a value of 0 and insufficient was assigned a value of 1. The data were analyzed accordingly.

The short form of the Spanish Hypertension Quality of Life Questionnaire (MINICHAL), developed by Badia et al.[34] and translated into Thai by the researchers, was used to measure HRQoL. The MINICHAL English version was translated using a translation-back translation process. The instrument contains two dimensions

with 16 items. Ten refer to the mental domain (e.g., Has it been difficult to relate to people?) and the other six refer to the somatic domain (e.g., Have you had swollen ankles?). The items were organized using a 4-point Likert scale, where a score of 0 indicates "No" and a score of 3 indicates "Yes, a great deal." The total scores can range from 0, reflecting the best health status, to 48, indicating the worst health status. In our pilot study of 30 participants, the Cronbach's alpha coefficient reliability was 0.85, and in the main study, 0.78.

*The short version of the European Health Literacy Survey Questionnair*e, consisting of 16 items (HLS-EU-Q16), was developed by Sorensen et al. and translated into Thai by Tanukeaw et al.,[35] and used to measure health literacy. The instrument contains four dimensions, including 16 items related to finding, comprehending, evaluating/judging, and applying health-related information (e.g., Finding information about treatments or illnesses of concern?). Each item is answered using a 5-point scale: "Very difficult," "Fairly difficult," "Fairly easy," "Very easy," and "Don't know." According to the HLS-EU-Q16 manual, responses are typically scored by grouping "Very difficult" and "Fairly difficult" as 0, and "Fairly easy" and "Very easy" as 1, resulting in a total score ranging from 0 to 16. These scores are then categorized into three levels of health literacy. If the response is "Don't know," it is excluded from the score calculation and is treated as missing data for analysis. If there were more than two "Don't know" responses, the case was excluded from the analysis. The total scores, which range from 0 to 16 points, are categorized into three levels of health literacy. Scores ranging from 0 to 8 points reflect inadequate health literacy, scores from 9 to 12 points denote limited health literacy, and scores between 13 and 16 points represent adequate health literacy. In both the pilot study and the main study, the Cronbach's alpha coefficient reliability was 0.92.

The Neighborhood Scale was created by Auchincloss et al. and translated into Thai by Jariyasakulwong et al.[36] The instrument comprises two dimensions, each with nine items related to the suitability of the environment for physical activity and the accessibility of healthy foods (e.g., "My neighborhood provides many opportunities for physical activity"). These items are rated on a 5-point Likert scale, where a score of 1 indicates "Strongly agree" and a score of 5 indicates "Strongly disagree." The neighborhood resources availability is categorized into three levels based on total scores that range from 9 to 45 points. Scores between 9 and 21 mean neighborhood resources are highly appropriate, scores between 22 and 33 mean neighborhood resources are moderate, and scores between 34 and 45 mean neighborhood resources are low. In the pilot of 30 participants, Cronbach's alpha coefficient reliability was 0.92, and in the main study, 0.91.

The Adherence to the Dietary Approaches to Stop Hypertension Diet Consumption Questionnaire (Thai version), developed by Moonsarn and Sumpowthong,[37] contains 13 items, seven positive items and six negative items (e.g., "Do you consume vegetables, such as leafy greens?"). The items were organized on a 5-point Likert scale, ranging from "Practicing every day" to "Not practicing at all." Total scores range between 13 and 65 points, with scores of ≥ 48.75 meaning adherence to DASH diet and scores of < 48.75 meaning nonadherence to the DASH diet. In the pilot study, the Cronbach's alpha coefficient reliability was 0.76, and in the main study, 0.81.

The Family Support to the Dietary Approaches to Stop Hypertension Diet Consumption Questionnaire (Thai version), developed by Moonsarn and Sumpowthong,[37] and contains five items (e.g., "Do your family members help prepare meals to support blood pressure control?"). The items are arranged on a 5-point Likert scale with a score of 1 indicating "Least" and 5 indicating "The most." Total scores range from 5 to 25 points, divided into three levels of family support: 5 to 11 points indicate low family support, 12 to 18 points indicate moderate family support, and 19 to 25 points indicate high

family support. In the pilot study, the Cronbach's alpha coefficient reliability was 0.96, and in the main study, it was 0.98.

The Barriers to Receiving Care Questionnaire (Thai version) was developed by Watanakijkrilert et al.[38] The questionnaire consists of four dimensions, each with three items: time, travel, costs, and beliefs (e.g., "The waiting time to see a doctor is long"). The items are rated on a 5-point Likert scale, with a score of 1 indicating "Strongly disagree" and a score of 5 indicating "Strongly agree." The overall scores range from 12 to 60 points, with the barriers to receiving care categorized into three different levels. Scores of 12 to 28 points indicate few barriers to receiving care, scores of 28 to 44 points indicate moderate barriers to treatment, and scores of 45 to 60 points indicate many barriers to receiving care. In the pilot, the Cronbach's alpha coefficient reliability was 0.88, and in the main study, 0.86.

Data Collection: Data were collected from March to April 2024, following approval by the IRB committee. The primary investigator (PI) collected the data with the assistance of the head nurse to provide information about the research project. If any participants were interested in participating, the PI reviewed and screened them using the inclusion criteria. Then the PI personally invited the eligible participants to a private area, provided them with study information, and obtained informed consent. Interviews were conducted using the seven assessment instruments and covered demographic information, taking approximately 30 to 45 minutes to complete. After data collection, the PI personally reviewed and verified the data for completeness and accuracy prior to beginning the analysis.

Data Analysis: The data were analyzed using SPSS software (version 23). Descriptive statistics, including frequency, percentage, mean, and standard deviation, were employed to analyze the personal characteristics and study variables. The correlations between the independent and dependent variables were analyzed using Pearson's correlation coefficient, and the predictive power between the independent and dependent variables was evaluated through stepwise multiple regression analysis. The overall significance level was set at an alpha (α) of 0.05. The multiple regression analysis assumptions were tested, including the following: the dependent variable was a continuous scale; the residuals were normally distributed; the dependent and six independent variables had a linear relationship; there were no spurious outliers; and the dependent and independent variables were homoscedastic with no multicollinearity among independent variables, indicating that all assumptions met acceptable criteria.

Results

More than half of the participants were female (59.6%), with ages varying from 42 to 87 years. The average age was 64.0 years, with a standard deviation of 9.9 years. Most participants were older adults (66.1%); 63.4 % were married. The highest education level was primary school (27.3%), and 55.2% were unemployed. Most participants had an average family income of more than 40,000 baht (approximately 1,200 USD) per month and rated their income as sufficient (73.8%). The duration since diagnosis with hypertension ranged from 1 to 5 years (43.7%), and approximately half of the participants (45.4%) had been receiving antihypertensive medication for 1 to 5 years. More than half had normal blood pressure on the day of data collection (64.5%).

The findings indicated that every participant (100%) reported a good HRQoL, with a mean score of 17.76 (SD = 0.14). A total of 71.0% had adequate health literacy, 84.2% reported highly appropriate neighborhood resources, 72.7% adhered to the DASH diet, 68.8% received very high family support, and 97.3% reported few barriers to receiving care **(Table 1).**

Table 1. Number, percentage, means, standard deviation (SD) of HRQoL, health literacy, perceived income sufficiency, neighborhood resources, adherence to the DASH diet, family support, and barriers to receiving care (n = 183)

Variables	Number	Percentage	Mean	SD	Interpretation
HRQoL (0-48)					
Min-Max (16-26)	183	100.0	17.76	0.14	Good
Health literacy (0-16)			13.90	2.89	Adequate
Inadequate (0-8)	13	7.1			
Limit (9-12)	40	21.9			
Adequate (13-16)	130	71.0			
Perceived income sufficiency					
Sufficient	135	73.8			
Insufficient	48	26.2			
Neighborhood resources (9-45)			15.35	5.90	Highly appropriate
Highly appropriate (9-21)	154	84.2			
Moderate appropriate (22-33)	29	15.8			
Adherence to the DASH diet (13-65)			53.04	6.08	Adherence
Nonadherence (40-48.74)	50	27.3			
Adherence (48.75-65)	133	72.7			
Family support (5-25)			20.32	5.34	High
Low level (5-11)	15	8.2			
Moderate level (12-18)	42	23.0			
High level (19-25)	126	68.8			
Barriers to receiving care (12-60)			15.85	5.43	Low
Low level (12-28)	178	97.3			
Moderate level (29-44)	5	2.7			

Note. HRQoL = Health-related quality of life, DASH = Dietary Approaches to Stop Hypertension

According to the study findings, health literacy was negatively correlated with HRQoL ($r = -0.313$, $p < 0.01$), indicating that higher health literacy was associated with better HRQoL. Sufficient income, appropriate neighborhood resources, and low barriers to receiving care were significantly correlated with HRQoL ($r = 0.192$, $p < 0.05$; $r = 0.288$, $p < 0.01$; and $r = 0.402$, $p < 0.01$, respectively). However, the adherence to the DASH diet and family support were not found to be significantly correlated with HRQoL in patients with hypertension, as presented in **Table 2.**

Table 2. Correlation between health literacy, perceived income sufficiency, neighborhood resources, adherence to the DASH diet, family support, and barriers to receiving care and HRQoL in the subjects (n = 183)

Variable	1	2	3	4	5	6	7
1. Health literacy	1						
2. Perceived income sufficiency	-0.125	1					
3. Neighborhood resources	-0.331**	0.135	1				
4. Adherence to the DASH diet	0.122	-0.166*	-0.257**	1			
5. Family support	-0.012	-0.334**	-0.198**	0.301**	1		
6. Barriers to receiving care	-0.298**	0.184*	0.276**	-0.214**	-0.166*	1	
7. HRQoL	-0.313**	0.192*	0.288**	-0.034	0.023	0.402**	1

Note. *p < 0.05, **p < 0.01; For the QoL score, the higher the score, the lower QoL.

The results of the stepwise multiple regression analysis showed that only three predictors, health literacy (β = -0.173, $p < 0.05$), neighborhood resources (β = 0.145, $p < 0.05$), and barriers to receiving care (β = 0.310, $p < 0.001$) significantly predicted HRQoL, accounting for 22.1% of the variance (R^2 = 0.221, $F = 16.893$, $p < 0.05$) whereas, perceived income sufficiency, adherence to the DASH diet, and family support did not demonstrate significant impacts on HRQoL among persons with hypertension, as shown in **Table 3.**

Table 3. Predictive ability of health literacy, perceived income sufficiency, neighborhood resources, adherence to the DASH diet, family support, and barriers to receiving care on HRQoL in the participants (Stepwise multiple regression) (n = 183)

Variables	B	SE	β	t	p-value	95%CI	
						Lower	Upper
(Constant)	0.835	1.120		0.745	0.457	-1.376	3.046
Barriers to receiving care	0.128	0.029	0.310	4.402	< 0.001	0.070	0.185
Neighborhood resources	0.055	0.027	0.145	2.032	0.044	0.002	0.108
Health literacy	-0.133	0.055	-0.173	-2.410	0.017	-0.243	-0.024
$R = 0.470$, $R^2 = 0.221$, Adjusted $R^2 = 0.208$, Overall $F = 16.893$; $p < 0.05$							

Note. B = unstandardized coefficient, SE = standard error for the unstandardized coefficient, β = standardized coefficient, t = t-test statistic, R^2 = proportion of variance in the dependent variable explained by the independent variables, Adjusted R^2 = proportion of variance explained after adjusting for the number of predictors

Discussion

The results of this study indicated that all participants reported good HRQoL, which may reflect effective blood pressure management and access to healthcare services among the study population. This result aligns with prior research suggesting that effective blood pressure management is related to a higher quality of life in people with hypertension.[8,10] However, despite this positive outcome, the analysis further highlighted complex relationships between HRQoL and several social determinants of health.

Health literacy was significantly associated with HRQoL in individuals with hypertension, exhibiting a negative correlation. This explanation aligns with the HRQoL scoring system used in this study, in which lower scores reflect a higher quality of life. Therefore, the findings support the conclusion that individuals with greater health literacy generally experience a higher HRQoL. The results align with a prior study,[16] which suggests that individuals with greater health literacy are more capable of accessing, understanding, and utilizing health information, leading to improved self-care behaviors, treatment adherence, and healthier lifestyle choices. These behaviors lead to improved physical and mental health, particularly in the management of chronic conditions such as hypertension.

Within the framework of the SDH, health literacy is recognized not merely as an individual skill but as a socially influenced determinant shaped by education, access to resources, and health communication. Individuals with limited health literacy often face challenges in navigating the healthcare system, understanding prescriptions, and making informed health decisions. As such, strengthening health literacy is not only a clinical priority but also a public health strategy to promote equity in health outcomes.

Perceived income sufficiency was statistically significantly correlated with HRQoL among people with hypertension, although the strength of the relationship

was relatively low. This suggests that individuals who perceived their income as sufficient were more likely to report better HRQoL compared to those who viewed their income as insufficient. This result aligns with the SDH conceptual framework proposed by the World Health Organization,[6] which emphasizes that economic conditions such as income stability and sufficiency are crucial factors influencing health outcomes. Sufficient income enables individuals to access healthcare services, maintain a nutritious diet, afford medications, and live with less financial stress, all of which contribute to better physical and mental HRQoL.

However, when perceived income sufficiency was included in the stepwise multiple regression analysis, it was not identified as a significant predictor of HRQoL. This suggests that its influence may be interrelated with other intermediary factors, such as family support or access to care, and may not independently predict HRQoL in this sample. Additionally, in the context of Thailand, some individuals with lower incomes may still report an adequate quality of life due to factors such as strong family support or access to universal health coverage, which reduces financial burden and enhances access to healthcare services. Therefore, the perceived sufficiency of income may reflect more than just financial standing; it may also reflect the broader social and healthcare environment.

Neighborhood resources were statistically significantly correlated and predicted HRQoL among people with hypertension. Furthermore, neighborhood resources emerged as a significant predictor of HRQoL in the stepwise multiple regression analysis, highlighting the vital role that community environments play in shaping individuals' health and HRQoL. These findings are consistent with the SDH conceptual framework,[6] which underscores how social and physical environments influence health outcomes. A neighborhood with supportive features, such as accessible healthcare facilities, safe walking areas, the availability of healthy foods, and green spaces, encourages health-promoting behaviors, improves disease management, and contributes to better mental health, ultimately enhancing HRQoL.

A large number of participants (84.2%) reported that community resources were particularly useful in this study, suggesting that a supportive community environment may help patients better manage their hypertension and reduce the disease burden in their daily lives. Notably, these environmental benefits can significantly increase opportunities for physical activity, access to DASH dietary options, and improved access to healthcare, all of which are critical factors in managing chronic conditions such as hypertension. The findings were consistent with prior studies that living in a proper environment resulted in a statistically significant and good quality of life.[13] In conclusion, the findings of this study emphasize the need to consider community resources as a determinant of health that directly affects HRQoL. Future research and public health efforts should focus on enhancing community environments to improve outcomes for chronic diseases.

Adherence to the DASH diet was not correlated with or predictive of HRQoL in hypertensive patients, despite 72.7% of participants reporting adherence to the DASH diet. This result differs from several previous studies conducted in other countries, which reported that adhering to the DASH diet can significantly reduce blood pressure and improve overall cardiovascular health,[24] thus enhancing quality of life.

The lack of significant association in this study may be attributed to several contextual and methodological factors. First, adherence to the DASH diet was evaluated using self-reported measures, which could be influenced by reporting bias or overestimation of actual compliance. Second, while adherence to the DASH diet is known for its effectiveness in lowering blood pressure, its direct effect on perceived quality of life, particularly in the short term, may be less apparent to patients, especially if other social or psychological stressors are present. Additionally, it is possible that the benefits of the DASH diet on HRQoL become more noticeable only after sustained, long-term adherence, which may not have been fully captured in this cross-sectional study. Cultural

differences in dietary patterns, food availability, and affordability of the DASH diet may also affect how diet influences health outcomes in the Thai context.

Family support was not correlated and was unable to predict the HRQoL. The findings of this study are not consistent with several previous studies, including a cross-sectional study in China, which found that family support significantly affected HRQoL in hypertensive patients.[27] In theory, family support, through emotional support, assistance with meal preparation (e.g., adherence to the DASH diet), and assistance with following medical advice, should promote healthy behaviors and improve patients' HRQoL.

Additionally, as this study used a cross-sectional design, it captures only a snapshot in time. The influence of family support may emerge more clearly in longitudinal studies that track changes in health behaviors and quality of life over time. In summary, while family support is theoretically and culturally important, the findings of this study suggest that family support alone may not be sufficient to significantly enhance HRQoL among people with hypertension unless it is paired with practical involvement and reinforced by supportive environmental and informational factors.

Barriers to receiving care were moderately correlated with HRQoL and were also a strong predictor of HRQoL in the stepwise multiple regression analysis. The direction of the correlation in this study was positive, indicating that participants who reported fewer barriers to accessing care tended to have better HRQoL. These findings are consistent with prior literature that highlights how difficulties in accessing healthcare, such as transportation issues, long waiting times, limited service availability, and financial costs, can negatively impact an individual's ability to manage chronic diseases effectively, which in turn affects their physical and emotional quality of life.[14] For patients with hypertension, uninterrupted access to health services, timely consultations, and regular follow-up are crucial in ensuring blood pressure control and reducing complications, which are directly tied to their quality of life.

In the context of the Thai healthcare system, these results highlight the importance of access to services in influencing patient outcomes. The majority of participants in this study reported low levels of barriers to receiving care (97.3%), suggesting that minimizing logistical, systemic, or financial barriers could lead to further improvements in HRQoL among people with hypertension. In conclusion, the results suggest that reducing barriers to treatment access is a crucial strategy for enhancing HRQoL among individuals with hypertension. Health policies that focus on increasing access to services, such as improving access to community-based health services, reducing waiting times, and providing transportation or mobile clinics, could greatly benefit this population.

Limitations

The research was carried out at only one outpatient department in Bangkok, which restricts the extent to which the results can be applied to other areas or healthcare environments. In addition, the study did not statistically adjust for certain demographic and clinical variables, including age, gender, and medication adherence. It might be possible that these factors may confound the relationships between the predictors (e.g., health literacy, perceived income sufficiency) and the outcome (HRQoL). Furthermore, the cross-sectional design of the study limits the capacity to determine causal links between social determinants and HRQoL, since it collects data only at one specific moment, and the use of convenience sampling instead of random sampling may introduce sampling bias, as the sample may not be fully representative of all people with hypertension in Thailand.

Conclusions and Recommendations

Health literacy, neighborhood resources, and fewer barriers to receiving care were significant predictors of HRQoL. Therefore, nurses should promote health literacy by encouraging people to seek

health information from accurate and reliable sources. It is also important to empower PW-HT to recognize and use available resources in the neighborhood for their illness. Additionally, nurses should identify barriers to accessing healthcare services to enhance the delivery of timely and equitable care. Moreover, these results highlight the importance of developing nursing interventions that are culturally sensitive and centered on promoting equity, grounded in an understanding of the social context and lived experiences of PW-HT, particularly within Thai communities. Tailored interventions that consider local beliefs, resource availability, and health system constraints, developed and further tested with rigorous research designs, are recommended.

At the policy level, the study findings support the need for integrated public health policies in the following areas: Health literacy infrastructure investment (e.g., community-based education), improving the neighborhood environment (e.g., pathways suitable for walking, jogging, or access to healthy food), and reducing barriers to enhance easy access to care (e.g., reforming service hours or providing transportation support).

Acknowledgments

The researchers wish to thank all participants and sincerely appreciate the support provided by King Chulalongkorn Memorial Hospital and the Thai Red Cross Society for this study. The preparation of this manuscript used the Grammarly program for correcting grammatical errors.

Grants and Funding Information

This study received no funding support.

Conflict of Interests

The authors state that there were no commercial or financial interests involved in the research that could be perceived as a potential conflict of interest.

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อิทธิพลของปัจจัยสังคมกำหนดสุขภาพต่อคุณภาพชีวิตด้านสุขภาพในผู้ที่มีความดันโลหิตสูง : การศึกษาแบบภาคตัดขวาง

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บทคัดย่อ: โรคความดันโลหิตสูงเป็นกลุ่มโรคไม่ติดต่อเรื้อรังที่เป็นปัญหาสาธารณสุขสำคัญทั่วโลก รวมถึงประเทศไทย และมีแนวโน้มเพิ่มขึ้นอย่างต่อเนื่อง การไม่สามารถควบคุมระดับความดันโลหิตได้จะส่งผลกระทบทั้งด้านร่างกายและจิตใจ ก่อให้เกิดผลลัพธ์ทางด้านลบต่อคุณภาพชีวิตด้านสุขภาพของผู้ป่วยโรคความดันโลหิตสูง การศึกษาแบบภาคตัดขวางนี้ มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่มีอิทธิพลต่อคุณภาพชีวิตด้านสุขภาพในผู้ป่วยโรคความดันโลหิตสูง ภายใต้กรอบแนวคิดของปัจจัยสังคมกำหนดสุขภาพ กลุ่มตัวอย่างคัดเลือกโดยวิธีการสุ่มแบบสะดวกจำนวน 183 ราย โดยเป็นผู้ป่วยโรคความดันโลหิตสูงชนิดไม่ทราบสาเหตุที่มารับบริการในคลินิกอายุรกรรม แผนกผู้ป่วยนอก โรงพยาบาลตติยภูมิขั้นสูงแห่งหนึ่งในภาคกลางของประเทศไทย เครื่องมือที่ใช้ในการเก็บข้อมูล ประกอบด้วย แบบสอบถามข้อมูลส่วนบุคคลและแบบบันทึกข้อมูลสุขภาพ แบบสอบถามคุณภาพชีวิตในโรคความดันโลหิตสูง แบบประเมินความรอบรู้ด้านสุขภาพฉบับย่อ แบบประเมินสภาพแวดล้อมบริเวณที่อยู่อาศัย แบบสอบถามความร่วมมือในการบริโภคอาหารเพื่อหยุดความดันโลหิตสูง แบบสอบถามการสนับสนุนจากครอบครัว และแบบสอบถามอุปสรรคในการรับการรักษา วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนาและการวิเคราะห์การถดถอยพหุคูณแบบขั้นตอน

ผลการศึกษาพบว่า กลุ่มตัวอย่างทั้งหมด (ร้อยละ 100) มีคุณภาพชีวิตด้านสุขภาพอยู่ในระดับดี โดยความรอบรู้ด้านสุขภาพ สิ่งแวดล้อมบริเวณที่อยู่อาศัย และอุปสรรคในการรับการรักษาสามารถร่วมกันทำนายคุณภาพชีวิตด้านสุขภาพในผู้ป่วยโรคความดันโลหิตสูงได้ ร้อยละ 22.1 โดยอุปสรรคในการรับการรักษามีอำนาจในการทำนายสูงสุด รองลงมาคือสิ่งแวดล้อมบริเวณที่อยู่อาศัย และความรอบรู้ด้านสุขภาพตามลำดับ ดังนั้น พยาบาลควรส่งเสริมความรอบรู้ด้านสุขภาพโดยส่งเสริมให้ผู้ป่วยมีการค้นหาข้อมูลจากแหล่งข้อมูลที่ถูกต้องและน่าเชื่อถือ ส่งเสริมให้ผู้ป่วยเห็นความสำคัญของการมีและใช้แหล่งทรัพยากรที่เอื้อต่อโรคของผู้ป่วย และค้นหาอุปสรรคในการรับการรักษา เพื่อส่งเสริมคุณภาพชีวิตด้านสุขภาพที่ดีในผู้ป่วยโรคความดันโลหิตสูง

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คำสำคัญ: ความดันโลหิตสูงชนิดไม่ทราบสาเหตุ ความรอบรู้ด้านสุขภาพ คุณภาพชีวิตด้านสุขภาพ สิ่งแวดล้อมบริเวณที่อยู่อาศัย ปัจจัยสังคมกำหนดสุขภาพ

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