THE ROLE OF MEDICATION LITERACY IN THE TREATMENT OF HYPERTENSIVE PATIENTS: A REVIEW

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ABSTRACT

Hypertension, or high blood pressure, has become a major contributor to cardiovascular disease globally. Its prevalence continues to increase, necessitating intensive healthcare efforts. Medication literacy, or the skill of understanding and applying medication information, is crucial for chronic patients, including those with hypertension. However, there has been limited research on this topic, highlighting the need for a literature review of the levels and roles of literacy in the therapy of hypertensive patients. This study used a narrative review approach to analyze the findings of articles on medication literacy in hypertensive patients. This study employs a narrative review approach to analyze findings from various journals. The data were derived from articles focusing on medication literacy in hypertensive patients, identified through literature searches on PubMed from 2013 to 2023. The selected articles were published in international journals, have a full text, can provide data on the role of medication literacy in hypertensive patients, and use quantitative, qualitative, or mixed-methods research designs.Two studies included in the review originated from China. Both articles reported low literacy levels among hypertensive patients. Factors, such as education and income, can also influence literacy. These findings underscore the importance of improving medication literacy in hypertension management, emphasizing the need for better education and more effective development strategies. Both articles also emphasized the significance of medication literacy in the context of hypertension management; that is, they highlighted the need for improved medication literacy and provided evidence of the positive impact of medication literacy on blood pressure control. Collectively, these findings highlight the importance of enhancing medication literacy for the treatment of hypertension. Further interventions that adopt and personalize the patients' level of literacy from the corresponding hypertension medication could be more effective, instead of providing the information as generic education.

Keywords: medication literacy, hypertension, blood pressure management, influencing factors, review

INTRODUCTION

Hypertension, also known as high blood pressure, is a major contributor to global cardiovascular disease (Zhou et al., 2021). It is a primary medical condition and has emerged as a significant risk factor for cardiovascular, renal, neurological, and ophthalmic diseases worldwide, making it a leading cause of disease and deaths (Murray et al., 2020).

The worldwide occurrence of hypertension rose from around 4.5% (0.9 billion adults) in 2000 to 7% in 2010. Predictions suggest that it might impact 1.6 billion adults by 2025 (Lim et al., 2012). As a result, there is a need for more rigorous approaches to manage and control blood pressure, emphasizing the effectiveness of treatments (Unger et al., 2020).

The hypertension therapy guidelines of the International Society of Hypertension recommend addressing and controlling hypertension through lifestyle modifications and medication use (Unger et al., 2020). Nevertheless, based on previous research, drug therapy remains a primary approach for managing hypertension and plays a crucial role in its regulation. Various drug categories have been suggested to control blood pressure, with a choice depending on concurrent medical conditions and complications (Unger et al., 2020).

In the realm of medication usage, patients often encounter diverse information and instructions from various sources that vary in quality and reliability (Krska et al., 2019). Some individuals may be prescribed more than two medications, adding complexity to the required and received information (Guerrero-García & Rubio-Guerra, 2018). To easily comprehend this information, patients are expected to possess adequate medication literacy (Rahman et al., 2020).

Medication literacy is the concept of health literacy development that emphasizes medication-related abilities. This literacy includes interpreting dosage instructions, understanding labels, and knowing what to do if a dose is missed or side effects occur. (Sauceda et al., 2012). It involves the cognitive and social abilities needed to access, understand, communicate, calculate, and process information related to medication. This information is crucial for making informed decisions (King et al., 2011; Pouliot et al., 2018).

Individuals with adequate medication literacy skills can understand and adhere to medication-related information, potentially leading to improved therapeutic compliance and reduced risk of medication-related issues (Pouliot & Vaillancourt, 2016). Recent evidence indicates that patients with good medication literacy can enhance their ability to safely and accurately use medication (Ngoh, 2009; Yazicioglu & Yardan, 2021).

Therefore, assessing medication literacy in patients is crucial for enhancing therapeutic outcomes. However, there has been no literature review on the level and role of medication literacy in hypertensive patients. This could be attributed to the relatively recent recognition of medication literacy in the context of medication usage. It appears that this term is not as widely acknowledged as a pertinent term in health literacy related to medicine, such as medication understanding (Pouliot et al., 2018). Medication literacy not only evaluates patients' understanding but also addresses the detailed skills patients need to use their medications properly. It provides pharmacists with guidance on vital medication details to communicate with patients with limited health literacy. Recognizing the importance of these issues is crucial for achieving better therapeutic outcomes. This study aimed to identify such aspects and other influencing factors on medication literacy in hypertensive patients within relevant articles.

RESEARCH METHOD

To conduct this literature review, a narrative review methodology was utilized, encompassing the analysis of findings reported in several journals by previous researchers. The data were sourced from various articles focusing on the role of medication literacy in hypertensive patients, and these articles were published online.

Tools and Materials

A literature search was conducted using the PubMed database, with articles published between 2013 and 2023. The articles obtained from PubMed were then imported into the Endnote software. This software makes it easier for researchers to collect and organize relevant article references by author, title, and other categories, allowing them to proceed to the next step. The article selection process was carried out using Microsoft Excel, which allowed researchers to provide important notes more easily.

Article Selection Criteria

The inclusion criteria for selecting the selected articles were as follows: (1) articles published in international journals, (2) capable of providing data on the role of medication literacy in hypertensive patients, and (3) utilizing quantitative, qualitative, or mixed-methods

research designs. The exclusion criteria were as follows: (1) studies involving interventions on research subjects, (2) articles presenting only abstracts without complete texts, (3) articles lacking complete data, and (4) studies conducted in the same location within close time frames. The literature search process involved combining keywords such as "treatment literacy" and "hypertension*" using Boolean operators such as "AND" in accordance with predetermined search methods. The search limit was set to the last ten years, with no restrictions on text availability or article type.

Research Procedure

Two researchers (ORM and VW) conducted a literature search in early September and selected articles from mid-to late September. Following this, data were collected from journals that met the inclusion and exclusion criteria. The gathered information included article titles, first author names, publication years, country of research, sample sizes, sample characteristics, medication literacy measurement tools, sample literacy scores, measured therapeutic outcomes, role of medication literacy, and factors influencing medication literacy. Each researcher independently extracted data based on the agreed categories and discussed the results. The acquired data were subsequently presented in narrative format, encompassing both descriptive information and analytical results.

RESULTS AND DISCUSSION

Overview of articles used in the literature review.

A total of 20 article titles were obtained from a keyword-based search. Of these, 18 articles were excluded because they (1) involved interventions (n=4), (2) focused on health literacy unrelated to medication use (n=8), (3) were conducted in the same location (n=2), and (4) had irrelevant topics (n=4). Two articles reported by Ma et al. (2020) and Qin et al. (2023) met the criteria for further review of the article review process (Ma et al., 2020; Qin et al., 2023). Both studies, conducted in China by Ma et al. and Qin et al., gathered data from different research areas and years (**Table I**). These two studies employed a cross-sectional design, with over 50% male respondents and an average age above 60 years. Medication literacy in both studies was measured using the Chinese version of the Medication Literacy Scale for Hypertensive Patients (C-MLSHP) (Ma et al., 2020) and revised version of C-MLSHP (C-MLSHP R) (Qin et al., 2023). C-MLSHP R explored the knowledge dimension of medication in more depth and detail than C-MLSHP. Furthermore, medication practice literacy in C-MLSHP R focused more on overall patient behaviors related to seeking information about medication, making medication-related decisions, adherence to treatment schedules, as well as self-monitoring and supervision (Ma et al., 2020; Qin et al., 2023).

Table I. Articles Meeting Inclusion and Exclusion Criteria

Research Title; First Author; Year	Country of Origin; Research Design	Sample Size; Proportion of Male Patients; Age	Inclusion Criteria for Patients Involved in the Study
The status of medication literacy and associated factors of hypertensive patients in China; Ma et al.; 2020	China, Cross-sectional	590 (55,20%); Not available: >=60 years = 57.40%	1) Diagnosed with hypertension based on the most recent 2016 Chinese Hypertension Treatment Guidelines. 2) Above the age of 18. 3) Been using antihypertensive medication for over 2 weeks. 4) Demonstrating good consciousness and regular communication skills. 5) Consenting to participate in

			this study and having signed the informed consent.
Association between medication literacy and blood pressure control among hypertensive patients; Qin et al.; 2023	Cina; Cross-sectional (consecutive sampling)	378 (65,34%); 62,66 ± 12,49	1) Aged over 18 years. 2) Patients diagnosed with hypertension according to the 2018 China Hypertension Management guidelines. 3) Currently using or have used antihypertensive medication in the last 3 months. 4) Able to communicate and read normally. 5) Expressing consent to participate in this study

Measurement results of medication literacy and the role of medication literacy

The article reported by Ma et al. (2020) discussed various findings related to medication literacy in hypertensive patients (Ma et al., 2020). The research results indicate that the level of medication literacy among these patients was relatively low across all measured dimensions of medication literacy. The dimensions measured in the C-MLSHP include knowledge literacy, behavior, skills, self-medication practice, and treatment-related aspects. The literacy scores for each dimension range from 0.64±0.31 0.70±0.25. The research results, presented in **Table II**, reveal that knowledge literacy had the highest score compared to the other dimensions, while self-medication practice had the lowest score. Ma also reported on four factors influencing the level of medication literacy, i.e., educational, social, economic, and insurance type factors (Ma et al., 2020).

Table II. Medication Literacy: Measurement and Its Role in Hypertension Therapy

Author's name, Year;	Medication literacy measurement tool; Patient medication literacy level	Standardized medication literacy scores in each dimension	Measured therapeutic outcomes; Role of medication literacy	Factors influencing medication literacy
Ma et al., 2020	Chinese version Medication Literacy Scale for Hypertensive Patients (C-MLSHP); Medication literacy score = 24.61±5.13 (indicated low level of medication literacy; total the highest score of C-MLSHP = 37)	• Knowledge literacy = 0.70±0.25; • Attitude literacy = 0.67±0.15; • Skills literacy = 0.64±0.31; • Practice literacy = 0.65±0.15; • Average score for each dimension = 0.67±0.14	Therapeutic outcomes: None; Role of literacy: No correlation analysis conducted.	Educational level, annual income, occupation, type of health insurance.
Qin *et al.*, 2023	Chinese Medication Literacy Scale for Hypertensive Patients (C-	• Knowledge literacy = 0.39 ± 0.23; • Attitude	Therapeutic outcome: Well-controlled blood pressure.	Not available measurement

	MLSHP-R); The medication literacy score = 28.44 ± 8.78 (indicated medium level of medication literacy; with a total tool score of C-MLSHP-R ranging from 0 to 51).	literacy = 0.66 ± 0.26; • Skills literacy = 0.61 ± 0.33; • Practice literacy = 0.62 ± 0.22.	Role of literacy: Medication literacy is a factor influencing the level of blood pressure control in hypertensive patients. Each increase of 1 point in the medication literacy score is associated with 1.043 times increase in the likelihood of blood pressure control in hypertensive patients.

Qin et al. (2023) also assessed the medication literacy level in hypertensive patients. Qin et al. suggest that patients' medication literacy is at a medium level (Qin et al., 2023). The lowest scores were observed in the medication knowledge dimension, with the other dimensions—medication skills, medication practice, and patient attitude—following the standardized score range of 0.61±0.33 – 0.66±0.26.

In contrast to the study conducted by Ma, Qin et al. (2023) focused on the correlation between medication literacy and the level of blood pressure control in hypertensive patients. Univariate analysis results indicated statistically significant differences in medication knowledge, skills, and practices among hypertensive patients in the different blood pressure control groups. The group with controlled blood pressure showed better measurements of literacy dimensions than the control group. Multivariate analysis revealed that for every one-point increase in medication literacy score, there was a 1.043 times increase in the likelihood of achieving blood pressure control (Qin et al., 2023).

Medication literacy encompasses a comprehensive evaluation of an individual's understanding of treatment-related information, attitudes, skills, and practical applications, serving as a holistic measure of treatment competency (Pantuzza et al., 2022). Medication literacy is crucial for managing chronic diseases such as hypertension. The research articles included in this review report on the measurement of medication literacy in hypertensive patients, factors influencing literacy levels, and the relationship between literacy and hypertension therapy received by patients.

The findings from the study conducted by Ma et al. (2020) indicate that medication literacy in hypertensive patients is still relatively low. The lowest dimensions were medication and medication use skills. Previous studies on patients with various chronic diseases have reported similar results (Rahman et al., 2020).

This study also indicates that, although patients have adequate knowledge of hypertension, they struggle to effectively apply this knowledge in self-medication practices. This condition warrants the attention of healthcare professionals, as improperly conducted self-medication practices can jeopardize the safety and effectiveness of treatment. For instance, knowledge about the selection of over-the-counter drugs for relieving nasal congestion or cold needs to consider contraindications in hypertensive patients. Medications containing phenylpropanolamine can significantly increase blood pressure in hypertensive patients, leading to vessel rupture or stroke. With adequate education and guidance on drug selection by pharmacists, unexpected incidents in patients can be controlled. Hanafi et al., (2014) show that health education can not only enhance knowledge but also influence

patients' attitudes and practices. While disease knowledge might impact self-medication practices, Lin et al.'s research found that disease-related knowledge does not correlate with medication adherence (Lin et al., 2017).

Ma's study also identifies several factors influencing the level of medication literacy, including the level of education and annual income. Education tends to enhance patients' knowledge, although this differs from the findings of other studies (Adeomi et al., 2014). Education also appears to improve high blood pressure management skills (Block et al., 2018). Different annual income levels also affect medication literacy among hypertensive patients. A higher annual income allows patients financial resources to access information, including information about drugs and health.

The results of Qin et al. (2023) on medication literacy levels affirm that the medication literacy of hypertensive patients still needs improvement. Other findings from Qin et al.'s research suggest that patients who effectively manage their blood pressure tend to have better knowledge, skills, and medication practices. The improvement in blood pressure control among hypertensive patients underscores the importance of enhancing medication literacy as a means of improving hypertension management. Other studies have shown that inadequate blood pressure control is significantly correlated with patients' knowledge of hypertension, and increased awareness of hypertension correlates with improved blood pressure control (Rashidi et al., 2018).

Given that hypertension medication often requires long-term adherence, patients' literacy regarding their respective diseases and medications can significantly impact their attitudes toward treatment. Patients who have a better understanding of their health status need less assistance in managing medications and exhibit increased self-management and positive attitudes toward their disease. They are more likely to adhere to prescribed medication regimens (Kang et al., 2015).

Despite the significant impact of medication literacy on therapeutic outcomes, hypertensive patients are recognized as having insufficient levels of medication literacy (Ma et al., 2020). This could be attributed to the fact that achieving health knowledge and accurately comprehending health professionals' recommendations require a high level of medication literacy (Darvishpour et al., 2016). In managing their health, patients grapple with a plethora of medication-related information and instructions from diverse sources that vary in quality and reliability (Ng et al., 2017). Consequently, individuals with low health literacy levels are prone to more frequent hospitalizations, irregular medication use, challenges in managing chronic diseases, and difficulties in comprehending health messages, often resulting in increased mortality (DeWalt et al., 2004).

Our findings underscore the need for tailored interventions, educational programs, and policy initiatives to enhance medication literacy among hypertensive patients. Some approaches could be planned and executed to improve patients' literacy levels, such as (1) emphasizing educating patients on their diseases and medications to enhance health literacy; (2) offering personalized assistance, clear explanations, and ongoing communication to empower patients in managing their health; and (3) proactively identifying and bridging gaps in patients' understanding of medication-related information.

This review had limitations that should be considered when interpreting the results. First, the studies included in the review were sourced from only one article search database, leaving room for further studies on the same topic. Second, the studies included in the review were from the same country, making it challenging to generalize the findings to other countries. However, our study could alert scholars and healthcare providers that further research is necessary to address this topic. Additional studies could provide more evidence and support solid synthesis as recommendations for hypertension therapy.

CONSLUSION

Based on the explanations provided, both articles emphasized the importance of medication literacy in the context of hypertension management. Ma et al. (2020) underscore the need for improving medication literacy, while Qin et al. (2023) provide empirical evidence regarding

the positive impact of medication literacy on blood pressure control. Collectively, these findings highlight the significance of enhancing medication literacy in the management of hypertension. Patients with a high level of medication literacy had better disease outcomes than those with a lower level. As the nature of hypertension management is a long period of treatment, good patient abilities in medication literacy are expected to prevent non-adherence to the corresponding medication. It will help health care professionals to achieve their defined target therapy associated with the patients and prevent more serious diseases, such as stroke and heart disease.

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