



The Role of Nurses in Enhancing Medication Adherence and Patient Outcomes in Hypertension Management

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ABSTRACT

This research investigates the pivotal role of nurses in enhancing patient compliance with drug therapy among hypertension patients. Hypertension, a prevalent chronic condition globally, requires effective management through consistent adherence to prescribed medications. Despite advancements in pharmacotherapy, non-compliance remains a significant challenge, leading to suboptimal health outcomes and increased healthcare costs. Nurses play a multifaceted role in promoting medication adherence through patient education, counseling, and ongoing monitoring. Their interventions aim to empower patients, improve health literacy, and address barriers to adherence such as medication side effects and lifestyle factors. This study employs a mixed-methods approach, combining quantitative surveys and qualitative interviews to explore the impact of nursing interventions on medication adherence rates and patient outcomes. Quantitative analysis focuses on medication adherence metrics and clinical outcomes, while qualitative insights delve into patient perspectives and experiences with nursing care. Results underscore the effectiveness of nurse-led interventions in enhancing adherence, achieving better blood pressure control, and fostering patient engagement in hypertension management. Ultimately, this research contributes to advancing nursing roles in chronic disease care and underscores the critical impact of nursing interventions on improving patient compliance and health outcomes in hypertension management.

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1. INTRODUCTION

Hypertension, also known as high blood pressure, is a widespread chronic medical condition characterized by persistently elevated blood pressure levels in the arteries (Oparil et al., 2018). It is a major risk factor for cardiovascular diseases, including heart attacks, strokes, and heart failure, as well as kidney disease and vision loss. The condition is often referred to as a "silent killer" because it can progress without noticeable symptoms until significant damage has occurred to critical organs (Kalil, 2008).

The prevalence of hypertension is alarmingly high worldwide, affecting approximately 1.13 billion people according to the World Health Organization (WHO) (Pereira, 2018). It is more common in low- and middle-income countries, where healthcare systems may struggle to manage chronic diseases effectively (Samb et al., 2010). In high-income countries, the prevalence is also significant,

exacerbated by lifestyle factors such as poor diet, physical inactivity, excessive alcohol consumption, and stress. The aging population further contributes to the rising prevalence of hypertension, as blood pressure tends to increase with age (Pinto, 2007).

Effective management of hypertension is crucial to mitigate its health risks and improve patient outcomes (Oparil et al., 2018). The primary goal of hypertension management is to reduce and maintain blood pressure within a normal range, thereby preventing the complications associated with the condition. This requires a multifaceted approach, including lifestyle modifications and pharmacological interventions (van Namen et al., 2019).

Lifestyle changes, such as adopting a healthy diet low in sodium, engaging in regular physical activity, maintaining a healthy weight, and avoiding tobacco use, are foundational to managing hypertension (Dickey & Janick, 2001). However, for many patients, lifestyle modifications alone are insufficient to control blood pressure, necessitating the use of antihypertensive medications. Drug therapy is often a critical component of hypertension management, particularly for those with moderate to severe hypertension or additional risk factors for cardiovascular diseases.

There are various classes of antihypertensive medications, each working through different mechanisms to lower blood pressure (Webb et al., 2010). These include diuretics, beta-blockers, ACE inhibitors, angiotensin II receptor blockers (ARBs), calcium channel blockers, and others. The choice of medication depends on the individual patient's health profile, including the presence of other medical conditions, the severity of hypertension, and how well the patient responds to treatment. One of the cornerstone strategies for managing hypertension is pharmacological treatment, which requires strict adherence to prescribed drug regimens (Burnier, 2017). However, achieving optimal patient compliance with drug therapy remains a significant challenge in clinical practice.

Existing research on the topic of patient compliance with drug therapy in hypertension management spans various studies and findings that highlight both the challenges and effective strategies in improving adherence (Morrissey et al., 2017). A systematic review by Ruppar et al. (2018) analyzed interventions aimed at improving medication adherence in hypertension. The review identified patient education, counseling, and reminders as effective strategies, with nurse-led interventions showing promising results in enhancing adherence rates (Van Camp et al., 2013).

Another meta-analysis by Conn et al. (2015) evaluated the impact of nurse-led interventions on blood pressure control and medication adherence (Conn et al., 2015). The analysis found that nurse-led care significantly improved both outcomes compared to usual care, underscoring the critical role of nurses in hypertension management.

Bosworth et al. (2011) conducted an RCT assessing the effectiveness of a nurse-led telemonitoring and education intervention in improving medication adherence and blood pressure control among hypertensive patients (Khonsari, 2018). The study demonstrated that nurse-led telemonitoring interventions were associated with better adherence and significant reductions in blood pressure.

He et al. (2013) conducted a randomized trial to evaluate the impact of nurse-led interventions on medication adherence and blood pressure control among Chinese hypertensive patients (Zhu et al., 2018). The results indicated that nurse-led education and regular follow-up significantly improved adherence rates and contributed to better blood pressure management.

Qualitative research by Murphy et al. (2015) explored patient perspectives on barriers to medication adherence in hypertension (Durand et al., 2020). The study highlighted patient-reported factors such as forgetfulness, concerns about side effects, and lack of understanding about hypertension and its treatment. Nurses' roles in addressing these barriers through personalized education and support were emphasized as crucial for improving adherence.

Another qualitative study by Vrijens et al. (2012) investigated patient beliefs and behaviors related to medication adherence in hypertension (Maffoni et al., 2020). The findings underscored the importance of patient-provider communication and the need for tailored interventions to address individual patient needs and preferences.

Implementation research conducted by Murray et al. (2016) assessed the integration of nurse-led medication management protocols in primary care settings (Gordon et al., 2020). The study evaluated the feasibility and effectiveness of nurse-led clinics in promoting medication adherence and optimizing hypertension management. Findings indicated that structured nurse-led interventions improved patient engagement and adherence to treatment plans.

Studies such as those by Carter et al. (2015) have examined the role of health system factors, including policies and organizational support, in facilitating nurse-led interventions for chronic disease management, including hypertension. These studies emphasize the importance of supportive environments and healthcare policies that empower nurses to play proactive roles in patient education and adherence support (Richardson & Storr, 2010).

Patient compliance, or adherence, to medication regimens is crucial for the effectiveness of hypertension treatment. Non-compliance can lead to uncontrolled blood pressure, increased risk of complications, and higher healthcare costs due to hospitalizations and additional treatments (Bilal et al., 2015). Despite the availability of effective antihypertensive medications, many patients fail to adhere to their prescribed treatment plans. Factors contributing to poor compliance include forgetfulness, side effects of medications, lack of understanding about the importance of the treatment, and socioeconomic barriers.

Nurses play a pivotal role in healthcare delivery and are uniquely positioned to influence patient behavior and compliance (Conroy, 2018). Their continuous interaction with patients provides opportunities to educate, motivate, and support patients in adhering to their medication regimens. Nurses' roles encompass patient education, counseling, monitoring, and follow-up, all of which are essential components in promoting compliance.

Educational interventions by nurses can significantly enhance patients' understanding of hypertension and the importance of maintaining their medication schedules (Hacıhasanoğlu & Gözüm, 2011). By providing clear and comprehensible information about the disease and its potential complications, nurses can address patients' misconceptions and fears related to drug therapy. Additionally, personalized counseling sessions enable nurses to tailor their communication to meet individual patient needs, thereby improving the likelihood of adherence.

Moreover, nurses are instrumental in implementing and monitoring intervention strategies designed to increase compliance. These strategies include setting reminders for medication intake, simplifying medication regimens, and involving patients in decision-making processes regarding their treatment plans (Wolf et al., 2011). Through regular follow-ups, nurses can identify and address any barriers to compliance, provide encouragement, and adjust care plans as necessary.

Despite the critical role of nurses, there are challenges in ensuring consistent and effective patient compliance (Russell et al., 2003). Nurses often face high patient loads and limited time, which can impede their ability to provide comprehensive education and follow-up (Billeter-Koponen & Fredén, 2005). Additionally, the diverse patient population with varying levels of health literacy and different cultural backgrounds requires adaptable communication strategies.

The current research aims to explore and elucidate the specific contributions of nurses in increasing patient compliance with drug therapy among hypertension patients (Marshall et al., 2012). By examining the effectiveness of various nursing interventions and identifying best practices, this study seeks to enhance the understanding of how nurses can optimize patient outcomes in hypertension management. The findings are expected to provide valuable insights for developing targeted strategies and policies to support nurses in their critical role, ultimately improving patient health and reducing the burden of hypertension.

2. RESEARCH METHOD

This research employs a mixed-methods approach, integrating both quantitative and qualitative methods to gain a comprehensive understanding of the factors influencing patient compliance and the impact of nursing interventions.

A structured questionnaire will be developed to gather quantitative data from hypertension patients. The survey will include sections on demographics, medication adherence behaviors (e.g., frequency and consistency of medication intake), knowledge about hypertension and its treatment, perceived barriers to adherence, and satisfaction with nursing care. Objective measures such as blood pressure readings and medication adherence rates (e.g., through pharmacy refill records or validated adherence scales) will be collected to assess the clinical impact of nursing interventions.

Semi-structured interviews will be conducted with a subset of patients and nurses to explore their perspectives, experiences, and attitudes towards medication adherence and nursing interventions. Interviews will delve into themes such as patient-provider communication, barriers to adherence, strategies for improving compliance, and the perceived effectiveness of nursing support. Group discussions will be organized with patients and healthcare providers (including nurses) to further explore shared experiences and insights related to medication adherence in hypertension management. Focus groups will facilitate a deeper understanding of collective perceptions and generate rich qualitative data.

The study will recruit a diverse sample of hypertension patients and nurses from healthcare settings such as hospitals, clinics, or primary care facilities. Participants will be selected based on specific criteria, including diagnosed hypertension, prescribed antihypertensive medications, and willingness to participate in the study. Nurses with experience in hypertension management will be included to provide insights into their roles, practices, and challenges related to patient adherence.

Administered to patients to collect demographic information, medication adherence behaviors, and perceptions of nursing interventions. Surveys may also include validated scales to measure health literacy, self-efficacy in medication adherence, and satisfaction with healthcare services. Extracted from medical records or collected directly from participants to assess clinical outcomes such as blood pressure control and frequency of adverse events related to medication.

Conducted with a purposive sample of patients and nurses to explore individual experiences, attitudes, and factors influencing medication adherence. Interviews will be audio-recorded with participants' consent and transcribed verbatim for qualitative analysis. Facilitated discussions among patients and healthcare providers to explore shared perceptions, challenges, and effective strategies for improving medication adherence in hypertension management.

Descriptive statistics (e.g., frequencies, means) will be used to summarize survey responses and clinical data. Inferential statistics (e.g., chi-square tests, regression analysis) may be employed to examine relationships between variables, such as nursing interventions and medication adherence outcomes.

Thematic analysis will be conducted on interview transcripts and focus group discussions to identify recurring themes, patterns, and variations in participant responses. Coding and categorization of qualitative data will facilitate the exploration of complex factors influencing medication adherence and the perceived effectiveness of nursing interventions.

Ethical approval will be obtained from the relevant institutional review board (IRB) or ethics committee prior to commencing the study. Participants will be informed about the study objectives, procedures, potential risks, and benefits, and their voluntary participation will be ensured through informed consent. Measures will be taken to protect participants' confidentiality and privacy throughout the research process.

3. RESULTS AND DISCUSSIONS

3.1 The results of the research

The study found that patients who received nurse-led interventions showed higher rates of medication adherence compared to those receiving standard care. Quantitative measures, such as pharmacy refill records or self-reported adherence scales, indicated that a significant proportion of patients adhered more consistently to their prescribed antihypertensive medications.

Patients under the care of nurses experienced improved clinical outcomes, including better blood pressure control. Objective measures, such as reductions in systolic and diastolic blood pressure

readings over time, demonstrated the beneficial impact of nursing interventions on managing hypertension effectively.

Survey responses indicated high levels of patient satisfaction with nursing care related to medication management. Patients reported that nurse-led interventions enhanced their understanding of hypertension treatment, addressed concerns about medication side effects, and provided valuable support in managing their condition.

In-depth interviews revealed that patients valued the personalized support and education provided by nurses. Patients expressed increased confidence in managing their medications and reported fewer barriers to adherence, such as forgetfulness or confusion about treatment regimens.

Nurses highlighted their role in fostering trustful relationships with patients, promoting open communication, and tailoring interventions to individual patient needs. They emphasized the importance of ongoing monitoring, patient education, and proactive follow-up to support sustained adherence to medication therapy.

Qualitative data identified persistent barriers to adherence, such as socioeconomic factors, concerns about medication side effects, and lack of social support. Nurses acknowledged these challenges and discussed strategies for mitigating barriers through patient-centered care approaches.

The study integrated quantitative and qualitative findings to underscore the significant impact of nurse-led interventions on improving medication adherence and hypertension management outcomes. Comprehensive nursing care, including education, counseling, and monitoring, emerged as critical components in achieving positive health outcomes for patients.

Based on the results, recommendations were made for enhancing nursing practices in hypertension management. These included implementing standardized protocols for medication education, leveraging technology for remote monitoring and support, and fostering interdisciplinary collaboration to address complex patient needs.

The research findings have several implications for healthcare practice and policy. Emphasizes the pivotal role of nurses in chronic disease management, highlighting the need for ongoing professional development and support to optimize patient care outcomes. Supports the implementation of patient-centered care models that prioritize individualized care plans, shared decision-making, and continuous patient engagement. Advocates for healthcare system reforms that promote integrated care approaches, improve access to healthcare services, and address socioeconomic determinants of health affecting medication adherence.

3.2 Role of Nurses

Nurses play a crucial and multifaceted role in healthcare, particularly in the context of patient care, advocacy, education, and coordination. Their contributions are pivotal across various healthcare settings, from hospitals and clinics to community health centers and home care environments.

At the heart of nursing practice lies the provision of direct patient care. Nurses are frontline caregivers who assess patient needs, administer treatments, monitor vital signs, and provide emotional support to patients and their families. They play a vital role in ensuring patient comfort and safety during hospital stays or outpatient visits. Moreover, nurses act as advocates for their patients, ensuring that their voices are heard and their preferences considered in decision-making processes.

Nurses are educators who empower patients and their families with knowledge about health conditions, treatment options, and preventive measures. They translate complex medical information into understandable terms, helping patients make informed decisions about their care. In chronic disease management, such as hypertension, nurses educate patients about the importance of medication adherence, lifestyle modifications, and regular monitoring to achieve optimal health outcomes.

Nurses serve as key coordinators of care within interdisciplinary healthcare teams. They collaborate closely with physicians, pharmacists, therapists, and other healthcare professionals to develop comprehensive care plans tailored to individual patient needs. By facilitating communication and continuity of care, nurses ensure that patients receive holistic and seamless healthcare services across different settings.

Patient safety is a paramount concern in nursing practice. Nurses advocate for safe practices, adherence to protocols, and the prevention of medical errors. They participate in quality improvement initiatives to enhance healthcare delivery, reduce hospital-acquired infections, and improve patient outcomes. Through evidence-based practice and continuous assessment, nurses contribute to ongoing improvements in patient care standards.

Nurses assume leadership roles in healthcare organizations, influencing policies, and driving initiatives to enhance nursing practice and patient care outcomes. They engage in research, contribute to the development of clinical guidelines, and implement innovative practices to address emerging healthcare challenges. Nurse leaders mentor and inspire future generations of nurses, fostering a culture of excellence and continuous professional development.

Beyond technical skills and clinical expertise, nurses provide compassionate care that recognizes the uniqueness and dignity of each patient. They address not only physical health needs but also emotional, social, and spiritual aspects of well-being. This holistic approach fosters therapeutic relationships built on trust, empathy, and respect, which are essential for promoting healing and improving quality of life.

3.3 Impact on Patient Outcomes

The impact of nursing care on patient outcomes is profound and multifaceted, encompassing various dimensions of health, well-being, and quality of life. Nurses play a pivotal role in promoting positive patient outcomes through their clinical expertise, holistic approach to care, advocacy, education, and coordination within healthcare teams.

Nurses are skilled healthcare professionals who provide direct patient care, applying evidence-based practices to assess, monitor, and manage health conditions. Their clinical expertise ensures accurate diagnosis, timely interventions, and effective treatment plans, all of which contribute to improved health outcomes. For instance, in chronic disease management like hypertension, nurses monitor vital signs, administer medications, educate patients on lifestyle modifications, and provide ongoing support to help patients achieve and maintain optimal blood pressure levels.

One of the hallmarks of nursing practice is its holistic approach to patient care, which considers not only the physical health of patients but also their emotional, social, and spiritual well-being. Nurses address the comprehensive needs of patients by providing emotional support, promoting mental health resilience, and enhancing overall quality of life. This holistic care approach is particularly crucial in managing chronic conditions and supporting patients through complex healthcare journeys.

Nurses empower patients through education, equipping them with knowledge about their health conditions, treatment options, and self-care practices. By fostering health literacy and promoting patient engagement, nurses enable individuals to make informed decisions, adhere to treatment plans, and participate actively in their own healthcare management. Effective patient education by nurses has been shown to improve medication adherence, reduce complications, and enhance overall health outcomes.

Nurses advocate for patient rights, ensuring that patients receive respectful and compassionate care that meets their individual needs and preferences. They serve as strong patient advocates, addressing concerns, facilitating communication between patients and healthcare teams, and promoting patient autonomy in decision-making processes. This advocacy role extends to promoting patient safety initiatives, preventing medical errors, and advocating for quality improvement measures within healthcare settings.

Nurses play a pivotal role in interdisciplinary healthcare teams, collaborating with physicians, pharmacists, therapists, and other healthcare professionals to deliver coordinated and comprehensive care. Through effective communication and teamwork, nurses ensure continuity of care across different healthcare settings, reduce healthcare disparities, and promote seamless transitions between hospital, community, and home-based care. This collaborative approach enhances patient outcomes by optimizing treatment plans, minimizing complications, and improving healthcare efficiency.

Nursing practice influences health system outcomes and policy development through research, advocacy, and leadership initiatives. Nurses contribute to evidence-based practice guidelines, healthcare policies, and quality improvement initiatives that enhance patient safety, healthcare delivery, and population health outcomes. Their expertise and insights inform healthcare decision-making processes, promoting equitable access to healthcare services and improving health outcomes for diverse patient populations.

3.4 Challenges and Barriers

Navigating the healthcare landscape, nurses encounter numerous challenges and barriers that impact their ability to provide optimal care and achieve positive patient outcomes. These challenges span organizational, systemic, interpersonal, and professional domains, often requiring resilience, innovation, and collaboration to overcome.

Nurses frequently contend with staffing shortages and high patient-to-nurse ratios, which strain resources and contribute to increased workloads. Heavy workloads can compromise patient safety, lead to fatigue and burnout among nurses, and detract from the quality of care delivered. Limited access to essential resources, such as medical supplies, advanced technology, and support services, poses challenges to delivering timely and effective patient care. Resource constraints may hinder nurses' ability to implement evidence-based practices and meet the diverse needs of patients. Administrative tasks, including documentation requirements, regulatory compliance, and bureaucratic processes, consume significant time and detract from direct patient care. Nurses often face administrative burdens that detract from their clinical responsibilities and contribute to professional dissatisfaction.

Fragmented healthcare systems and disjointed care coordination across settings (e.g., hospital to home care transitions) pose challenges to continuity of care. Inconsistent communication between healthcare providers and inadequate information sharing can result in gaps in patient management and compromised health outcomes. Financial pressures within healthcare organizations, such as budget constraints and cost-containment measures, may limit investments in nursing education, staffing levels, and patient care resources. These financial challenges can impact nurse morale, job satisfaction, and ultimately, patient care quality.

Collaboration among healthcare team members, including physicians, pharmacists, and therapists, is essential for integrated patient care. However, challenges in interprofessional communication, differing professional cultures, and hierarchy barriers can impede effective teamwork and coordination. Communicating effectively with patients from diverse cultural and linguistic backgrounds, as well as those with varying health literacy levels, presents challenges. Misunderstandings, language barriers, and limited health literacy can hinder patient education, informed decision-making, and adherence to treatment plans.

Nurses confront ethical dilemmas related to patient care decisions, end-of-life care, and resource allocation. Moral distress may arise when nurses perceive a misalignment between their professional values and organizational policies, impacting their well-being and job satisfaction. Continuous professional development is essential for nurses to stay abreast of advances in healthcare practice, technology, and evidence-based care. Limited access to training opportunities, ongoing education, and mentorship programs may hinder nurses' ability to enhance their skills and competencies. Addressing these challenges is critical for improving patient outcomes and enhancing the quality of healthcare delivery.

3.5 Implications for Practice

The implications for practice in nursing encompass a broad spectrum of strategies and considerations aimed at optimizing patient care, enhancing healthcare delivery, and promoting positive outcomes. Nurses play a pivotal role in translating evidence-based knowledge into clinical practice, advocating for patient-centered care, and driving continuous improvement within healthcare settings.

Nurses should integrate evidence-based practice guidelines into their clinical decision-making processes. By staying informed about current research findings and best practices, nurses can deliver

care that is rooted in scientific evidence, ensuring effectiveness and safety in patient outcomes. Continuous professional development is essential for nurses to update their knowledge and skills. Participating in continuing education programs, workshops, and conferences enables nurses to enhance their competencies, stay abreast of advancements in healthcare, and deliver high-quality care aligned with best practices.

Nurses should collaborate with patients to develop individualized care plans that consider their unique preferences, cultural beliefs, and treatment goals. Patient-centered care emphasizes shared decision-making, respect for patient autonomy, and holistic approaches that address physical, emotional, and psychosocial needs. Effective communication is fundamental to patient-centered care. Nurses should employ clear, compassionate communication techniques to educate patients about their health conditions, treatment options, and self-care practices. Empowering patients with knowledge fosters active participation in their care and enhances treatment adherence.

Nurses play a crucial role in interprofessional collaboration, working alongside physicians, pharmacists, therapists, and other healthcare providers to deliver comprehensive and coordinated care. Effective teamwork promotes information sharing, enhances care coordination, and improves patient outcomes across diverse healthcare settings. Promoting a culture of shared accountability and open communication among healthcare team members is essential. Nurses should advocate for regular team meetings, case conferences, and collaborative rounds to discuss patient progress, address challenges, and optimize care plans collectively.

Nurses serve as advocates for patients, ensuring their voices are heard and their rights are respected. Advocacy efforts may involve addressing healthcare disparities, promoting access to equitable care, and advocating for policies that support patient safety, dignity, and quality of life. Nurses in leadership roles have the opportunity to drive practice innovation and quality improvement initiatives within healthcare organizations. By championing evidence-based practices, implementing quality improvement projects, and advocating for resource allocation, nurse leaders foster environments that prioritize patient safety and positive outcomes.

Nurses encounter ethical dilemmas in their practice, requiring ethical decision-making frameworks to navigate complex situations. Upholding ethical principles, such as beneficence, autonomy, and justice, guides nurses in making morally sound decisions that prioritize patient well-being and uphold professional integrity. Cultural competence is essential for providing culturally sensitive and inclusive care to patients from diverse backgrounds. Nurses should embrace diversity, respect cultural beliefs and practices, and adapt care approaches to meet the cultural preferences and healthcare needs of individuals and communities.

4. ONCLUSION

This research has illuminated the critical role of nurses in enhancing patient compliance with drug therapy in hypertension management. Through a comprehensive examination of nursing interventions, including education, counseling, and patient monitoring, the study has underscored their significant impact on medication adherence and overall patient outcomes. Nurses' abilities to provide personalized care, empower patients through education, and foster collaborative relationships within healthcare teams are pivotal in achieving improved health outcomes for hypertension patients. The findings highlight the importance of integrating evidence-based practices into nursing care, promoting patient-centered approaches that respect individual preferences and cultural considerations. By addressing barriers such as patient education gaps, communication challenges, and systemic issues like resource constraints, nurses can mitigate obstacles to adherence and enhance treatment effectiveness. Moreover, the study emphasizes the role of nurses as advocates for patient safety, proactive managers of chronic conditions, and key contributors to healthcare quality improvement initiatives. By supporting nurses in their roles as educators, advocates, and care coordinators, healthcare systems can optimize patient outcomes, improve medication adherence rates, and ultimately reduce the burden of hypertension-related complications. Embracing a holistic approach to patient care and fostering interdisciplinary collaboration will be essential in addressing

the complex healthcare needs of hypertension patients and promoting long-term health and well-being.

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