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A REVIEW ON MEDICATION ADHERENCE IN HYPERTENSION PATIENT.

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ABSTRACT

Hypertension is a major global health concern, affecting over 1 billion individuals worldwide. Medication adherence is crucial for effective blood pressure control and reducing cardiovascular risk. However, poor adherence to antihypertensive medications is common, particularly in patients with apparent treatment-resistant hypertension. This comprehensive literature review aims to identify the prevalence, factors, and effective interventions associated with medication adherence among hypertension patients. The prevalence of medication non-adherence ranges from 20-50%, with higher rates observed in developing countries. Poor adherence is linked to increased hospitalizations, mortality, and healthcare costs. Factors influencing medication adherence can be categorized as patient-related (e.g., age, education, health literacy), healthcare provider-related (e.g., physician-patient communication, medication counseling), and system-related (e.g., healthcare access, insurance coverage, medication costs). Effective interventions to improve medication adherence include patient education, reminder systems, pharmacist interventions, mobile health applications, and financial incentives.

Multifaceted, tailored, and technology-based interventions have shown promising results. Challenges in improving medication adherence include the complex nature of adherence behaviors and the need for personalized approaches. Future directions should focus on developing and implementing evidence-based, patient-centered interventions that address the multidimensional factors influencing medication adherence in hypertension patients. Improving medication adherence has the potential to significantly reduce the global burden of hypertension and its associated cardiovascular complications.

INTRODUCTION

Hypertension is a major public health concern, affecting over 1 billion individuals worldwide. Medication adherence is crucial for effective blood pressure control,reducing cardiovascular risk, and improving health outcomes.

As a silent and asymptomatic condition, hypertension represents the most crucial modifiable risk factor for cardiovascular diseases (CVD) and ranks as the leading cause of disability-adjusted life years.1 This widespread health concern affects individuals of both genders, with its prevalence and burden increasing on a global scale.2 Projections suggest that by 2025, hypertension will affect an estimated 1.6 billion adults worldwide, reflecting a 60% rise from the year 2000.3 A particularly alarming aspect is the disparity in prevalence increase between high-income nations and low- to middle-income countries (LMICs).

While awareness, treatment, and control rates are improving in high-income countries, these factors remain significantly lower in LMICs.4 This discrepancy can be partially attributed to an aging population, increased urbanization, and alterations in social and environmental risk factors.5 In the United States, overall prevalence is higher, with lower control rates observed among minority groups, particularly non-Hispanic blacks.6 It is noteworthy that within any hypertensive population, a subset of individuals remains unaware of their condition.

Hypertension is a leading risk factor impacting on global morbidity and mortality. In 2016, it was the largest contributor to global disability-adjusted lifeyears and its complications led to approximately 10.4 million deaths . Despite the wide range of efficacious antihypertensive treatments, blood pressure (BP) is still not adequately controlled in a considerable number of patients worldwide. In the United States (US), the age-standardized proportion of hypertension control among treated patients was reported to be 43.5%. A survey in 89 countries in 2018 found that 60% of treated patients had their BP controlled .Several factors can explain poor BP control, including poor adherence of patients to treatment, physician inertia, prescription errors, overcomplicated guidelines and unsupportive healthcare systems . Among these, poor adherence is a major challenge and is recognized as such by guidelines, especially as hypertension is a mostly asymptomatic condition requiring lifelong use of medication. Moreover, it is now acknowledged that most patients will need more than one antihypertensive medicationfor their BP to be controlled , which can have important consequences on adherence, given that patients on two-pill or three-pill antihypertensive regimens are less likely tobe adherent and more likely to discontinue treatment than patients on single-pill treatment .

Although the exact proportion of non-adherent patients may vary between studies, in part because different methods are used for its assessment, poor adherence to antihypertensive medications is common, especially in patients with apparent.

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REVIEW OF LITERATURE

1. **Seyed Mehrdad Hamrahian et.al (2022):** Medication non-adherence is an underestimated, modifiable risk factor in the management of hypertension and aTRH. Evaluation of medication adherence should become an integral part of assessment of patients with hypertension and particularly a TRH. It is true thatdrugs do not work in patients who do not take them, but medication non- adherence is a much more complex problem than simply blaming the patient. There are patient-related factors as well as healthcare-related ones.
2. **Neil R. Poulter et.al (2019):** he clear that when BP control is not achieved, non-adherence should be considered as a possible reason and measured. Also When poor adherence is detected, the patient–practitioner relationship has an important role to play in the identification of patient specific barriers to adherence.
3. **M. Burnier et.al (2017):** Cardiovascular mortality is declining in developed countries but rather increases in developing countries 87 Despite the availability of new effective and well tolerated drugs enabling to control bloodpressure effectively in almost 80% of patients, according to clinical trials, hypertension remains the number one risk factor for the development of stroke, coronary heart disease, congestive heart failure and chronic kidney diseases.
4. **Papatya Karakurt, et.al (2012):** He studied pn Factors affecting medication adherence in patients with hypertension. It was found that 57.9% of the patients did not use their medicines as prescribed. The primary reasons for non-concordance were forgetfulness/aloneness/negligence for 49.3%, high cost for 26.5%, and old age/inactivity for 16.3%that 43.6% of the patients had been hypertensive for 1 – 5 years, 94.4% knew of a special diet for hypertension, and 47.3% did not comply with their diet. According to the results of the study, it was found that 31.1% of the patients attended follow-up visits once a month
5. **Rosalie P. Patel et.al (2002):** The findings suggest that patients' greater perception of control over trying to reduce blood pressure may result in decreased reliance on medications and subsequent non-adherence to drug therapy. Implications of these findings on pharmacy practice are discuss.
6. **Hayden B. Bosworth, PhD (2011):** Poor adherence to efficacious cardiovascular-related medications has led to considerable morbidity, mortality, and avoidable health care costsThus, to these ends, we are also proposing an ongoing alliance to continue to work together to frame the problems related to medication adherence share methods and successes for improving optimal use of evidence-based treatment.

AIM & OBJECTIVES

AIM

To conduct a comprehensive review of the literature to identify the prevalence, factors, and effective interventions associated with medication adherence among hypertension patients**.**

OBJECTIVES

1. To determine the prevalence of medication non-adherence among hypertension patients.
2. To examine the patient-related, healthcare provider-related, and system-related factors influencing medication adherence.
3. To evaluate the effectiveness of various interventions (e.g., patient education, reminder systems, pharmacist interventions) in improving medication adherence.
4. To identify the most effective strategies for improving medication adherence in specific populations (e.g., elderly, low-income, minority groups).
5. To discuss the challenges and future directions for improving medication adherence Among hypertention patient.

PLAN OF WORK

Prevalence of Medication Non-Adherence

- 20-50% of hypertension patients are non-adherent to medication regimens .
- Non-adherence rates higher in developing countries .
- Poor adherence linked to increased hospitalizations, mortality, and healthcare costs .

Factors Influencing Medication Adherence:

Patient-Related Factors:

- Age
- Education level
- Health literacy
- Medication beliefs
- Social support

Healthcare Provider-Related Factors

- Physician-patient communication
- Medication counseling

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- Follow-up appointments

System-Related Factors
- Healthcare access
- Insurance coverage
- Medication costs

Interventions to Improve Medication Adherence
- Patient education
- Reminder systems
- Pharmacist interventions
- Mobile health applications
- Financial incentives

Effective Strategies
- Multifaceted interventions
- Tailored interventions
- Technology-based interventions

UNDERSTANDING TREATMENT ADHERENCE

The World Health Organization defines adherence as the degree to which an individual's actions - including medication intake, dietary habits, and lifestyle modifications - align with the recommendations provided by a healthcare professional . While adherence to lifestyle changes plays a crucial role in managing and preventing hypertension , this discussion will concentrate on medication adherence. The term 'adherence' is preferred over 'compliance' as it recognizes the patient's active agreement to recommendations , rather than implying passive obedience.

Defining adherence precisely is challenging due to the variety of real-world behaviors associated with it. However, a commonly used benchmark for distinguishing adherence from non-adherence is when a patient takes 80% of their prescribed medication , though this threshold has not been validated for antihypertensive drugs. A European consensus paper proposed that adherence comprises three elements: initiation (taking the first prescribed dose), implementation (the extent to which the patient's actual dosing matches the prescribed regimen), and discontinuation (ceasing to take the prescribed medication).

A retrospective study analyzing electronic monitoring data from 4783 patients across 21 Phase IV trials revealed that 2% of patients never started treatment, and 48% experienced at least one 'drug holiday' (skipping doses for three or more consecutive days) annually. Approximately half of the patients with available follow-up data stopped their treatment within the first year . Notably, patients who poorly followed their prescribed regimen were more likely to discontinue treatment . In real-world clinical settings, these figures appear to be even more concerning: an examination of 195 930 electronic prescriptions indicated that 28% of patients did not initiate a new prescription for antihypertensive medication .

Prevalence of Medication Non-Adherence

The global burden of hypertension, defined as blood pressure (BP, mmHg) ≥140 systolic or ≥90 diastolic or antihypertensive treatment, was projected to rise from 918 million adults in calendar year 2000 to 1.56 billion in 2025.

The projected increase in the burden of hypertension reflected an expected rise in both prevalent hypertension from 26.4% to 29.2% and the worldwide population. By 2010, these projections appeared conservative as the worldwide prevalence of hypertension was estimated at 31.1%, affecting 1.39 billion people.

The large increase in prevalent hypertension globally was explained largely by rapidly rising prevalence in low middle–income countries. In 2010, ≈349 million hypertensive adults lived in high-income countries and 1.04 billion in lowmiddle–income countries. Prevalent hypertension was lower in high- than low-middle–income countries, whereas awareness, treatment, and control were substantially lower in the latter . Among treated hypertensive adults, roughly one-half were controlled in high-income countries compared with one-fourth in low-middle–income countries.

Factors Influencing Medication Adherence

Therapy-Related Factors/Interventions.

Complex regimens with multiple medications, especially when paired with multiple daily doses, are long-recognized as barriers to adherence. Alternatively, fewer medications, and especially fewer pills, which can be implemented using once daily single-pill combinations are consistently associated with better adherence and hypertension control .45,46 Patients who reach therapeutic targets more rapidly, who require fewer adjustments in their medication regimen, and who experience no or limited adverse effects

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are more likely to adhere than patients with a longer period to control, who often undergo multiple changes to their medication regimens, and experience adverse effects, are less likely to adhere to treatment. Long-term

chronic diseases, such as hypertension, are often associated
with progressive declines in persistence on treatment with thepassage of months and years. In addition to single-pill combinations, clinicians can further improve adherence by prescribing a larger number of pills with each prescription to reduce refill frequency. Moreover, patients with hypertension often require multiple medications to control their hypertension, and they frequently have other chronic diseases requiring additional medications. Refill consolidation so that multiple medications are obtained at the same time can improve adherence.

Condition-Related Factors/Interventions
Adults with hypertension, especially with aging, often have multiple chronic conditions and polypharmacy, which may adversely affects medication adherence. Major depression and other psychoses can adversely influence adherence as can drug or alcohol abuse and dementia.Interestingly, alterations of memory in elderly patients can results in a poor adherence as well as in an overadherence, with a higher drug consumption than what has been prescribed, which may induce drug toxicity.54 Not surprisingly, major disabilities and poor quality of life are documented to adversely affect medication adherence,55 especially when the medication(s) do not attenuate the disability or enhance quality of life. On a related note, severe chronic symptomatology, similar to chronic asymptomatic disease,can adversely impact medication adherence.

Patient-Related Factors/Interventions
As noted in the 2003 WHO Report on adherence, patient-related factors are often the principal focus of efforts to understand and improve adherence, which can lessen attention to the important role played by the other dimensions of adherence. While most interventions center on patient-related factors can improve adherence, failure to account for other dimensions of adherence typically leads to suboptimal improvements in adherence and associated clinical outcomes. To highlight the importance of these other dimensions, patient-related factors, which are important, were presented last in the 2003 WHO Report and the current review. Some patients do not accept the diagnosis, which is obviously a major impediment to adherence.

While not denying the diagnosis, other patients may fail to perceive the potentially severe impact of a currently asymptomatic disease on future health risk, including symptomatic and life-threatening conditions, such as coronary heart disease, chronic heart failure, stroke, or dementia. If patients perceive that prescription medications are ineffective in controlling hypertension or are likely to have major adverse effects, then adherence is likely to be adversely impacted.

A lack of knowledge about hypertension and its consequences are logically linked to suboptimal adherence. Yet, adherence interventions based only on education often lead to suboptimal results, although education is often a component of successful multimethod interventions. One example of a common misunderstanding that adversely affects adherence is the term hypertension, which connotes too many patients that stress or behavioral issues are the root cause of the elevated BP.58 In fact, patients with this perception of hypertension are less likely to take antihypertensive medications.

Factors Contributing To Nonadherence In Hypertensive Patients
Adherence is recognized as a complex issue influenced by various interconnected factors, including socioeconomic, healthcare system, medical condition, therapy, and patient-related aspects . The interactions among patients, healthcare providers, and the healthcare system can significantly affect a patient's adherence to treatment . The healthcare system plays a crucial role in creating an environment that promotes adherence at multiple levels and can impact access to care and cost-related obstacles . At the healthcare provider level, factors such as communication abilities, knowledge of guidelines, appropriateness and intricacy of prescribed treatments, therapeutic inertia, and time limitations can all influence adherence (Table 1). At the patient level, various factors can negatively impact adherence, and these may differ from one patient to another .

Hypertension is primarily an asymptomatic condition, which may lead patients to underestimate the necessity or benefits of treatment. This is particularly true for younger, active individuals without comorbidities, who might also be concerned about potential or experienced side effects, or reluctant to incorporate treatment into their daily routines. Side effects experienced by patients during therapy are one of the primary reasons for nonadherence, especially when combined with a lack of perceived treatment benefits, whether real or imagined by the patient.

Improving Medication Adherence Among Patients with Hypertension.
Simplify the regimen.

- Encourage patients to use adherence tools, like day-of-the-week pill boxes or mobile apps.
- Work to match the action of taking medication with a patient's daily routine (e.g., mealtime or bedtime, with other medications they already take properly).

Impart knowledge

- Write down prescription instructions clearly, and reinforce them verbally.

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- Provide websites for additional reading and information.

Modify patients' beliefs and behavior.

- Provide positive reinforcement when patients take their medication successfully, and offer incentives if possible.
- Talk to patients to understand and address their concerns or fears.

Provide communication and trust.

- Allow patients to speak freely. Time is of the essence, but research shows that most patients will talk no longer than 2 minutes when given the opportunity.
- Use plain language when speaking with patients. Say, "Did you take all of your pills?" instead of using the word "adherence."
- Ask for patients' input when discussing recommendations and making decisions.
- Remind patients to contact your office with any questions.

Leave the Bias

- Understand the predictors of non-adherence and address them as needed with patients.
- Ask patients specific questions about attitudes, beliefs, and cultural norms related to taking medications

CONCLUSION

Poor adherence to medication represents a challenge in the management of hypertension and its importance is increasingly recognized. The barriers to adherence are complex, affected by several contributing and often interconnected factors at the patient level, practitioner level and healthcare system level, and they can differ depending on the patient's profile, as outlined in this review. Medication adherence among hypertension patients remains a significant concern. Understanding factors influencing adherence and implementing effective interventions can improve health outcomes, reduce healthcare costs, and enhance quality of life.

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