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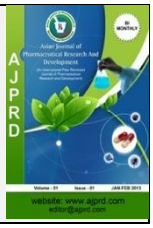

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Review Article

A Review on Hypertensive Drug Prescription

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A B S T R A C T

Hypertension is considered to be the vital reason of mobidity and mortality in the society. It is an important risk aspect for cerebro-vascular, cardiovascular, and renal problems. A number of national and international guidelines for the management of hypertension have been published. The increasing occurrence of hypertension and the frequently escalating expenditure of its treatment control the prescribing patterns amongst physicians and compliance to the treatment bythe patients. from the time when several years ago, diuretics were calculated as the first-line drugs for management of hypertension therapy; however, the recent guidelines by the Joint National Commission (JNC8 guidelines) advise both calcium channel blockers in addition to angiotensin converting enzyme inhibitors as first-line drugs, in adding up to diuretics. This assessment aims on the antihypertensive medication utilization, adherence to treatment by patients, and physicians' adherence to guidelines in prescribing medications in various settings. The antihypertensive medication prescribing pattern studies assist to observe, estimate and essential changes to the prescribing practice to get rational and cost-effective treatment. In addition, there should always be an updating of recommended guidelines and inventive drug formulations, and prescription monitoring evaluations help in rational use of antihypertensive drugs, which can be tailored to go with the patients' requirements, counting those in the emergent countries.

Keywords: Prescription pattern, anti-hypertensive, adherence, evaluation

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INTRODUCTION

Hypertension, also known as high or raised blood pressure, is a condition in which the blood vessels have persistently raised pressure. Blood is carried from the heart to all parts of the bodyin the vessels. Each time the heart beats, it pumps blood into the vessels. Blood pressure is created by the force of blood pushing against the walls of blood vessels (arteries) as it is pumped by the heart. The higher the pressure, the harder the heart has to pump.[1]

Hypertension is a serious medical condition and can increase the risk of heart, brain, kidney and other diseases. It is a major cause of premature death worldwide, with upwards of 1 in 4 men and 1 in 5 women – over a billion people – having the condition. The burden of hypertension is felt disproportionately in low- and middle-income countries, where two thirds of cases are found, largely due to increased risk factors in those populations in recent decades. Hypertension significantly increases the risk of heart, brain and kidney diseases, and is one of the top causes ofdeath and disease throughout the world. It can be easily detected through measuring blood pressure, at home or in a health centre, and can often be treated effectively with medications that are low cost. The study, conducted by a global network of physicians and researchers, covered the period 1995–2021. It used blood pressure measurement and treatment data from over 100 million people aged 30–79 years in 184 countries, together covering 99% of the global population, which makes it the most comprehensive review of global trends in hypertension to date.[2-6]

By analysing this massive amount of data, the researchers found that there was little change in the overall rate of hypertension in the world from 1995 to 2021, but the burden has shifted from wealthy nations to low- and middle-income countries. The rate of hypertension has decreased in wealthy countries – which now typically have some of the lowest rates – but has increased in many low- or middle-income countries. As a result, Canada, Peru and Switzerland had among the lowest prevalence of hypertension in the world in 2020, while some of the highest rates were seen in the Dominican Republic, Jamaica and Paraguay for women and Hungary, Paraguay and Poland for men. (See notes to editors for country breakdowns/rankings). Although the percent of people who have hypertension has changed little since 1990, the number of people with hypertension doubled to 1.28 billion. This was primarily due to population growth and ageing. In 2021, over one billion people with hypertension (82% of all people with hypertension in the world) lived in low- and middle-income countries.[7]

Scope and objectives of the hypertension guideline

The 2022 WHO hypertension guideline aims to provide the most current and relevant evidence based global public health guidance on the initiation of treatment (with pharmacological agents) for hypertension in adults. The recommendations target the general adult, non-pregnant, hypertensive population. Although several countries and professional societies have guidelines on the topic of hypertension, these are specific to the population of that particular country or the specific setting or constituency of the professional society. Recent shifts in hypertension management, such as moving away from using beta-blockers as a first-line agent or the increased research and adoption of combination therapies and single-pill combinations, are all additional reasons for new guidance. The Guideline for the pharmacological treatment of hypertension in adults will be the first global guideline in the past two decades on the topic and will have specific relevance to low- and middle-income countries (LMICs). The guideline provides new recommendations on the threshold for the initiation of pharmacological treatment for hypertension, recommendations on intervals for follow up, target blood pressure to be achieved for control, and the cadre of health care workers who may initiate treatment. It provides the basis for deciding whether to initiate treatment with monotherapy, dual therapy, or single-pill combination, as well as guidance for countries on selecting medicines for hypertension control in their national guidelines for hypertension management.[8]

The objectives of the hypertension guideline are to:

- Provide a blood pressure threshold for the initiation of treatment for hypertension;
- Determine if laboratory tests or cardiovascular risk assessment are required prior to initiation of treatment for hypertension;
- Determine the pharmacological agents with which to initiate treatment;
- Determine the need to initiate treatment with monotherapy,
- Dual therapy, or single-pill combinations; provide targets for blood pressure control inhypertension;
- Provide intervals for follow up for patients with hypertension; and
- Determine how nonphysician health care workers can participate in the management of hypertension.

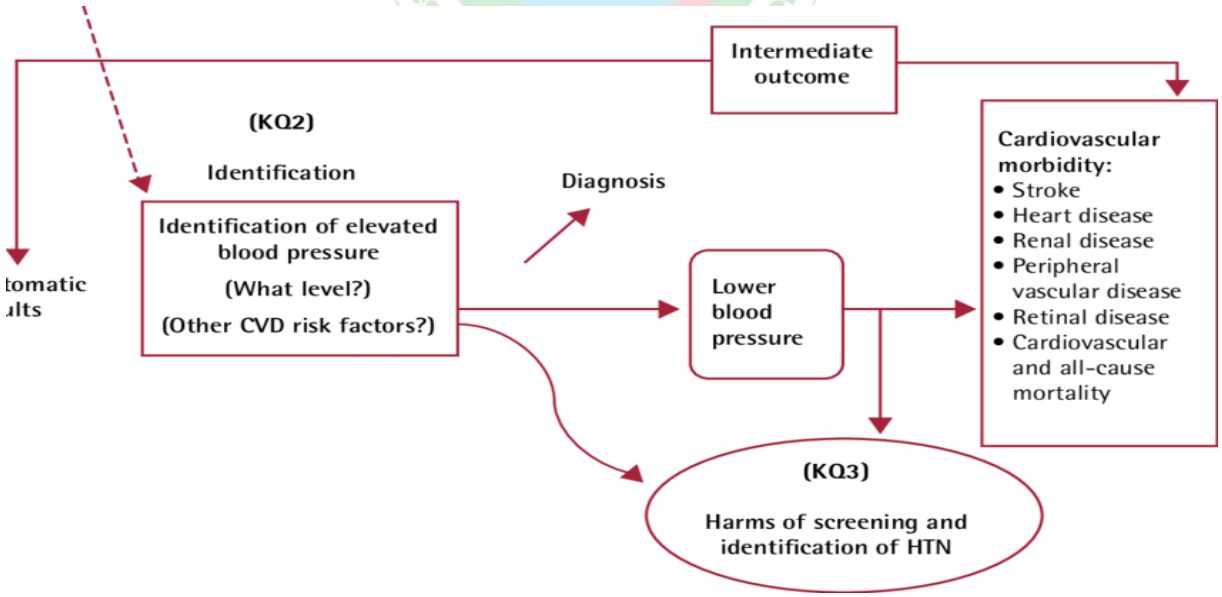

Figure: 1 Analytic Framework Hypertension Management

- Ensure that healthcare professionals taking blood pressure measurements have adequate initial training and periodic review of their performance
- Because automated devices may not measure blood pressure accurately if there is pulse irregularity (for example, due to atrial fibrillation), palpate the radial or brachial pulse before measuring blood pressure. If pulse irregularity is present, measure blood pressure manually usingdirect auscultation over the brachial artery
- Healthcare providers must ensure that devices for measuring blood pressure are properly validated

maintained and regularly recalibrated according to manufacturers' instructions

- When measuring blood pressure in the clinic or in the home, standardise the environment and provide a relaxed, temperate setting, with the person quiet and seated, and their arm outstretched and supported. Use an appropriate cuff size for the person's arm
- In people with symptoms of postural hypotension (falls or postural dizziness):
- measure blood pressure with the person either supine or seated
- measure blood pressure again with the person standing for at least 1 minute before measurement
- If the systolic blood pressure falls by 20 mmHg or more when the person is standing:
- review medication
- measure subsequent blood pressures with the person standing
- Consider referral to specialist care if symptoms of postural hypotension persist.
- For guidance on the prevention of obesity and cardiovascular disease, see NICE's guidelines on obesity prevention and cardiovascular disease prevention.
- Offer lifestyle advice to people with suspected or diagnosed hypertension, and continue to offer it periodically
- Ask about people's diet and exercise patterns because a healthy diet and regular exercise can reduce blood pressure. Offer appropriate guidance and written or audiovisual materials to promote lifestyle changes
- Ask about people's alcohol consumption and encourage a reduced intake if they drink excessively, because this can reduce blood pressure and has broader health benefits. See the recommendations for practice in NICE's guideline on alcohol-use disorders
- Discourage excessive consumption of coffee and other caffeine-rich products
- Encourage people to keep their dietary sodium intake low, either by reducing or substituting sodium salt, as this can reduce blood pressure
- Do not offer calcium, magnesium or potassium supplements as a method for reducing blood pressure
- Offer advice and help to smokers to stop smoking. See NICE's guideline on stop smoking interventions and services
- Inform people about local initiatives by, for example, healthcare teams or patient organisations that provide support and promote healthy lifestyle change, especially those that include group work for motivating lifestyle change.[10]

Diuretics

Thiazides had shown a decrease in cardiovascular morbidity and in reduction of risk of stroke and congestive cardiac failure in trials.1 A low dose thiazide diuretic had shown a reduction in cardiovascular event rate by 34% compared to placebo. Thiazides in low dose do not significantly decrease insulin sensitivity and they are associated with very low risk of side effect (hypokalemia, hyperuricemia, hyponatremia or hypercalcemia). Thiazides may not be effectives Objects who had reduced renal function.[11]

Calcium Channel Blockers

CCBs appear to be a favorable choice for monotherapy as well as for combination with other agent classes in the treatment of hypertension and may provide specific benefits beyond BP lowering.[10] Nowadays, dihydropyridine (DHP) CCBs are one group of most frequently prescribed antihypertensive medications in China and other Eastern Asian countries. The third and fourth generations of DHP CCBs have been proved to be effective and well tolerated antihypertensive agents without baroreflex activation in young and elderly hypertensive patients or in those patients with cardiovascular and/or renal complications. The concept with regard to the pharmacological mechanism underlying clinical efficacy by DHP CCBs has also been gradually updated by accumulating evidence from their traditional peripheral hypotensive actions to the involvement of the central pre-sympathetic neurons.[12] ACE Inhibitors They exert a renoprotective effect beyond their antihypertensive property. In type II patients with microalbuminuria ACEI has stabilized the AER and renal function in some studies and others are supporting the notion that the blood pressure reduction is more important. The main side effect of ACE is cough, which may limit the use. ACEI at a low dose at night and temporarily to suspend the use of loop diuretics. Concomitant use of ACEI with potassium sparing diuretic should be avoided.[14] Patients who do not tolerate ACEI can reverse the use with ARB.

Beta blockers: The invention of betablockers culminated in the era of treatment of cardiovascular diseases. since invention of propanalol, it took a good place in the physicians armamentarium against Cardiovascular Diseases's its currently used in ischeamic heart diseases, hypertension, cardiac arrhythmias and heart failure.

Evaluating prescribing pattern of antihypertensive drugs

There have been several studies evaluating the prescribing pattern of antihypertensive drugs worldwide. Over the past 20 years, there has been a consistent increase in the use of ACEIs, ARBs and CCBs and many robustly conducted clinical studies have showed no consistent differences in antihypertensive efficacy, side effects and quality of life within these drug classes. This has been supported by a retrospective time series data from 2007 to 2019 noted that the consumption of antihypertensive drugs in China nearly doubled. The most frequently prescribed antihypertensive drug classes were CCBs and ARBs, with prescriptions of the latter increasing most rapidly. Liu and Wang demonstrated that in 6,536 newly diagnosed cases of uncomplicated hypertension, CCBs and BBs were the most

prescribed antihypertensive medications. Surprisingly, the expensive, and well-known first-line antihypertensive therapy was low (8.3 % monotherapy and 19.9 % overall used Phadke's criterion for assessment of appropriateness of prescribing. They observed that most patients were being treated with two or more drugs and CCBs were most frequently prescribed antihypertensive medicines. Similar to other studies, 67.92 % of the patients were prescribed more than one drug, with the most commonly used combination being CCB + BB + alpha-blocker (7.55 %). Based on Phadke's evaluation criteria, 87.27 % of prescriptions were found rational. In another drug utilization study, 645 prescriptions were analyzed. A total of 697 antihypertensive drugs prescribed, of which 33.57

% were ARBs, 16.79 % ACEIs, 13.63 % were BBs and 11.91 % CCBs.

CONCLUSION

The constant challenges in managing hypertension, still need special consideration. There is a number of national and international guidelines for the management of hypertension have been published highlighting mono- or combination therapy according to the BP levels and prescription rate of thiazide diuretics which are the least associated comorbidity. Worldwide, hypertension treatment strategies have changed widely over time in terms of first drug of choice from diuretic to ACEI/ ARB/ CCB, from monotherapy to low doses of combination single drug therapy. Health policy makers in country should be supposed to make evaluations and treatment as a right to the public health organisations to get better outcomes in reducing morbidity and mortality due to hypertension. The pattern of evaluation, adherence to therapy and physicians adherence to the guidelines of hypertension and other datas which are concerned of the comorbid conditions have been explored by many clinical studies. In spite of several published guidelines and datas, many contradictions still exist towards the treatment approach since physicians sometimes have to individualize the therapy, based on specific patient characteristics and reaction to treatment. India which is a developing country Require more systematic studies on the evaluation of prescribing patterns and guideline based antihypertensive medications' use, which can be modified to suit the patients' requirements.

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