

Hypertension – A Silent Killer

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Abstract: - Hypertension is a major public health problem all around the world due to its high prevalence. Around 7.5 million deaths occur or 12.8% of the total of all annual deaths worldwide occur due to high blood pressure. It is predicted to be increased to 1.56 billion adults with hypertension in 2025. Raised blood pressure is the major risk factor for chronic heart disease, stroke, and coronary heart disease. BP elevation is very much positively correlated to the risk of having stroke and coronary heart disease. Other than coronary heart disease and stroke, heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment are the complications. Hypertension (or HTN) or high blood pressure is defined as abnormally high arterial blood pressure. According to the Joint National Committee 7 (JNC7), normal blood pressure is a systolic BP < 120mmHg and diastolic BP < 80mmHg. Hypertension is defined as systolic BP level of ≥ 140 mmHg and/or diastolic BP level ≥ 90 mmHg. The grey area falling between 120–139mmHg systolic BP and 80–89mmHg diastolic BP is defined as “pre-hypertension”. Pre-hypertensive subjects are at more risk of developing hypertension but it itself is not a medical condition. The risk factors and factors affecting poor adherence can be reduced by assessing medication adherence and by providing patient counseling about their disease conditions, drugs, and life style modifications.

Keywords: Hypertension, BP elevation, Medication adherence

I. INTRODUCTION

Hypertension is considered as one of the major community health problem in many of the countries. It is the one of the cardiovascular diseases estimated to cause 7.1 million deaths annually, accounting for 13% of all deaths globally and remains as a significant public health challenge and one of the most essential risk factors for coronary heart disease, stroke, heart failure and end stage renal disease if left untreated.^[1]

Hypertension is a condition in which the blood vessels have persistently raised pressure. It can also be defined as a systolic blood pressure (SBP) ≥ 140 mmHg and/or diastolic blood pressure (DBP) ≥ 90 mmHg. Because of its financial cost and chronicity, it is considered as a worldwide public health burden.^[2] HTN is known as the “silent killer” and that can be easily detected and majority of the hypertensive patients (more than 50%) do not know they have HTN until their organs are getting damaged especially to heart, brain and kidneys.^[1]

Hypertension is ranked in the first position among the preventable causes of death in worldwide.

Globally it is a part of an epidemiological transition from communicable to non-communicable diseases. In the world, epidemiological transition for hypertension have many contributing factors including aging, urbanization, sedentary

lifestyle, obesity, ethanol consumption, and excess salt intake etc.^[3]

In the early stage of hypertension, patients rarely shows symptoms and many of the people left undiagnosed. People those who are diagnosed with hypertension may not have an access to the treatment as well as they may not have an ability to successfully control their condition for a long term. Hypertension cannot cause long term symptoms but its significant side effects may occur after years.^[3] Majority of patients remain asymptomatic with hypertension and some of the people with HTN may report headaches, lightheadedness, vertigo, altered vision, or fainting episode.^[2]

II. PREVALENCE OF HYPERTENSION

Globally, the overall prevalence of hypertension is in between 10%: 15%. In middle income countries the prevalence rates of hypertension is as high as 30% to 32%. But in high-income countries shows a lower prevalence of hypertension (35%) than others. Generally in lowland middle income countries the expected overall prevalence of hypertension is to be 46%. Due to uncontrolled population growth, weak health system for early detection and treatment and poor health seeking behavior etc, dramatically increases the prevalence of hypertension in African countries.^[2] In the Kingdom of Saudi Arabia (KSA), the prevalence of hypertension is increasing rapidly as one fourth of Saudis have HTN. The prevalence of hypertension is higher in the central region of the country when compared to other regions. In our local set up there was no available data which shows the prevalence of hypertension.^[4]

In India, mainly in the urban areas, the prevalence reports of hypertension was increasing rapidly, ie. 25% of adults, and gradually even in rural areas, i.e. 10% of individuals are affected. There were about 66 million hypertensive patients was found in India out of these 66 million hypertensive patients—34 million are in urban areas and 32 million in rural areas (estimated from same study).^[4]

III. RISK FACTORS

Hypertension is a disease condition and it is occur due to several predisposing factors. Such factors may vary even there is difference between urban and rural regions of the same place and also from country to country.

“Urbanization and Health” is used as the theme for World Health Day 2010, organized by World Health Organization by realizing the effect of urbanization on our collective health.

Urbanization is mainly considered as one of the key drivers of non-communicable diseases (NCDs), especially in low- and middle-income countries (LMICs) and also considered as determinant of health.^[5]

When compared to rural people, urban people are more at risk of these diseases. As per the findings of National Family Health Survey (NFHS-4), in urban areas of Uttar Pradesh, the prevalence of hypertension, obesity, and blood glucose was 10.5%, 23.9, and 9.9%, respectively. However, in the rural areas the prevalence of the same phenomenon was 8.3%, 10.8%, and 8.2%, respectively. When compared to rural area it is very much clear that all the parameters are having higher prevalence in urban area.^[6] A web of risk factors like elderly population, mechanization, sedentary life, and dietary changes act together when urbanization rapidly increases and then these factors entangles people in it and leads to several chronic diseases. Identification of the risk factors of hypertension is an essential prerequisite in order to take effective prevention measures to treat the conditions.^[4]

Behavioral risk factors such as use of tobacco, alcohol consumption, obesity, unhealthy diet, increase blood glucose level and elevated cholesterol level directly leads to cardiovascular disease and it is very much influenced by the impact of hypertension. To reduce CVD premature mortality the primary prevention in general population is the reduction of risk factors. For preventing and controlling of hypertension and cardiovascular-related diseases it is important to emphasize the healthy lifestyle modification of the population because it is necessary and more effective way.^[5]

Weight reduction, physical activity, stop smoking, healthy and lower sodium diets, and frequency of BP monitoring are the life style modifications followed by the patients to reduce the disease condition and therefore it is the important component of hypertension treatment. The life style modification is when combined with antihypertensive treatment can improves the recommended life style adherence and patient medication adherence^[5]

When considering prevalence in gender wise, men having higher prevalence of hypertension and pre-hypertension compared with women (M: 40.9% and F: 26.0%) and (M: 45.9% and F: 38.05%), respectively. Gender difference in hypertension prevalence is a common fact and one of the possible explanations for reason may be partially due to biological sex difference and partially due to behavioral risk factors smoking, alcohol consumption, or physical activity. Consumption of alcohol and smoking might be less in women compared to men and that may be few of the protective factors against hypertension in women. Another reason for this is ,women are more interested in health care services utilization and more aware about their health conditions and also more frequently report their poor health so that is why women are more likely to have better health when compared with men.^[6]

Another important risk factor for hypertension was found to be the age. As the age advances the prevalence of hypertension also rises in both sexes. High prevalence of hypertension in older age groups is mostly due to increasing the stiffening of aorta and artery walls with increasing age group. Other factors like marital status, education, occupation, socioeconomic status, BMI, abdominal obesity, tobacco use, alcohol use, and physical activity were significantly associated with the hypertension. Factors like low literacy level and being too rich were also associated with hypertension. Doing less physical activity and having convenience foods are the contributing risk factors for overweight and obesity which are already proven and it is subsequently linked to hypertension.^[6]

As per WHO report, in developed countries the third largest risk factor for the hypertension is the alcohol consumption and the second major cause of death was being the tobacco use in worldwide. As compared to nonusers hypertension was more prevalent in tobacco users (OR: 1s.86) and alcohol users (OR:1.55).^[6]

IV. PROGNOSTIC, DIAGNOSTIC AND THERAPEUTIC ASPECTS

Prognostic, diagnostic and therapeutic interventions combines the major aspects of hypertension management. By considering the prognostic aspects, while assessing the hypothesis^[7]

that a healthy blood pressure (BP) that is characterized by an age-adjusted and sex-adjusted SBP Z-score between $_{-1.5}$ and $_{-0.5}$, is familial. While considering a sample of general population found that the predicted total mortality and cardiovascular disease at home BP is as reliably as office BP. Where as variability in home SBP was exhibited superior prognostic ability than variability in office BP. When comparing with normotensive patients not only sustained and masked, but also white-coat hypertension was also associated with increased risk of death and cardiovascular disease events. A controversy is still behind the scene that the real cardiovascular risk is always associated with white-coat hypertension and during the time of follow-up the small sample size and a limited number of end points may lead to increased estimates of cardiovascular risk in patients with white-coat hypertension.^[7]

Compare the BP risk in patients with and without diabetes mellitus, both in patients with and without diabetes , the risk of stroke and coronary disease events are markedly increased in hypertensive patients, whereas individuals with normal BP, the risk is reduced. In high-normal BP and normal BP groups there is no significant difference in risk was seen. Other conditions that influencing the prognosis in hypertension is central obesity especially among women those living in urban area and get exacerbated the association between hypertension and cardiovascular disease events.^[7]

Considering the diagnostic implications, the subclinical carotid damage, finding carotid intima-media thickness is the association of metabolic syndrome and is significantly higher in patients with metabolic syndrome than in those without the metabolic syndrome. In patients with the metabolic syndrome ultrasound search of subclinical carotid disease is suggested that may refine cardiovascular risk stratification and decision-taking strategies. Renal ultrasound is the widely used method in the diagnostic work-up of patients with newly diagnosed hypertension, not only to detect the renal injury signalled by increased renal resistive indices but also to identify causes of secondary hypertension originating from the kidney.^[7]

Considering the third part ie, the aspects of hypertension management, the standardization to a preselected BP reduction is a problematic issue. However, crude analysis cannot explore when selecting to standardize to unmask some clinical aspects. It should have a solid clinical justification for the projected comparison of the standardized RRs(relative risks) and whether the extent of BP reduction is linearly associated with the outcome to standardize.^[5]

Salt reduction is to be the most cost-effective one among the non-pharmacological interventions among hypertensive patients with obstructive sleep apnoea, two-thirds have urinary nor-metanephrine (uNMT) above the normal limit. Under positive airway pressure therapy uNMT may decrease or normalized, parallel with changes in the apnoea-hypopnea index after percutaneous transluminal renal angioplasty.^[5] The impact of renal function on cardiovascular and renal outcomes in hypertensive patients with atherosclerotic renal artery stenosis is followed up for years and the outcome was found to be worse that the renal function get impaired and, a poor response of estimated glomerular filtration rate to angioplasty. The therapeutic effectiveness for the catheter renal denervation is the sustained reduction in the office and ambulatory BP in patients with resistant hypertension, associated with a low complication rates.^[7]

V. COMPLICATIONS

The annual change in SBP causes the progression of brachial-ankle pulse wave velocity, but not its baseline level. This implies that to slow arterial wall stiffening with regardless of initial BP, effective control of BP may be important and hence it also reduces the cardiovascular risk.^[8]

While considering the sleep disturbances in hypertension, the endothelin antagonist, bosentan, is an option. In response to acute hypoxia in patients with severe obstructive sleep apnea, for those patients the endothelin contributes to the rise in systolic pressure, but it not increases the muscle sympathetic nerve activity. In obese children with sleep-disordered breathing, their endothelial function and arterial stiffness is not have a flow-mediated vasodilatation but found a significant relationship between the apnea-hypopnea index and carotid distensibility.^[9]

VI. DISCUSSION

As we all know, nowadays hypertension is a common health problem in our worldwide. In less developed and developing countries there is a continuous progression in the number of patients with HTN. It is affected in many ways, due to some major risk factors as we discussed above such as obesity, consumption of alcohol and smoking etc. Family history is the another major factor for hypertension.^[1] Due to the increasing mortality and disability problems because of hypertension it is very important to overcome the world from this disease condition. The major reasons for poor BP control is the poor medication adherence and lack of knowledge and awareness on hypertension which is largely related to deterioration in a patient's quality of life.^[4]

Patient adherence is influenced by Multiple factors that includes prescribed therapies, quality of life, complexity and side effects of medications, health care system issues, demographic, behavioral, treatment, and clinical variables like family history consumption of alcohol and smoking etc, factors affecting non-adherence includes lack of assess to medications, forgetfulness, dissatisfaction with treatment, Other fear of getting used to medication etc and lack of knowledge regarding hypertension^[5]

There are significant differences among countries about the awareness about HT and treatment and control and that are relatively low worldwide. It is difficult to accept the treatment by the patient for hypertension in the absence of symptoms. for long-term control of blood pressure the use of antihypertensive drug therapy is the key method. Managing the Hypertension can be through lifestyle modification or pharmacological agents such as diuretics, angiotensin converting enzyme (ACE) inhibitors, calcium channel blockers (CCBs), angiotensin receptor blockers (ARBs) and beta-blockers. The availability of effective anti-hypertensive drugs and inadequate or incorrect management of hypertension surely results in a complete range of complications and causes leading damage to the heart, brain, retina, kidneys, deterioration in quality of life and finally death. WHO stressed that by considering the preventive strategies and increasing the effectiveness of interventions about hypertension should be taken as the key elements to health outcomes of population than improving specific medical treatments for the condition.^[7]

Symptomless nature of the condition, the long duration of therapy, side effects of medication, complicated drug regimens, lack of understanding about hypertension management and risks, and costs of medication are some of the facts that patients sometimes may fail to take their medication depending on the population studied and its estimated range antihypertensive medication adherence rates have widely differed.^[3]

People with chronic conditions, self-management support is an important care and also encourages their families, give support and educate them and to assist them for understand their focal role in managing their illness, make informed decisions about care, and engage in healthy behaviors. Educational programmes are arranged to increase patients' skill and to manage their chronic disease and supports them systematically to provide support and help them to find interventions all are the responsibility of the health care staff. The self-management intervention to lowered systolic blood pressure (SBP) by 10 mm Hg more than usual care. By providing educational activities patients gain more sufficient knowledge about hypertension disease and it is more helpful to them for their better blood pressure control as well as to improve their outcome.^[6]

In developing countries increasing the knowledge and awareness, detection, treatment, and control of hypertension (HTN) like cost-effective use of health services are needed among public, particularly about the risks associated with uncontrolled blood pressure. The important medical challenge in the prevention and treatment of hypertension has been identified as screening for elevated systolic blood pressure (SBP).^[6] A major obstacle for achieving the targeted blood pressure control is the low adherence with the prescribed treatment. Therefore, the adherence of the patient is of utmost importance in the treatment of hypertension. Individuals with low medication adherence have a high risk in terms of uncontrolled blood pressure and adverse outcomes that may arise. It has been proven that the patients affects the medication adherence positively when the involvement of patients in decision making, and taking disease and treatment seriously. This clearly indicates that medication non-adherence is the multifaceted problem, responsible for increasing the important medical and public health issues like worsened therapeutic outcome, higher hospitalization rates, and increased health care costs.^[5]

VII. CONCLUSION

Hypertension is a global challenge with high morbidity and mortality rates. The prevalence of HTN is increasing in developing countries. It can be managed by assessing the

adherence level of the patients. Knowledge about hypertension and its treatment were associated with adherence behavior of patients. One of the biggest obstacles in therapeutic control of high blood pressure is the poor adherence to anti-hypertensive therapy. Early diagnosis and management of co morbidities, adherence counseling and patient education about the disease and its treatment are important to improve adherence status of patients.

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