



## A STUDY ON MANAGEMENT OF HYPERTENSION BY TERTIARY HEALTH-CARE PHYSICIANS IN THE CITY OF RAJASTHAN

### Community Medicine

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### ABSTRACT

**BACKGROUND:** Hypertension poses a major public health challenge in India due to high prevalence and poor control. Outpatient care provided by tertiary healthcare setup plays key role in diagnosing and controlling hypertension as patients usually approach them first for any kind of ailment. Hence, awareness of physicians in such setups regarding the diagnosis, recent developments in pharmacotherapy of hypertension and comorbidities is of utmost importance. Therefore, this survey study was planned and conducted on physicians working in an outpatient facility in a tertiary health-care setup. **AIM AND OBJECTIVES:** (1) assess the present knowledge of physicians regarding the diagnosis, investigations required and related pharmacological and therapeutic measures for dealing with hypertension as well as hypertension related comorbidities and (2) determining the need of familiarizing physicians with newer and advance lines of management of hypertension. **MATERIALS AND METHODS:** A cross-sectional observational study was conducted for a period of 6 months among 70 physicians from department of Medicine and Obstetrics and Gynaecology who treat patients of hypertension. Questionnaire about diagnosis, investigation, target blood pressure, and treatment based on Joint National Committee 8 and Indian Guidelines on Hypertension III guidelines as well as non-pharmacological measures and continued medical education programs was provided to them. After receiving filled questionnaire, physicians were assessed for their adequacy of knowledge by calculating their scores. Physicians whose score signified adequate knowledge were divided into two groups, that is, staff (professors, associate professors, and assistant professors) and resident doctors. Results were expressed as mean  $\pm$  standard deviation and statistical significance was assessed using Mann-Whitney test. **RESULTS:** Forty-four physicians were shown to have adequate knowledge out of which 21 were staff doctors and 23 were resident doctors. Both the groups were comparable in their knowledge. All the physicians agreed to update the recent knowledge in treatments which will benefit the health of patients. **CONCLUSION:** Most of the physicians were seen to have adequate knowledge but still there was a constraint for boosting up the knowledge among physicians.

### KEYWORDS

Treatment of Hypertension; Associated Risks; Joint National Committee 8 and Indian Guidelines on Hypertension III Guidelines; Cross-Sectional Observational Study; Continued Medical Education

### INTRODUCTION

According to systematic review and meta-analysis of prevalence, awareness, and control of hypertension,<sup>[1]</sup> prevalence of hypertension in India is 29.8% seen in both urban and rural parts, and awareness is 25.1% in rural and 41.9% in urban parts of the country. However, the estimate of hypertensive patients having their blood pressure (BP) in control in rural and urban India is only 10.7% and 20.2%, respectively. Hypertension is a significant reason for death and has been reported to be directly responsible for 57% of all stroke deaths and 24% of all coronary heart disease (CHD) deaths.<sup>[2]</sup> The WHO has rated hypertension as one of the most important causes of premature deaths worldwide.<sup>[3]</sup> Due to the high prevalence and poor control as well as the high mortality and morbidity rates, hypertension poses a major public health challenge in India as well as worldwide.

Incidences of hypertension are higher in patients with diabetes mellitus as well as in pregnancy, and its control in these conditions becomes even more crucial for the health of the patient. Hypertension, if left untreated, may increase the chances of diseases like strokes, renal disorders and left ventricular hypertrophy (LVH), so making early detection and control of the disease is very essential.

Outpatient care provided by tertiary health-care setup, should provide the necessary expertise required for treatment and further management of such patients. These physicians have a key role in diagnosing and controlling hypertension as patients usually approach them first for any kind of ailment.

Knowledge of advancements in treatments and therapies would aid improvement in diagnosis and subsequent healthcare, thus having an overall beneficial effect on patient health. It has been seen that if BP is effectively controlled, many of the cardiovascular diseases can be prevented and even a slight decrease of BP by 2 mm Hg reduces the risk of stroke by 15% and the risk of coronary artery disease by 6%.<sup>[4]</sup> Hence, awareness of physicians in such setups regarding the diagnosis, recent developments in pharmacotherapy of hypertension, and comorbidities is of utmost importance. Therefore, this survey study was planned and conducted on physicians working in an outpatient facility in a tertiary health-care setup. The questionnaire used to assess the knowledge of these physicians, consists of questions regarding management of hypertension in patients with or without comorbidities. It may help to evaluate the awareness of physicians

regarding current guidelines for managing hypertension and stress on the need for medical educational training programs and workshops to familiarize them with newer and advancing lines of management.

### OBJECTIVES OF THIS STUDY WERE:

1. assess the present knowledge of physicians regarding the diagnosis, investigations required, and related pharmacological and therapeutic measures for dealing with hypertension as well as hypertension related comorbidities
2. Determining the need of familiarizing physicians with newer and advancing lines of management of hypertension.

### MATERIALS AND METHODS

The study was conducted under Indian Council of Medical Research Short Studentship (ICMR-STs) program as a survey among the physicians treating hypertension on an outpatient basis in a tertiary health-care hospital in Pune. Institutional Ethics Sub-Committee approval (IESC/STS/2018/14) was obtained before starting the study. Written informed consent was obtained from the participating physicians before initiating the study. They were selected as per the inclusion and exclusion criteria which are mentioned below.

### Type of Study

This was a cross-sectional observational study.

### Place of Study

The study was conducted Govt. Medical college Dungarpur Rajasthan

### Period of Study

The study period was 10 months (April 2020–December 2020).

### Sample size

The sample size was 70.

### INCLUSION CRITERIA

The following criteria were included in the study:

- Physicians from Department of Medicine and Obstetrics and Gynaecology
- Physicians playing an active role in providing outpatient care to patients.

### EXCLUSION CRITERIA

Physicians unwilling to participate in the study were excluded from the study.

**Study Technique**

The questionnaire consists of total 20 questions, out of which 14 questions were knowledge evaluating questions, in which five questions were about diagnosis, investigations required, target BP and nine questions were about drug of choice for treating hypertension with and without comorbidities based on Joint National Committee (JNC) 8 and

Indian Guidelines on Hypertension (IGH) III Guidelines [Table 1].

After the physicians had returned the questionnaire filled with their answers, they were assessed for their adequacy of knowledge by calculating the scores. A score of 1 point was credited to each correct answer and 0 for wrong answer.

**Table 1: Questionnaire given to the physicians based on JNC 8 and IGH III guidelines**

Questions	Options				
	A	B	C	D	E
Which of the following BP defines hypertension in an adult (<60 years) patient without comorbidities?	≥150/90 mm Hg	≥140/90 mm Hg	≥130/80 mm Hg	≥160/100 mm Hg	Other, please specify
What are the factors that help in diagnosing a patient with hypertension?	3 consecutive high BP readings, 1–4 weeks apart	Occipital headaches	Emotional outputs	All of the above	-
What are the investigations suggested to confirm the diagnosis?	Fundus examination	Lipid Profile	ECG/EKG	Urine for microalbuminuria	All of the above
What is the first-choice drug for initiation of monotherapy in a newly diagnosed patient with uncomplicated hypertension?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	-
What is the first-choice drug for initiation of monotherapy in a young individual?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	-
What is the target BP that is to be achieved in a patient (≥60 years), with uncomplicated hypertension?	<150/90 mm Hg	<140/90 mm Hg	<130/80 mm Hg	<135/85 mm Hg	Other, please specify
What is the target BP that is to be achieved in hypertensive patients with diabetes mellitus?	<150/90 mm Hg	<140/90 mm Hg	<130/80 mm Hg	<135/85 mm Hg	Other, please specify
What is the preferred drug of choice for treating hypertension associated with diabetes mellitus?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	-
What is the preferred drug of choice for treating hypertension in pregnant females?	ACE inhibitors/ARBs	Beta blockers/ labetalol	CCBs (Nifedipine)	Methyldopa	-
What is the preferred drug of choice in elderly (≥80 years) patients?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	Alpha blockers
What is the preferred antihypertensive drug of choice for primary prevention of stroke?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	-
What is the preferred drug of choice in hypertensive patients with LVH?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	-
What is the preferred drug of choice in hypertensive patients with CHDs?	ACE inhibitors/ARBs	Beta blockers	CCB	Diuretics	-
What is the preferred drug of choice in hypertensive patients with non-diabetic renal disease?	ACE inhibitors/ARBs	Beta blockers	CCB	Alpha blockers	-
CCB: Calcium channel blockers, CHDs: Coronary heart diseases, BP: Blood pressure, LVH: Left ventricular hypertrophy					

Adequate knowledge of guidelines was defined as correctly answering nine out of 14 questions (>60%).<sup>[5]</sup>

Physicians whose score signified adequacy of knowledge were divided into two groups, Staff (Professors, Associate Professors, and Assistant Professors) and Residents. Both the groups were compared with each other on the basis of their scores.

This questionnaire also contains other six questions about non-pharmacological measures and interest of physicians in updating their knowledge through continuing medical education (CME) programs [Table 2]. All 20 questions were of multiple-choice question.

**Data Analysis**

The results were expressed in mean ± standard deviation and statistical significance was analyzed by Mann–Whitney Test using the statistical software program Prism (GraphPad), *P* < 0.05 was considered to be statistically significant.

**RESULTS**

All participants (70 physicians) have completed and returned the filled questionnaire with answers. The demographic data of all the physicians are shown in Table 3.

The percentage of correct answers to the 14 knowledge evaluating questions of all participants is shown in Table 4. On the basis of criteria used for adequate awareness, only 44 (56.66%) physicians had

adequate knowledge of the guidelines, of which 21 were staff doctors and 23 were resident doctors. The maximum score of physicians was 12 and only six physicians were able to score it.

The mean score obtained by staff doctors was 9.6 ± 3.6 and mean score obtained by resident doctors was 11 ± 0.83. The difference between these groups was not

**Table 2: Questionnaire regarding non-pharmacological measures and continuing medical education**

Questions	Options				
	A	B	C	D	E
Are lifestyle changes encouraged in patients with hypertension?	Yes	No	-	-	-
What lifestyle changes do you encourage in a hypertensive patient with diabetes mellitus?	Weight loss, if obese	Lower sodium intake	Regular exercise	Quit smoking/ drinking	All of the above
Have you ever attended any CME programs/ workshops on hypertension management?	Yes	No	-	-	-
Do you feel that there is a need for CME	Yes	No	-	-	-

programs/ workshops on hypertension management in your hospital?					
Would you like to attend a CME programs/ workshops on hypertension management regularly?	Yes	No	-	-	-
What would be an appropriate frequency of such CME programs/ workshops on hypertension management?	Monthly	Every 2-3 months	Every 6 months	Yearly	Not required
CME: Continuing medical education					

**Table 3: Demography of physicians**

Variables	n (%)	Mean±standard deviation
Gender		
Male	46 (60)	
Female	29 (40)	
Age	25-58 years	34±9.7
Year of experience	1-28 years	8±8.5
Designation		
Resident	37 (51.7)	
Assistant Professor	10 (13.3)	
Associate Professor	13 (20)	
Professor	10 (15)	

**Table 4: Number of physicians provided correct answer as per each question**

Question number	Number and percentage of answers conforming to the guidelines
1	46 (74.33)
2	70 (101)
3	70 (101)
4	42 (52)
5	60 (100)
6	36 (43)
7	24 (23)
8	61 (100)
9	63 (101)
10	64 (101)
11	19 (31)
12	9 (13)
13	61 (100)
14	0 (0)

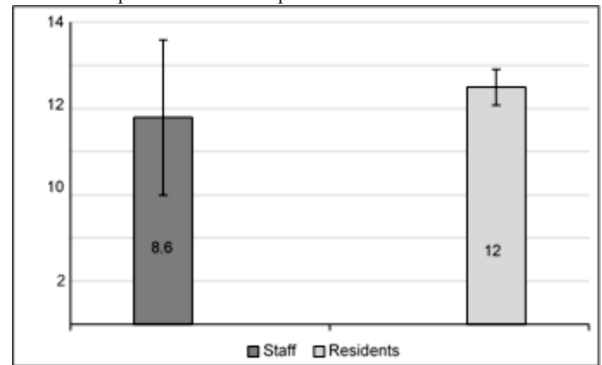
as shown in Figure 1. Lifestyle changes are encouraged by all the physicians in patients with hypertension. All of them accredit changes such as weight loss (if obese), lower sodium intake, regular exercise, and quitting smoking/alcohol help in controlling hypertension. About 55% of physicians have attended CME programs and workshops and found it helpful. All of them trust in the JNC 8 and IGH Guidelines. All the physicians feel that there is a need for CME programs in their hospitals and all of them would like to attend CME programs/workshops on hypertension regularly.

**DISCUSSION**

There have been various surveys that have been conducted worldwide to assess the knowledge and awareness of physicians regarding new guidelines for managing hypertension. In this study, 44 (56.66%) physicians had adequate knowledge of the guidelines. The maximum score of physicians was 12 and only six physicians were able to score it. Lifestyle changes, lowering sodium intake, regular exercise, and quitting smoking/alcohol were encouraged by all doctors. All the physicians feel that there is a need for CME programs in their hospitals and all of them would like to attend CME programs/workshops on hypertension on regular basis.

significant statistically. Both the groups were comparable in their knowledge regarding the guidelines on hypertension A research that

was pursued in Malaysia shows that even though there was a relative increase in the awareness of physicians, they still had poor knowledge regarding guidelines recommended antihypertensive agents for LVH, renal disease, and uncomplicated hypertension.[5] Current study also shows poor knowledge of the physicians regarding guidelines recommended antihypertensive agents for LVH, stroke, and renal disease. The possible reason for poor adherence could be



**Figure 1: Comparison of mean adequate knowledge and awareness among staff doctors and resident doctors**

that patients with comorbidity were referred to the specialist for the treatment and only uncomplicated hypertensive patients were treated by these physicians.[5] However, it also found adequate knowledge of the physicians regarding guidelines recommended antihypertensive agents for diabetes, CHD, and pregnancy. In this study, all physicians (100%) agreed that three consecutive high BP readings, 1-4 weeks apart, help in diagnosing a patient with hypertension. Hence, it appears they are following the correct strategy for diagnosing hypertension.[6] They also concur that other investigations such as fundus examination, lipid profile, electrocardiogram (ECG/EKG), and urine for microalbuminuria can confirm the diagnosis. Fundus examination is a simple and easily accessible investigation which can indicate the prognosis and severity of hypertension and it provides an indication of arteriolar damage occurring elsewhere.[6] ECG/EKG is an important clinical tool for detecting LVH. It is an independent predictor of cardiovascular mortality. Hence, hypertensive patients who have ECG/EKG evidence of LVH should be treated aggressively.[6] In this study, all physicians know the importance of this test for diagnosis, but only 8 (13%) physicians chosen the correct drug of choice, that is, ACE inhibitors/ARBs for prevention of LVH as recommended in guidelines.[7,8] As per Thulasimani *et al.*,[6] both hypertension and dyslipidemia should be treated together to prevent myocardial infarction and stroke. Here, all physicians were knowing the importance of investigating dyslipidemia in hypertensive patients. However, only 18 (30%) physicians chose the correct drug therapy, that is, ACE inhibitors/ARBs for prevention of stroke as recommended by JNC 8. However, for hypertensive patients with CHD 100% physicians adhere to the guidelines in choosing the recommended therapy.

Only 14 (23%) physicians knows the target BP that is to be achieved in hypertensive patients with diabetes mellitus but 100% physicians were adherent to the drug of choice for diabetes mellitus with hypertension. All the physicians in this study were chosen the right drug of choice in elderly (≥80 years) and young patients without comorbidities as per JNC 8 and IGH III. Microalbuminuria is considered predictor for kidney and heart patients. There is a significant correlation between BP and microalbuminuria as it indicates the general vascular dysfunction.[9] All physicians know the importance of this test but they were lacking in the knowledge about drug of choice for hypertension with renal disease. As per JNC 8 the first-line drug for hypertension with renal disease recommended is ACE inhibitors/ARBs and it was not chosen by any physician in this study. Awareness among all physicians about the target BP for all age groups was also poor.

Another research conducted in Coimbatore,[10] India, brings to light the adherence of physicians to the JNC 8 guidelines as well as their perception toward it. It was observed that 28% of prescriptions were rational and 56% were irrational, and majority of the physicians (65%) were not following the JNC 8 guidelines. In another study conducted in Saudi Arabia on residents of family and internal medicines shows 98% awareness of the guidelines for the management of hypertension.[11]

Our study shows that 56.66% physicians were having adequate knowledge of the guidelines. A similar research conducted in Pakistan<sup>[72]</sup> concluded that 39.4% of the prescribers knew correct BP goal for treating hypertensive patient above 60 years, and 43.8% knew correct BP goal for treating hypertensive patient of any age having diabetes mellitus. Whereas in this study, 43% of the physicians knew the correct BP goal for hypertensive patients above 60 years and only 23% of physicians knew the correct BP goal for a hypertensive patient with diabetes mellitus. The main barriers for lacking awareness about the recent guidelines among the physicians could be the lack of time for updating knowledge attending workshops/CMEs and other may be the affordability for the same.

Various guidelines on hypertension management have been published, disseminated, and regularly updated to improve hypertension control. However, it was found that the recommendations of the guidelines are not followed in the clinical practice. As the hypertensive patients were not managed as per the guidelines contributes to poor quality of care and health outcomes as well as increased risks of related comorbidities.<sup>[11]</sup> Knowledge of advancements in treatments and therapies would aid improvement in diagnosis and subsequent healthcare, thus having an overall beneficial effect on patient health. It has been seen that if BP is effectively controlled, many of the cardiovascular diseases can be prevented and even a slight decrease of BP by 2 mmHg reduces the risk of stroke by 15% and the risk of coronary artery disease by 6%.<sup>[4]</sup> Hence, awareness of physicians in such setups regarding the diagnosis, recent developments in pharmacotherapy of hypertension and comorbidities is of utmost importance. As most patients in our country are not able to afford specialists such as cardiologists/ nephrologists; hence, there is a high need for more widespread and effective management of hypertension. Physicians have a major role in this regard, as early diagnosis and management can prevent related complications of hypertension. Hence, this study proves the necessity for updating the knowledge about recent advances time to time. This is the first step in increasing the awareness about the need of updating the recent knowledge in treatments among physicians which will benefit the health of patient.

Current study has focused on all aspects of hypertension management including pharmacologic as well as non- pharmacologic therapy such as lifestyle changes, lowering sodium intake, regular exercise, and quitting smoking/ alcohol as well as diagnosis, regular updating knowledge of physicians. The major limitation of this study was its limited number of sample size taken from a single hospital.

In this study, all physicians had correctly chosen the drug of choice for diabetes, CHD, pregnancy as well as in elderly ( $\geq 80$  years) and young patients without comorbidities. All the physicians are following the correct strategy for diagnosing hypertension. The correct drug of choice was chosen by 8 (13%) physicians for prevention of LVH and by 18 (30%) physicians for prevention of stroke. There was lack of awareness among all the physicians regarding first-line drug for hypertension with renal disease. Awareness among all physicians about the target BP for all age groups was also poor. Lifestyle changes are encouraged by all the physicians in patients with hypertension. All the physicians feel that there is a need for CME programs in their hospitals and all of them would like to attend CME programs/ workshops on hypertension regularly. As per the criteria used, 34 (56.66%) physicians have shown adequate knowledge of the guidelines on hypertension. Both the groups were comparable in their knowledge regarding the guidelines on hypertension. It is important to update the knowledge about advancements in treatments and therapies which will aid improvement in diagnosis and subsequent healthcare, thus having an overall beneficial effect on patient health.

## CONCLUSION

Most of the physicians were seen to have sufficient knowledge but still there was a requirement for boosting up the knowledge among physicians.

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