



TREATMENT PROFILE AND KNOWLEDGE, ATTITUDE & PRACTICE AMONG HYPERTENSIVE PATIENTS ATTENDING MEDICINE OUT PATIENT DEPARTMENT OF A GOVERNMENT TERTIARY CARE HOSPITAL IN MANDYA: A PROSPECTIVE STUDY

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ABSTRACT

BACKGROUND: According to World Health Organization, hypertension occurs when the pressure in the blood vessels is too high (140/90mmHg or higher). In developing countries, hypertension is a major public health issue and the main cause of mortality and disability. Patient's quality of life will be impacted by the degree of education, lifestyle choices, and disease management. Our study aims to improve patient understanding of hypertension and to characterize the manner in which hypertensive individuals are treated. **OBJECTIVE:** To describe the treatment profile of known hypertensive patients and also to evaluate prescription practice in accordance with JNC-8 guidelines. This study also assesses the knowledge, attitude and practice regarding hypertension control among hypertensive patients. **METHOD AND METHODOLOGY:** A prospective study was conducted among 300 hypertensive patients enrolled in the Outpatient Department, Department of General Medicine, 2023. **RESULT:** The present study showed that among 300 patients, the majority were females (56%). More than half of the patients involved in the study were uneducated (59%). Maximum patients had a history of hypertension since 1-5 years (63%). The majority of the complications associated with hypertension were due to Diabetes (39.3%). Among the total patients, 61% were on mono therapy. In mono therapy, CCB (47.50%) was most commonly prescribed, while in two-drug combination therapy, ACEI+CCB were commonly prescribed at 41.8%, and in three-drug combination therapy, ACEI+ CCB+ Beta blockers were commonly prescribed at 3.4%. The majority of the patients were in Stage 1 HTN (38.7%). Only 45.3% have the achieved the target BP as per JNC-8 guidelines. There was a significant improvement ($p<0.050$) in patient knowledge seen after patient education. **CONCLUSION:** Hypertension is a major public health problem and a leading cause of death and disability in developing countries. The majority of the patient have not achieved target BP according to JNC-8 guidelines. This study concluded that before providing patient education participants had inadequate knowledge and practice towards the disease, but after providing a patient education, their knowledge level and attitude towards the hypertension disease drastically increased. This clearly shows that there is a need for patient education about the diseases. There is a significant improvement ($p<0.050$) in the knowledge of patient on hypertension, but on the other hand, not much improvement have been seen in attitude and practice of patients towards hypertension.

KEY WORDS: JNC-8, Hypertension, Knowledge, attitude & Practice, CCB, ACEI, Beta blockers, Blood pressure.

INTRODUCTION

According to World Health Organization (WHO), hypertension develops when the pressure in blood vessels is excessive (systolic blood pressure >140mmHg and diastolic blood pressure >90mmHg or higher).^[1] In developing countries, hypertension is a significant public health issue and one of the main causes of mortality and disability.^[2] In India, HTN is directly accountable for 57% of all stroke deaths and 24% of coronary heart disease. According to the WHO, hypertension is one of the leading global causes of premature death.^[3] About one-third of all deaths in India are attributable to uncontrolled blood.^[4] The WHO aims to reduce the prevalence of high blood pressure among persons ages 18 years and older by 25% relative by 2025.^[5] Inadequate education programs, low socioeconomic level, a lack of physical activity, obesity, smoking, alcohol consumption, and exposure to ongoing stress are the main causes of the rising prevalence of hypertension. Patient non adherence to medicine may result from this.^[6] According to the Non Communicable Disease (NCD) national profile that the World Health Organization (WHO) issued in 2018, 24% of adults Indians had high blood pressure. Hypertension was about equally prevalent in both sexes, with 23% of women and 24% of men reporting.^[7] According to the 2018 World Health Statistics, of the estimated 57 million deaths worldwide in 2016, 71% were caused by NCDs. According to reports, hypertension ranks fourth in developed countries for contributing to early death and seventh in underdeveloped countries. Over 1 billion adults worldwide have hypertension, a number that will rise to 1.5 billion in the coming decades.^[8] The Eighth Joint National Committee (JNC 8) (2014) issued evidence-based recommendations on therapy, goals, and drugs for adults with hypertension.^[9] (Table 1) Non pharmacological treatment mainly includes lifestyle modifications to reduce blood pressure.^[10] The pharmacological treatment includes the use of antihypertensive drug classes such as: Angiotensin converting enzyme inhibitors (ACEI), Angiotensin II receptor blockers (ARB's), Diuretics, Calcium channel blockers (CCB), Beta blockers, Alpha blockers, Renin inhibitors, Vasodilators, Endothelin receptor antagonists^[11]

In chronic illness conditions like hypertension, where prevention and control need a lifetime commitment to a healthy lifestyle and also to prevent subsequent consequences, a proper examination and knowledge of the KAP factor is highly helpful. Knowledge is a body of information about a disease, its origin, risk factors, symptoms, and complications, whereas attitude is a way of being and a determining factor between a circumstance and a person's response to it. The visible acts that a person takes in reaction to a situation are called practices. Gaining awareness of hypertension is crucial to reaching the desired outcome. The patient's attitude and practice in the management of hypertension are significantly influenced by their level of disease knowledge. Therefore, it's crucial to determine how much the patient is conscious of their blood pressure readings. Therefore, we provide thorough patient education on the condition in this study.^[6] If hypertension is treated effectively, the prevalence of coronary artery disease, stroke, and kidney failure in the nation may gradually decline.^[12]

In this study we mainly aim to educate patient on the disease, its risk factors, complication, management and lifestyle modification. There were many previously conducted studies which showed poor knowledge, attitude and practice towards the HTN, whereas there were not many studies that focused on providing patient education after the KAP study. There is a tremendous need for patient education on the diseases because most of the patients were unaware of the disease, its complication and lifestyle modification. Our study mainly emphasizes providing patient education, which can increase the quality life of patient. This study is mainly conducted to understand the complete treatment profile of hypertension along with the knowledge, attitude and practice of the patients towards hypertension. This study also emphasizes the importance of patient education in improving knowledge, attitude and practice towards hypertension.

Table 1: Classification of BP levels (According to JNC 8 guidelines)¹¹

| Category | Systolic BP(mm Hg) | | Diastolic BP(mm Hg) |
|------------------------------|--------------------|--------|---------------------|
| Normal | < 120 | AND | < 80 |
| Prehypertension/elevated HTN | 120 – 139 | OR | 80 – 89 |
| Stage 1 HTN | 140 – 159 | OR | 90 – 99 |
| Stage 2 HTN | ≥ 160 | OR | ≥100 |
| Hypertensive Crisis | >180 | AND/OR | >120 |

NEED FOR THE STUDY

This study helps us to gain knowledge about the treatment profile of known hypertensive patients and to evaluate whether the hypertensive goals were achieved according to JNC-8 guidelines. This study also helps us to know the knowledge of the patient's about disease, its cause, normal BP level, sign & symptoms, prescribed drug name, complications, risk factors etc. And also to find whether the patient have positive attitude and good practice regarding control of hypertension. This KAP study helps us to understand the awareness of patients on hypertension.

RESEARCH METHODOLOGY

This was a prospective study conducted in the outpatient department, Department of General Medicine MIMS, Mandya. Based on inclusion and exclusion criteria 300 patients with known case of hypertension in the last one year or older and reporting to OPD were included, and conducted according to convenience sampling for a period of 6 months. Data shall be collected from the patient attending outpatient department. Then it shall be record using a semi-structured questionnaire which contains 3 parts. The first part shall collect details regarding socio-demographic characteristics like name, age, sex, etc. The second part shall collect details regarding their medical history regarding hypertension and its treatment, including compliance to treatment. Details about family history, comorbidities, etc. will also be collected. The third part is a series of pretested questions that shall assess the patient's knowledge, attitude and practice regarding various aspects of hypertension, its risk factors, diagnosis, treatment, complications, etc. The part on knowledge regarding hypertension contains 10 questions and on attitude & practice regarding hypertension control contains 4 and 5 questions respectively.

KAP questionnaires

A well-prepared and validated KAP questionnaire was used to carry out this study. There were a total of 18 questions, with 10 questions related to knowledge about hypertension, which included risk factor, complications, and symptoms, cause etc. 4 questions to assess the attitude of the patient towards the disease, and 5 questions regarding the practice. The questioners were answered by conducting a face to face interview and later giving patient education about the disease. The patient was educated about the disease and its management, its complications, risk factor, causes and symptoms.

Scoring method

Based on the interview, the knowledge of the patient was assessed using a scale ranging from 0-10. Each correct answer was given 1 score and an incorrect 0 score. In the scoring, a score of 8-10 indicates good knowledge, 7-5 indicates satisfactory knowledge and 0-4 indicates poor knowledge. The attitude of the patient was assessed by a score ranging from 0-4. If the score is 4 then the patient has a good attitude towards hypertension, while 0-3 score indicates a poor attitude. Out of the total 5 questions, scoring was given to only relevant 3 questions. The maximum score given is 6. If the score obtained is between 5-6, and the patient have good practice with hypertension, followed by 0-4 score, which indicates poor practice with hypertension.

After obtaining consent from the patient, the patient interview was conducted using the KAP questionnaires. Then the baseline score was noted and patient counselling were given accordingly. The patient was educated on the disease hypertension, its normal range, risk factor, complication, symptoms, causes, lifestyle modifications, management etc. Then follow-up was done and the score was noted again. The obtained score were compared with before and after patient education. Then the improvement in their knowledge, attitude and practice before and after patient counselling was assessed.

Data collected was coded and checked for completeness and uniformity, then data was entered in an MS Excel worksheet, and descriptive statistics was used, and the results was presented as tables, graphs or expressed as percentages according to the type of information collected. The mean and standard deviation are used wherever required. The paired t-test is used to find the improvement in the KAP study.

RESULT AND DISUCSSION

A total of 300 patients from were enrolled in the study based on inclusion criteria from outpatient department, MIMS, Mandya. Among the total of 300 patients, 56% (n=168) were female %, which correlates with the similar study done by **Venkataraman R et al.**^[13]. The maximum number of patients was found in the age group of 51-60 years (n=109), and the minimum number of patients was found in the age group of 18-30 years (n=1). Among total 16.3% (n=52) were found to be smokers whereas 10.6% (n=32) were alcoholic. Out of total of 300 patients, 59% (n=177) were uneducated, which is similar to the previously conducted study by **Sharma A et al.**^[14]. The majority of the patients the majority 86.7% (n=260) came for a regular check-up. Out of 300 patients, 0.7% (n=13) reported an ADR (Adverse drug reaction) of dry cough with the use of the drug Enalapril. Out of total 300 patients 26% (n=78) patients had family history of hypertension. This result is similar to previously conducted study by **Sharma A et al.**^[14] (Table 2).

Table 2: Patients demographic characteristics

| Characters | No. of Patients |
|---------------------------------------|-----------------|
| Age (Mean ± SD) | 60.3±10.3 |
| Gender | |
| Male | 132 |
| Female | 168 |
| Social History | |
| Smokers | 52 |
| Chronic smokers | 39 |
| Occasional smokers | 13 |
| Alcoholic | 32 |
| Chronic alcoholic | 25 |
| Occasional alcoholic | 7 |
| Literacy status | |
| Illiterate | 177 |
| 1-8 th Standard | 68 |
| 9-12 th Standard | 45 |
| Graduation | 10 |
| Family History of Hypertension | |
| Yes | 78 |
| No | 222 |

Our study showed that majority of patients had history of hypertension for 1-5 years. This study is similar to previous conducted studies by **Sharma A et al.**^[14] and **Bollampally M et al.**^[15] were they also concluded that most of patient had history of hypertension since < 5 years. (Figure 1).

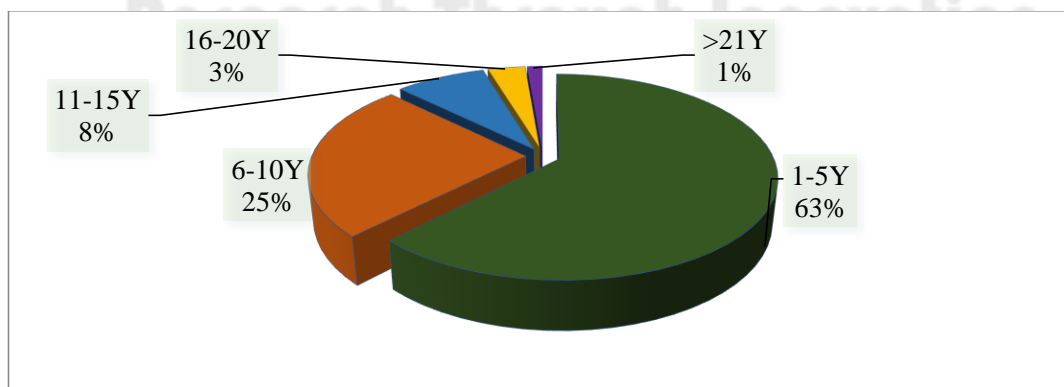


Figure 1: Distribution of patients based on duration of hypertension

In a total of 300 patients, 45% (n=135) did not have comorbidities associated with hypertension. The majority of the patients 39.3% (n=118)

had DM as a comorbidity, followed by Stroke 6.6% (n=20). (Table 3)

Table 3: Distribution of patient based on co-morbidities

| Comorbidity | No. of patients (%) |
|--------------------------|---------------------|
| No co-morbidities | 129 (43%) |
| IHD | 7 (2.3 %) |
| Hypertensive Urgency | 1 (0.3%) |
| Accelerated hypertension | 1 (0.3%) |
| Asthma | 2 (0.6%) |
| COPD | 2 (0.6%) |
| Parkinson Disease | 1 (0.3%) |
| Stroke | 20 (6.6%) |
| Seizure | 3 (1%) |
| Chronic Kidney Disease | 5 (1.6%) |
| Diabetes Mellitus | 118 (39.3%) |
| Hypothyroidism | 11 (3.6%) |

Our study shows that majority of patients blood pressure were controlled by the mono therapy (61%), this correlated to the studies conducted by **Rammadas S et al.**^[16] and **Mishra et al.**^[17] (Table 4). In mono therapy maximum of the patient were prescribed with Calcium Channel Blocker 47.50% (n=87) which is in accordance with the studies conducted by **Chandrika et al.**^[18] **Venkataraman R et al.**^[13] **Mishra et al.**^[17] (Figure 2). In two-drug combination therapy ACEI+CCB were commonly prescribed 41.8% (n=49). In case of three-drug combination therapy ACEI+ CCB+ beta blockers were commonly prescribed 3.4% (n=4)

Table 4: Drug therapy distribution of patient

| Therapy | No. of patients | Percentage |
|---------------------|-----------------|------------|
| Mono therapy | 183 | 61% |
| Combination therapy | 117 | 39% |
| 2 drug therapy | 108 | 36% |
| 3 drug therapy | 9 | 3% |

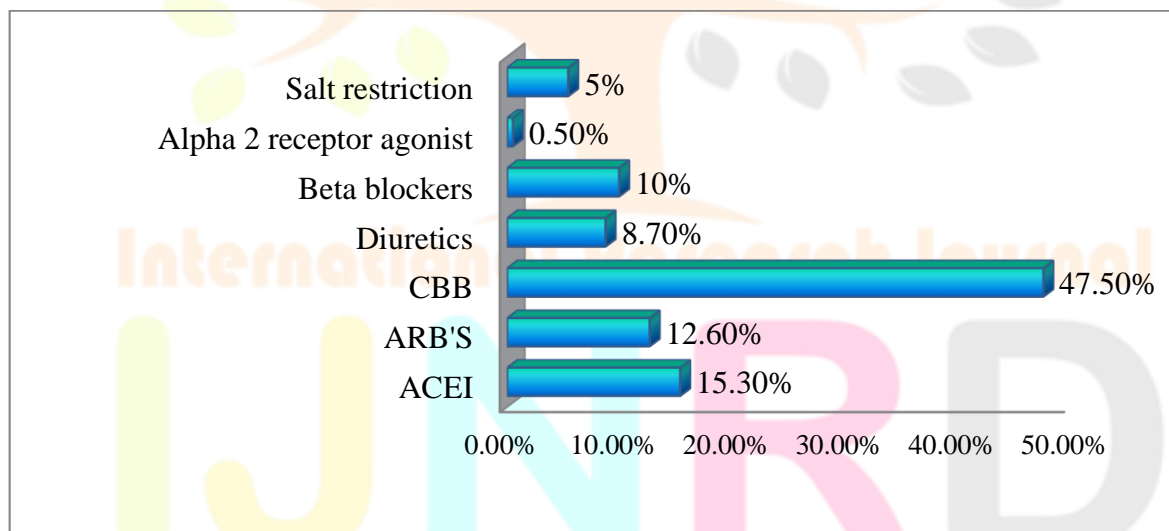


Figure 2: Different class of drugs commonly used in mono therapy

Most commonly prescribed drug was Amlodipine 49.3% (n=148) followed by Enalapril 48.6% (n=146) (Figure 3).

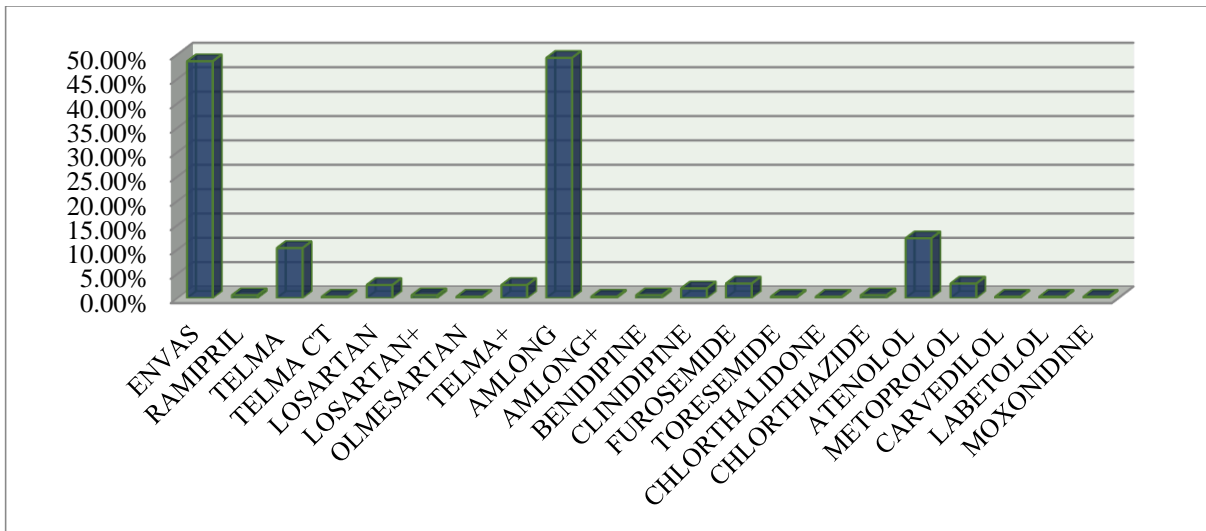


Figure 3: Distribution of patients based on drugs prescribed

Out of the total patients in the study group, only 10.7% (n=32) are in the normal range of BP <120/80 mmHg. The majority of the patients, 38.7% (n=116), of patients are in the Stage 1 HTN, i.e., systolic BP 140-159mmHg or diastolic BP 90-99. This study is similar to the previous study conducted by Venkataraman R *et al.*^[13] This is followed by 22.3% (n=67) of patients in Stage 2 HTN, in which systolic is BP ≥160mmHg and diastolic BP is ≥100mmHg. Among total patients, 16.7% (n=50) were in a stage of hypertensive crisis in which systolic BP was >180mmHg and/or diastolic BP was >120 mmHg. Around 11.7% (n=35) are in stage of prehypertension (Figure 4).

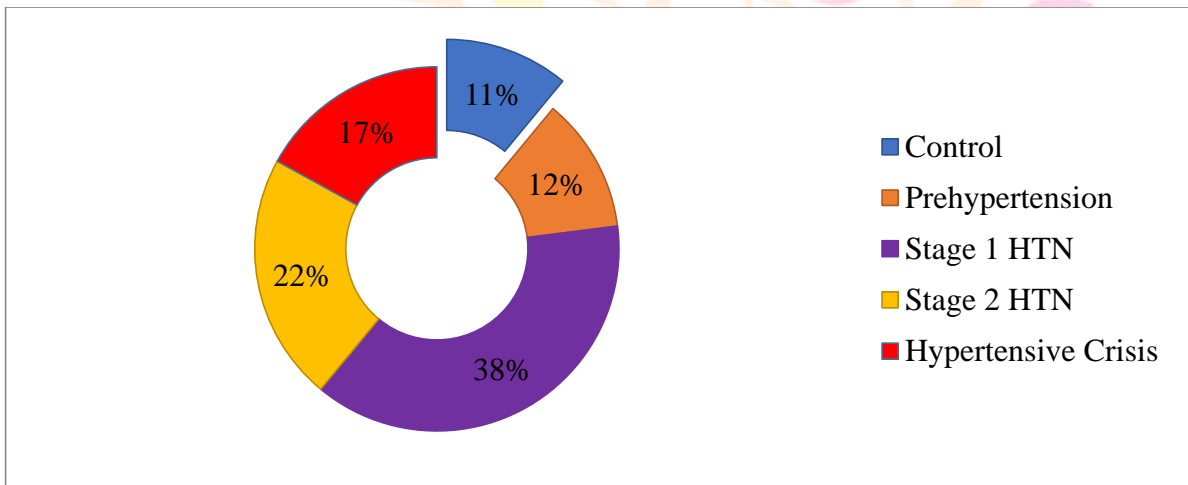


Figure 4: Distribution of patient based on stages of BP

According to JNC-8 guidelines, out of 93 patients without diabetes or CKD (age greater than 60 years), 47 patients (15.6%) have achieved the BP goal as per JNC-8 (less than 150/90mmHg) and patients in the category of patients without diabetes or CKD (less than 60 years) out of 80 patients 30 patients, (10%) have achieved the BP goal (less than 140/90mmHg). Meanwhile, in the patients with diabetes and without CKD (all ages), out of total 122 patients, 57 patients (19%) achieved the goal (less than 140/90mmHg), and in patients with CKD present with or without diabetes out of 5 patients, 2 of them (0.7%) were achieved the goal BP (less than 140/90mmHg) as per JNC-8 guidelines. This study reveals that majority of the patients have not achieved the target BP. Only 45.3% have only achieved the target BP as per JNC-8 guidelines (Figure 5). In contrast to the study conducted by Mishra *et al.*^[17] it was observed that in the present study majority of the patients have not achieved the target BP according to the JNC-8.

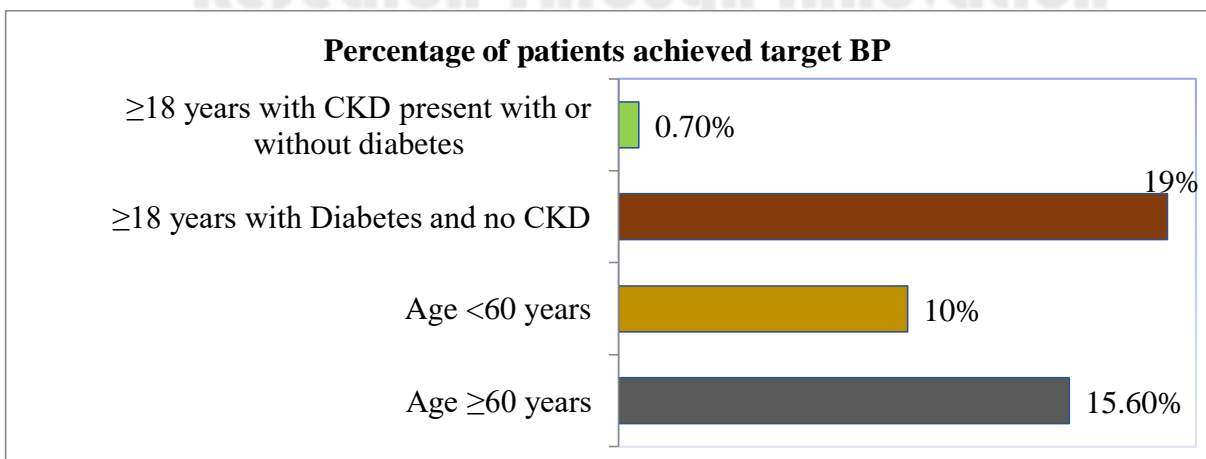


Figure 5: BP goals as per JNC-8 guidelines

The study showed that only 13% (n=39) of the patients had good knowledge on disease hypertension (Table 5), 66% had poor attitude (Table 6) and majority of the patient had good practice towards hypertension (Table 7). After giving patient education about 77% of patient achieved a good knowledge on hypertension, 88% had a good attitude and 100% of patients had good practice towards hypertension (Figure6).

Table 5: Response to knowledge assessment questionnaires

| Questions | Knowledge assessment questionnaires | Before education (n, %) | After education (n, %) |
|-----------|---|-------------------------|------------------------|
| 1 | What does hypertension mean? | 89 (29.7%) | 280 (93.3%) |
| 2 | If someone's blood pressure is 180/100mmHg, then it is? | 205 (68.3%) | 300 (100%) |
| 3 | Smoking a pack of cigarettes per day will not affect a person risk of hypertension. | 112 (37.3%) | 276 (92%) |
| 4 | People with increased Blood Pressure should take their medicine. | 286 (95.3%) | 300 (100%) |
| 5 | Obese persons are more at risk in developing complications of hypertension. | 146 (48.7%) | 266 (88.6%) |
| 6 | Person with hypertension should limit the salt intake in their diet. | 279 (93%) | 300 (100%) |
| 7 | High blood pressure can cause: diabetes/ kidney problems/ stroke/ heart attacks | 64 (21.3%) | 205 (68.3%) |
| 8 | Family history of hypertension can increase the risk of developing hypertension in a person. | 132 (44%) | 238 (79.3%) |
| 9 | The common symptoms of hypertension are: dizziness/fatigue/ shortness of breath/ chest pain/ irregular heartbeat. | 59 (19.7%) | 228 (78%) |
| 10 | Do you know the names of the medication you are taking? | 64 (21.3%) | 64 (21.3%) |

Table 6: Response to attitude assessment questionnaires

| Questions | Attitude assessment questionnaires | Before education (n, %) | After education (n, %) |
|-----------|---|-------------------------|------------------------|
| 1 | Do you think medication alone can control hypertension? | 110 (36.7%) | 265 (88.3%) |
| 2 | Do you think diet control along with regular exercise will improve the condition? | 234 (78%) | 273 (91%) |
| 3 | Do you think stress increases blood pressure? | 281 (93.7%) | 300 (100%) |
| 4 | Do you think regular BP check-up is necessary even though there are no symptoms? | 220 (73.3%) | 271 90.3% |

Table 7: Response to practice assessment questionnaires

| Questions | Practice assessment questionnaires | Before education (n, %) | After education (n, %) |
|-----------|--|--|---|
| 1 | How often you go for blood pressure check-up ? | Monthly 270(90%) | 3-4Months 20(6.6%) 300 (100%) |
| 2 | How do you identify your hypertensive medications? | Name: 64 (21.3%) Colour: 68 (22.7%) Shape: 168 (56%) | Name: 64 (21.3%) Colour: 68(22.7%) Shape: 168 (56%) |
| 3 | Are you taking prescribed medications regularly? | 300 (100%) | 300 (100%) |
| 4 | Do you follow diet which is rich in vegetables, fruits, whole grains, low fat products, and limited salt intake? | 296 (98.6%) | 300(100%) |
| 5 | Have you continued taking medications even if you don't have any symptoms? | 300 (100%) | 300 (100%) |

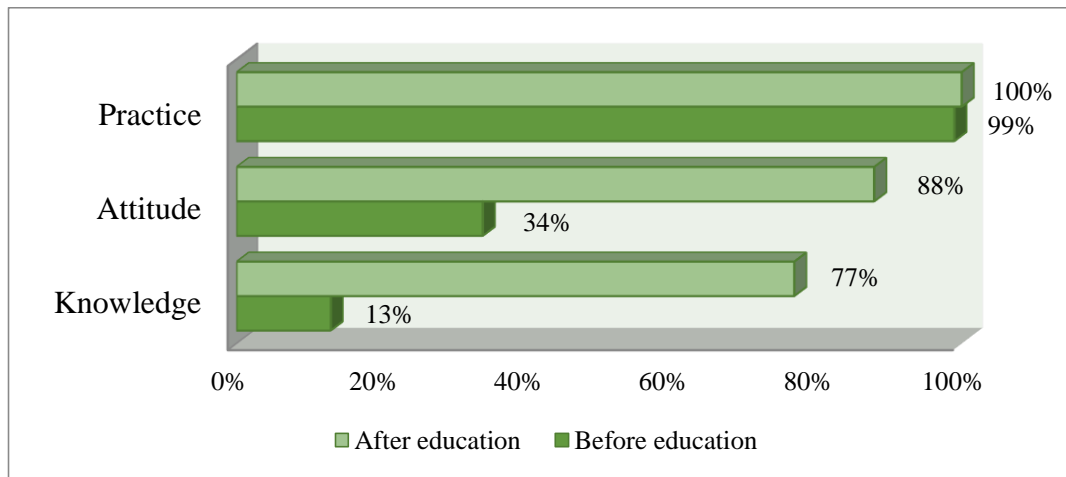


Figure 6: Percentage of knowledge, attitude and practice before and after patient education

Table 8: Comparison of KAP before and after patient education

| Parameter | Before counselling | After counselling | P value |
|-----------|--------------------|-------------------|---------|
| Knowledge | 143.6 (47.8%) | 245.7 (81.90%) | 0.0012 |
| Attitude | 211.25 (70.4%) | 277.25 (92.4%) | 0.1183 |
| practice | 291.5 (97.1%) | 300 (100%) | 0.324 |

A significant improvement ($p < 0.050$) was seen in the knowledge of the patient towards the disease hypertension (CI 95%). On the other hand there were non-significant changes seen in case of attitude and practice after providing patient education on disease (Table 8). In comparison to the improvement in the knowledge score, the attitude and practice score were not increased to high extent. Our study shows that better patient education have a greater impact on the patient awareness on the disease and increases their quality of life.

Our study is similar to the previously conducted study by Swaroop *et al.*^[8] In their study there was a significant improvement ($p < 0.001$) seen in the mean knowledge, attitude and practice scores before and after patient counselling. But in their study in comparison to knowledge score, the attitude and practice scores were not increased to great extent.

A proper assessment and understanding of KAP factor is very helpful in the chronic disease conditions such as hypertension, for which prevention and control necessitate a lifelong adoption of healthy lifestyle and also to prevent further complications. Our study showed that only 13% of the patients had good knowledge on disease hypertension. Education plays an important role in understanding and management of disease. Majority of patients 95.3% were aware that people with high blood pressure should take their medications everyday whereas 93% of patients aware that high intake of sodium increases blood pressure. Among total most of the patients were unaware of the causes, symptoms of hypertension. Among total only 34% had a good attitude towards the disease hypertension. Majority of the patients 93.7% agree that stress will increase blood pressure whereas only 36.7% thinks that medications alone can control the hypertension. In the case of practice towards hypertension majority of the patients had good practice. Among the total patients majority of them 90% had monthly checked their blood pressure. Almost all the patients 100% takes their medication regularly and have always continued taking medications even they don't have any symptoms. 98.6% were always on healthy diet rich in vegetables, fruits, whole grains, low fat products, and limited salt intake. After giving patient education there was a significant improvement ($p < 0.050$) in knowledge towards hypertension was found. After education majority of the patients 77% attained good knowledge, 88% showed good attitude.

Our study clearly shows that there is a tremendous need for patient education in various disease conditions. Patient with adequate knowledge about disease, risk factors, complication, symptoms helps to control the disease and prevent the further complication. Education plays as a bridge between the diseases and its control, with good education people can maintain their optimum blood pressure.

CONCLUSION

Non-communicable disease, such as hypertension, are becoming more prevalent in developing countries, posing a serious public health challenge. The purpose of this study was to better understand treatment profile as well as the knowledge, attitude and practice among hypertensive patients. Today, hypertension is the main cause of mortality and disability in the nation and a severe public health issue. In chronic disease conditions like hypertension, where prevention and control require a lifetime commitment to a healthy lifestyle and also prevent subsequent consequences, a proper examination and knowledge of the KAP factor are highly helpful. The patient's level of education is the key determinants of how much knowledge they have about their illness. Understanding, attitude and practice surrounding a condition are critical for its proper management.

According to our findings, females outnumbered males in our study. The age range of 51-60 years saw the highest number of patients. The drug class that is most frequently prescribed is CCB. The majority of the patients were on mono therapy. The majority of patients received prescriptions for amlodipine. The majority of the patients were in stage 1 HTN and only 45.3% have achieved the target BP as per JNC-8 guidelines.

Our study demonstrates that people need support and directions to manage their disease more effectively. Lack of education and experience can exacerbates disease symptoms, which can then cause serious complications and damage to other organs. The study's pre and post education showed significant improvements in knowledge among the patient. This study also highlights the possible role of clinical pharmacists in patient counselling to raise awareness of the necessity of hypertension control. This study sheds light on how patient education affects hypertension patient's knowledge, attitude and practice. Additionally, we worked to raise the patient's awareness and behaviour towards hypertension.

ACKNOWLEDGMENT: None

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