

**EVALUATION OF PROPORTION, RISK FACTOR ASSESMENT OF HYPERTENSION  
AND ASSESMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE (KAP) IN  
HYPERTENSIVE PATIENT IN TERITARY CARE HOSPITAL.**Sujala Sunil<sup>1</sup>, Haripriya H.<sup>2</sup> and Vishnu Das<sup>\*3</sup><sup>1,2,3</sup>Doctor of Pharmacy (Pharm D) Student, Sree Krishna College of Pharmacy and Research Center, Trivandrum, 695502.**\*Correspondence for Author: Dr. Vishnu Das**

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**ABSTRACT**

**Title:** Evaluation of proportion, risk factor assessment of hypertension and assessment of Knowledge, Attitude and Practice in hypertensive patient in tertiary care hospital. **Scope of The Experiment:** Hypertension is the important public challenge in the world due to its high prevalence and strong association with cardiovascular disease and premature death. The guidelines that were prepared based on clinical trials, so by following this we would ensure the safety and efficacy of drugs in patients. **Objective:** Proportion and risk factor assessment of Hypertension and assessment of Knowledge, Attitude and Practice among hypertensive patients. **Methodology:** The cases of 300 patients taking antihypertensive drugs were collected, only after the ethical committee approval. Patient who were willing to participate were included. Data were recorded and analysed by Statistical Package for Social Science. **Result:** More than half of the patients, were female with age, 61-80 years. Most commonly observed risk factor was lack of physical exercise and the least were drugs. KAP of patients were improved with significance,  $p > 0.05$ . **Conclusion:** Most patients were female with age, 61-80yrs and common risk factor was lack of physical exercise. KAP was significantly improved after counselling so by this we can improve the patient adherence.

**KEYWORDS:** Hypertension, Rationality, Joint National Committee.**INTRODUCTION**

In today's health world, the term silent killer that suits rightly to Hypertension, because of its nature. And it is the important public challenge in the world due to its high prevalence and strong association with cardiovascular disease and premature death. Hypertension is blood pressure elevated enough to perfuse tissues and organs.<sup>[1]</sup>

It is estimated that approximately 30% of the population (50 million Americans) has high BP ( $\geq 140/90$  mm Hg). Estimates from the National Health and Nutrition Examination Survey from 1999–2000 indicate that the prevalence is 30.1% and 27.1% among men and women, respectively. This represents a significant increase of 5.6% in women from 1988 to 2000, whereas the prevalence in men has remained unchanged. Prevalence rates are highest in non-Hispanic Blacks (33.5%), followed by non-Hispanic whites (28.9%) and Mexican-Americans (20.7%).<sup>[5]</sup> BP values increase with age, and hypertension is very common in the elderly. The lifetime risk of developing hypertension among those 55 years of age and older who are normotensive is 90%. In the older population (age  $\geq 60$  years), the prevalence of hypertension is 65.4% (estimated in 2000), which is

significantly higher than the 57.9% prevalence estimated in 1988.<sup>[2]</sup>

In an analysis of world wide data for global burden of hypertension 20.6% Indian men and 20.9% of Indian women were suffering from hypertension in 2005. The percentage is grow up to 22.9 and 23.6 for Indian men and women, respectively by 2025. Recent studies from India have shown the prevalence of hypertension to be 25% in urban and 10% in rural people in India.<sup>[12]</sup>

In integrated disease surveillance project in Kerala over all 9% respondents were found to have been diagnosed with hypertension by the health professional. In the urban area, the prevalence of hypertension was 10% with 9% among men and 11% among women. In rural area, 8% of hypertensive.<sup>[13]</sup>

Hypertension is a heterogeneous medical condition. Hypertension is mainly primary and secondary.

**Primary hypertension**

In which no specific cause can be identified, constitutes greater than 90% of all cases of systemic hypertension. The average age of onset is about 35 years.

**Predisposing factors**

- Family history of essential hypertension, stroke, and premature cardiac disease
- Patient history of intermittent elevation of blood pressure
- Racial predisposition, more common in African Americans than whites
- Obesity
- Stress
- High dietary intake of saturated fat and sodium.
- Sedentary life style.

**Secondary hypertension:** Hypertension secondary to any disease and drugs.

**a) Disease**

Renal disease: Acute glomerulonephritis Chronic renal disease Micro albuminuria Polycystic disease & Renin producing tumors Renal artery stenosis & vasculitis.

Endocrine disease: Hyperaldosteronism Acromegaly & Pheochromocytoma Hyperthyroidism & Hypothyroidism.

Cardiovascular disease: coarctation of aorta Myocardial infarction & Ischemic heart disease Left ventricular hypertrophy & Heart failure.

Neurological disease: Psychogenic Central sleep apnea Increased intracranial pressure.

**b) Drugs**

- NSAID, Corticosteroids
- ACTH, Estrogen
- Cyclosporine
- Antidepressant (especially Venlafaxine)
- Clonidine  $\beta$  blocker combination
- Cyclosporine and Tacrolimus.<sup>[1,2]</sup>

**PATHOPHYSIOLOGY**

The multiple mechanism of hypertension constitute aberrations of blood pressure. The blood pressure level is a complex trait that is determined by the interaction of multiple genetic environmental and demographic factors that influence 2 hemodynamic variables, cardiac output and peripheral resistance.

**Blood pressure = cardiac Output x Total peripheral resistance**

- Sympathetic nervous system**

Baroreceptors in the carotids and aortic arch respond to changes in blood pressure and influence the arteriolar constriction and dilation. When stimulated to constriction, that increase the heart rate and peripheral resistance, thus increasing blood pressure.

- Renin Angiotensin Aldosterone System**

Fall in blood pressure stimulate release of renin by kidney. Renin react with circulating substrate and angiotensinogen to produce angiotensin I. In the pulmonary endothelium is another enzyme called angiotensin converting enzyme, that convert angiotensin I to angiotensin II, potent vasoconstrictor. Angiotensin II stimulate the release of aldosterone from adrenal gland, which result in increased sodium reabsorption, fluid volume and blood pressure.

- Fluid volume regulation**

Increased fluid volume increase venous system distension and venous return, affecting cardiac output and tissue perfusion. These changes alter the vascular resistance that increase the blood pressure.

Multiple factors are responsible for sustaining Hypertension. Potential defect in sodium transport, play a role in sustaining hypertension. Other factors include genetics, endothelial dysfunction and neurovascular anomalies. Other vasoactive substance involve are nitric oxide, endothelin, bradykinin, and atrial natriuretic peptide.<sup>[1]</sup>

**DIAGNOSIS**

Hypertension is diagnosed by a simple test using sphygmomanometer. And it is measured at two end points, when the heart is most contracted at peak pressure (Systolic pressure) and then when the heart is most relaxed (Diastolic pressure). Elevated systemic blood pressure usually defined as a systolic reading  $\geq 140$ mmHg and a diastolic blood pressure  $\geq 90$ mmHg. According to seventh report of joint national committee on the Detection Evaluation and treatment of high blood pressure hypertension has 4 stages and it is illustrated as follows.<sup>[4]</sup>

**Table No: 1 JNC VII classification of Hypertension**

| Classification  | Systolic hypertension | Diastolic hypertension |
|-----------------|-----------------------|------------------------|
| Normal          | 120mmHg               | 80mmHg                 |
| Prehypertension | 120-139mmHg           | 80-89mmHg              |
| Stage 1         | 140-159mmHg           | 90-99mmHg              |
| Stage 2         | $\geq 160$ mmHg       | $\geq 100$ mmHg        |

If the clinic blood pressure is 140/90mmHg or higher conform the diagnosis of hypertension. When the ambulatory blood pressure monitoring is used then take at least two measurement per hour during the usual walking hours.<sup>[7]</sup>

**RISK FACTORS**

Awareness about the risk factors for hypertension is required to decrease the double burden on the society.<sup>[8]</sup> Obesity, Excess dietary sodium intake, reduced physical activity, inadequate intake of fruits and vegetables,

excess alcohol intake, smoking, stress are the important risk factor for hypertension.<sup>[4]</sup>

A large number of drugs are currently available for reducing blood pressure.

#### Classification

- Diuretics
- Aldosterone receptor blockers
- Beta blockers
- ACEIs
- ARBs
- CCBs
- Alpha-1 blockers
- Central alpha-2 agonists and centrally acting drugs
- Direct vasodilators.<sup>[6]</sup>

#### KNOWLEDGE ATTITUDE AND PRACTICE OF HYPERTENSION

Hypertension is a frequent condition and is control through both non pharmacological lifestyle factors and pharmacological treatment. Pharmacological treatment for hypertension has been shown to be effective in decreasing BP and subsequently cardiovascular events, although BP levels achieved in treated patients may still be considerably higher than those in truly normotensive persons. Lifestyle measures for lowering BP include reduced alcohol intake, reduced sodium chloride intake, increased physical activity, and control of overweight. Lifestyle interventions also have the potential to reduce the need for or the amount of medications in hypertensive and prevent high BP from developing in non-hypertensive. The lifestyle interventions are also controlling other concomitant cardiovascular risk factors not necessarily related to hypertension, such as smoking, raised cholesterol level, or diabetes, hence the importance of a multifactorial approach to effective risk reduction in hypertensive. Several models have been proposed to account for health behaviors and sustained behavioral changes. Although they may differ in content and perspective, models for behavior change stress the importance of evaluating the perceptions, attitudes, beliefs and outcome expectations of individuals as a crucial means to understand observed behaviors and to guide behavioral change. A proper assessment and understanding of KAP factors is particularly helpful in the area of chronic conditions such as hypertension, for which prevention and control necessitate a lifelong adoption of healthy lifestyles.<sup>[16]</sup>

#### METHODOLOGY

##### STUDY DESIGN

It was a prospective observational study conducted in a tertiary care hospital in Trivandrum. This was a 6 month study conducted from October 2014 to March 2015.

##### SAMPLE SIZE

The sample size was calculated using the formula

$$N = \frac{Z_{\alpha}^2 p q}{D^2}$$

Where  $\alpha$  - type 1 error or false positive error.

$$Z_{\alpha} = 1.96 = 2$$

P - Anticipated percentage of antihypertensive drug used among the patient admitted in cardiology hypertensive outpatient and hypertensive in patients.

$$q = 100 - p$$

d- Precision factor which is 20% of p.

p-30% (from pilot study conducted in cosmopolitan hospital private limited.

Therefore d= 20% of 300. Hence total 300 patients were included in the study.

#### ENROLLMENT

##### • INCLUSION CRITERIA

All patients above age 18 years who were willing to participate in the study of both sex groups having hypertension was included in the study.

##### • EXCLUSION CRITERIA

Psychiatry patients, pregnant women and patient admitted for surgery and the patient who were not willing to participate in the study were excluded.

#### DATA COLLECTION

During the six months period a total of 300 patients were enrolled in the study. Permission to collect data and to accompany physicians on ward rounds were obtained from the Hospital Ethical Committee. Data took from the respective department before starting the study. Written informed consent was taken from each patient before including in to the study. Identity of patient was kept confidential. The relevant data collected while accompanying the physician 6 days in a week and also from the inpatient medical records. Data was collected by using data collection form. Data like name, age, sex, general examination, vital signs, laboratory investigation, concurrent disease, risk factors were collected from patient's case sheets. Also analysed to check the prevalence of hypertension (age, gender). All patients' data entry form were analysed for drug interaction with antihypertensive. Assessing the BP value from the patient BP chart and also directly taking the BP by using a mercury sphygmomanometer by using standard procedure.

#### Measurement of Blood Pressure

Guidelines from American Heart Association define proper procedures for measuring BP. These include the following:

- Allow the patient to sit quietly for 5 minutes before measuring BP
- The patient should be seated comfortably with the back supported and the upper arm bared without constrictive clothing.
- The legs should not be crossed.
- The arm should be supported at heart level and the bladder of the cuff should be encircle at least 80% of

the arm circumference. Larger or smaller cuffs must be used as needed.

- The mercury column should be deflated at 2 to 3 mm/sec and the first and last audible sounds should be taken as systolic and diastolic pressure. The column should be read to the nearest 2 mmHg
- Neither the patient nor the observer should talk during the measurement.

These measurement guidelines recommended as the standard for as the standard for measurement, but recognize that this devices are being replaced by newer technologies.

Analyse the major risk factors for hypertension by direct interview and from their case chart. Cohen perceived stress scale was used to assess the severity of stress. It contain 10 questions. PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.<sup>[17]</sup> BMI Categorization done by taking their weight and height and categorize it as underweight, normal, overweight and obese.

Assessing the patient's knowledge, attitude and practice about hypertension by providing KAP questionnaire to all hypertensive patients and half of the patient population was selected randomly and counsel the patients by providing a patient information leaflet. The KAP score were closely observed to find out significant improvement in the knowledge of hypertensive after counselling. A questionnaire was completed by an interview. For every right answer received the score of 1 and every wrong answer got zero

## STATISTICS

The data was then compiled, and subjected for statistical analysis. We used SPSS version for the statistical analysis. KAP can be assessed by using the Wilcoxon signed rank test when comparing two groups.

## RESULT

### DEMOGRAPHIC DETAILS

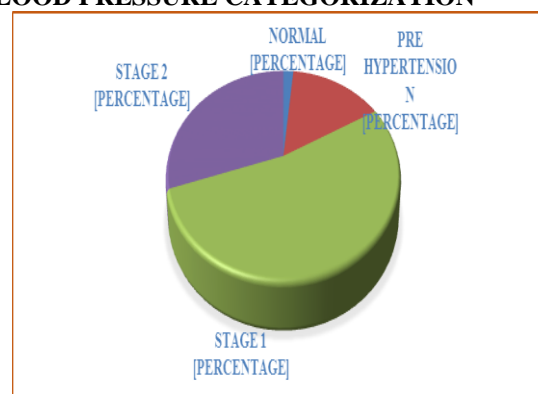
**Table No. 2: Frequency and percentage distribution of demographic variables of hypertensive patients.**

| Variables           | Frequency | Percentage (%) |
|---------------------|-----------|----------------|
| <b>Age in years</b> |           |                |
| 18-40               | 7         | 2.3%           |
| 41-60               | 98        | 32.7%          |
| 61-80               | 175       | 58.3%          |
| Above 80            | 20        | 6.7%           |
| <b>Gender</b>       |           |                |
| Male                | 138       | 46%            |
| Female              | 162       | 54%            |

Data presented in Table shows that among 300 patients, more than half of the patients i.e. 175(58.3%) were in the age group of 61-80 years of age, more than one-fourth

i.e. 98(32.7%) were in the age group 41-60 years of age, 20 (6.7%) were in the age group of above 80 and 7 (2.3%) were in the age group of 18-40 years of age. Most common age group of 60-69 years (34%) followed by 70-79 years (23%) and 40-49 years (22%) were found in study conducted by Pai et al.<sup>[16]</sup> But in study conducted by Tiwari et al, the most common age group found that 50-59 years (33.3%) followed by 60-69 years and 40-49 years (26.7%).<sup>[17]</sup> In our study, female patients i.e. 162 (54%) outnumbered than male patients, 138 (46%). Similar result was observed in the study of Sandozi and Emami in which, 53% were female and 47% were male.<sup>[15]</sup>

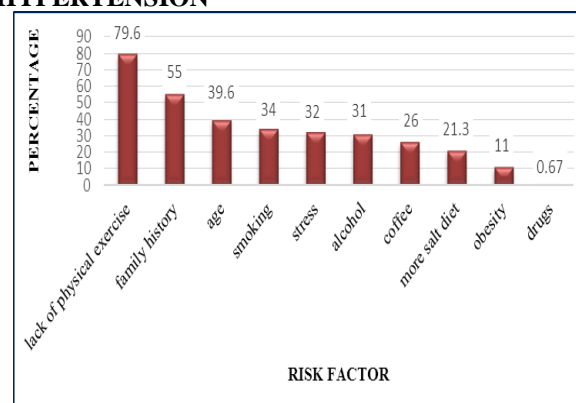
## BLOOD PRESSURE CATEGORIZATION



**Figure. No: 1 Frequency and percentage of blood pressure categorization according to JNC VII guideline.**

Figure above reveals that among 300 patients in the study, greater than half i.e. 159 (53%) of the patients have stage 1 hypertension, more than one fourth i.e. 90 (30%) have stage 2, less than one fourth i.e. 46(15.33%) have prehypertension and 5 (1.67%) have normal blood pressure. Similar result was found in the Study of Kaur S et al, were 37.2% patients had stage I HTN.<sup>[18]</sup>

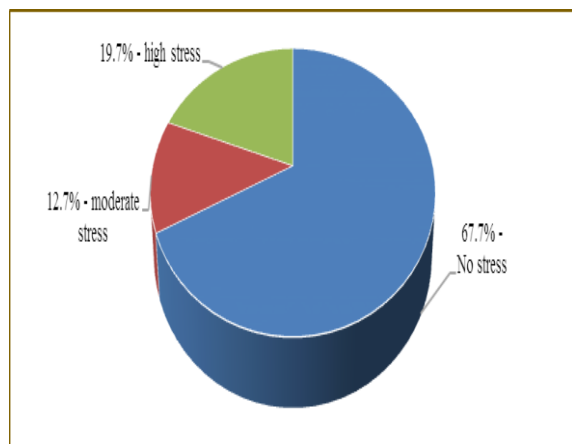
## RISK FACTOR ASSESSMENT OF HYPERTENSION



**Figure No 2: Frequency and percentage of risk factor assessment of Hypertension**

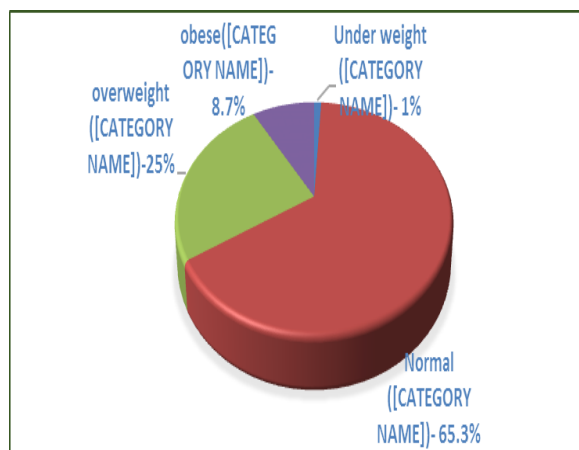
Figure presented above shows that among 300 hypertensive patients in the study, more than half i.e.

239(79.6%) have the risk factor of lack of physical exercise followed by family history (55%), age (39.6%) and least risk factor observed for the risk factor of hypertension due to drugs i.e.2(0.67%). The study conducted by Kumar H et al identified that the major risk factors was family history (65.1%) and followed by alcoholism (38.1%), smoking (28.8%), age (27.3%).<sup>[19]</sup>



**Figure No 3: Frequency and distribution of stress in hypertensive patients**

Figure above reveals that among 300 hypertensive patients enrolled in the study, more than half i.e. 203(67.7%) of the hypertensive patients have no stress, less than one fourth i.e. 59(19.7%) have high stress and more than one by eighth have moderate stress.



**Figure No 4: Frequency and distribution of BMI grade in hypertensive patients**

Figure presented above reveals that among 300 hypertensive patients enrolled in the study, more than half i.e. 196 (65.3%) of the patients have normal body weight, one fourth i.e. 50(25%) have overweight, less than one by eighth i.e. 26(8.7%) were obese and 3(1%) were underweight. Similar results were found in a study conducted by Mbah B.O. and Eme in which 70% normal weight, 17.5% overweight, 7.5% obese and 5% normal weight patients were found.<sup>[20]</sup>

## KNOWLEDGE, ATTITUDE AND PRACTICE

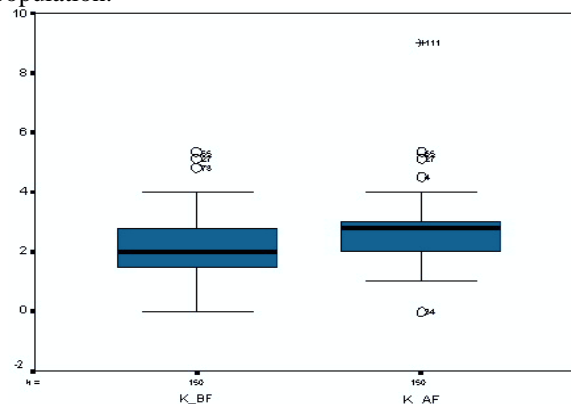
This can be done by using Wilcoxon Signed Rank Test, Table No: 3

| WILCOXON SIGNED RANK TEST |             |             |             |
|---------------------------|-------------|-------------|-------------|
|                           | K_AF - K_BF | A_AF - A_BF | P_AF - P_BF |
| Z                         | -12.549     | -11.656     | -11.751     |
| P                         | .000        | .000        | .000        |

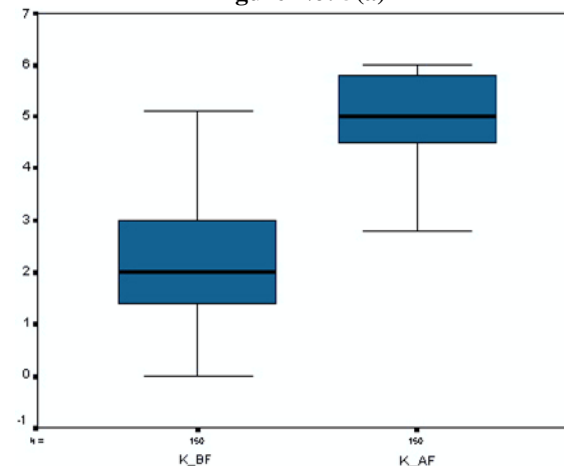
In our study KAP can be assessed by providing the KAP questionnaire before and after patient counselling to individual patient and the Z value was found to be -12.549, -11.656 & -11.751 for K, A&P respectively. The P value was found to be 0.000, 0.000 & 0.000 for K, A&P respectively. Since the P value < 0.05. So the study is significant. Similar result can be seen in a study conducted by Aubert et al and the p value was found to be <0.001.<sup>[13]</sup>

## KNOWLEDGE

Figure 5 (a) and 5 (b) shows the knowledge, before and after counselling of control and test group respectively. And by comparing these figures we can see that before counselling, 5(a) the knowledge of these two groups was relatively similar but after counselling, 5(b) there was significant improvement of knowledge of the test population.



**Figure No: 5(a)**



**Figure No:5 (b)**



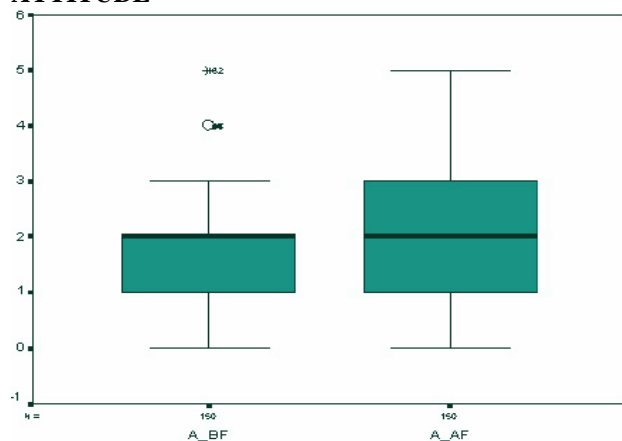
**ATTITUDE**

Figure No: 5(c)

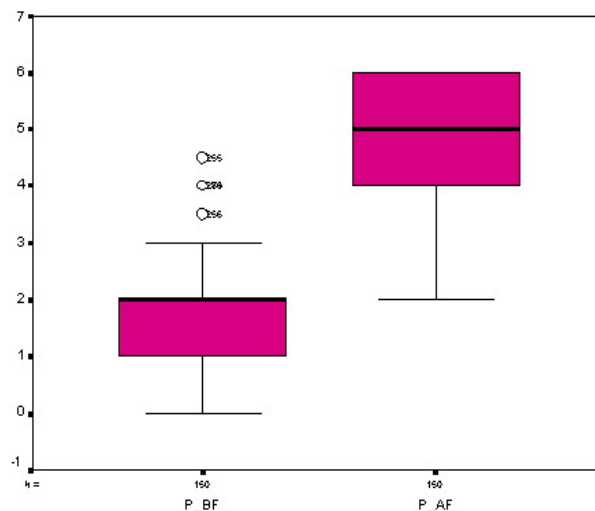


Figure No: 5(f)

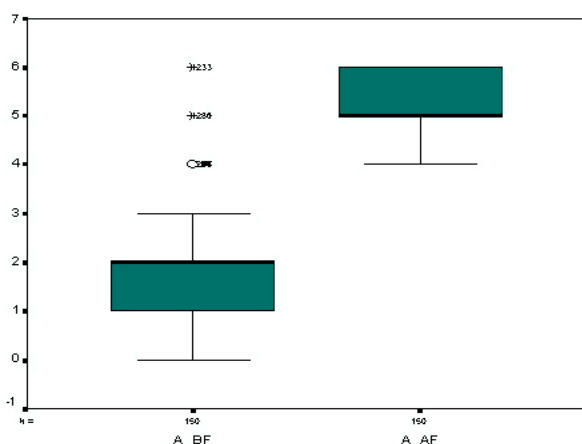


Figure No: 5(d)

Figure 5 (c) and 5(d) shows the attitude, before and after counselling of control and test group respectively. And by comparing these figures we can see that before counselling, 5(c) the attitude of these two groups is relatively similar but after counselling, 5(d) there is large improvement of knowledge of the test population of hypertensive patients.

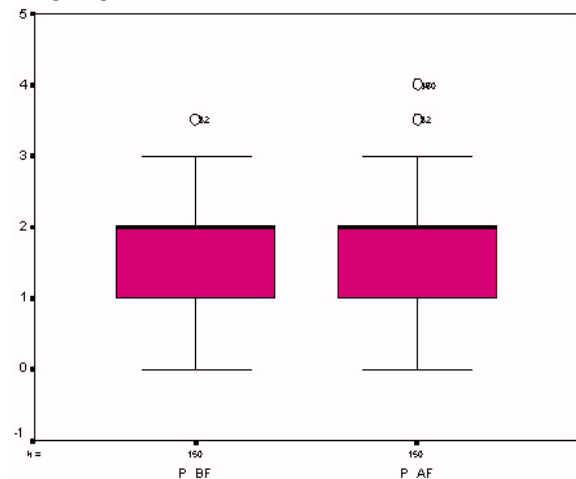
**PRACTICE**

Figure No: 5(e)

Figure 5 (e) and 5(f) shows the practice, before and after counselling of control and test group respectively. And by comparing these figures we can see that before counselling, 5(e) the attitude of these two groups is relatively similar but after counselling, 5(f) there is significant improvement of knowledge of the test population of hypertensive patients.

**CONCLUSION**

The present study helped to identify the prevalence of HTN, JNC VII Blood categorization and risk factors of HTN. Prevalence was more among the age group of 61-80yrs and was more in females. Most hypertensive patients had very poor awareness, attitude and practices toward hypertension. Poor practices were responsible for higher Blood pressure. So we concluded that through effective clinical pharmacist intervention the knowledge, attitude and practice were improved after patient counselling. There is need for encouraging health services including health education through patient counselling targeting on various risk factors, life style modification and management of hypertension. The clinical pharmacist have to play a central role in educating the people in avoiding the risk factors for hypertension.

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