



## Assessment of Health-Related Quality of Life in Hypertension Patients at Tertiary Care Hospital

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### ABSTRACT

**Objective:** The present study is aimed to study to assess the health related quality of life in hypertension patients in an inpatient pharmacy at tertiary care hospital

**Methodology:** The study was conducted in the inpatient pharmacy department of tertiary care hospital Bangalore, India. In this method, the inpatient case sheets and prescriptions will be screened for Analysis of prescriptions for various effects of health related quality of life on hypertension patients on daily basis. The review patients will be followed everyday until their release. The Micromedex, Medscape, articles and important references books will be utilized as apparatuses to audit the gathered information.

**Result:** The blood pressures, QoL scores, adherence scores, and KAP of the test and control groups did not differ significantly at baseline. At the final follow-up, both groups' blood pressure control improved as patients continued to see their doctors regularly. However, the test group saw a more significant drop in blood pressure ( $p < 0.05$ ). At the end of the study, the test group's mean systolic and diastolic blood pressures were  $13.69 \pm 6.02$  ( $p < 0.01$ ) and  $9.38 \pm 6.71$  ( $p < 0.01$ ), respectively. Patients in the test group had significantly ( $p = 0.002$ ) higher QoL scores than at baseline at the final follow-up. Patients in the experimental group likewise would be wise to progress in adherence than the benchmark group patients. At the last follow, the experimental group, who had gotten broad schooling with respect to their sickness, it the board and the dietary and way of life change important to control their illness, showed a measurably critical improvement in KAP score ( $p = 0.003$ ).

**Conclusion:** At the end of the study patients in the test group had better blood pressure values and better scores in all six subscales of the PGWBI. At the final follow-up, these patients also showed an increase in KAP scores and adherence. According to the findings of our research, pharmacists have the potential to significantly contribute to the improvement of the quality of life and outcomes of hypertension treatment.

### Introduction

Hypertension is viewed as one of the main sources of death and handicap, and its pervasiveness is quickly expanding in emerging nations. Hypertension is accounted for to be the fourth most normal reason for unexpected passing in created nations and the seventh in non-industrial nations. Late reports show that almost 1 billion grown-ups (approximately a fourth of the total population) have hypertension, and this rate is anticipated to increment to 1.56 billion continuously 2025. In India 20-40% of grown-up hypertensive patients are from metropolitan region and 12-17% from rural region. According to Brown, 1994, Kearney et al., India accounts for 15% of all uncontrolled hypertensive patients worldwide. 2005). Surveying the personal satisfaction of hypertensive patients is a significant issue.[2]

Wellbeing related QOL (HRQOL) is arising as a significant result in hypertension and can be unfavorably impacted by hypertension itself and the symptoms of antihypertensive medications. However, there have been conflicting reports regarding HRQOL among hypertensive individuals; some studies have found that hypertensives have worse HRQOL than the general population, while Moum et al. announced no effect of hypertension on HRQOL in some/all areas. The connections between understanding, sickness, therapy factors, side effects, and HRQOL were depicted by a model distributed in 1995. This model recommends that physiologic changes because of disease or therapy lead to side effects, which thus impacts utilitarian status or HRQOL. These connections are impacted by quiet and ecological factors that might influence the patient impression of side effects and changes in HRQOL. This general model can be applied to information from clinical examinations to discover the strength of connections among HRQOL and patient, illness, and treatment factors. The WHO defines quality of life (QoL) as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns." [1]

Different researchers have reported different determinants of HRQOL, including disease symptoms, illness severity, and drug-related factors like the number of antihypertensive medications and adverse reactions to therapy. The quality of life of hypertensive patients has been the subject of numerous studies, and the results have consistently demonstrated that it is lower than that of normotensive individuals. Depression, anxiety, and other mental health

issues that are linked to the onset and progression of cardiovascular diseases like hypertension have been the primary focus of worldwide research. Bondage, et al., observed that degrees of gloom and uneasiness were higher among patients with atrial fibrillation even a half year after determination and treatment. [ 7]

There is a scarcity of studies detailing QOL in Indian hypertensive patients. Thus this study was directed to decide QOL in hypertensive patients utilizing MINICHAL, a particular device for surveying QOL in hypertensive people and WHOQOL-BREF (world wellbeing association personal satisfaction - BREF), a conventional instrument material in any persistent illness and furthermore to assess similarity of these two QOL devices. from institutional audit board. Composed informed assent was acquired from every member. The study included all patients over the age of 18 with essential hypertension who had been taking antihypertensive medication for at least one month. [10]

## METHODOLOGY:

**Study design and site:** The study was Prospective and Observational and was conducted at tertiary care hospital in Bangalore.

### Inclusion Criteria:

- All inpatient staying for atleast 24 hours
- Patient having hypertension

### Exclusion Criteria:

- Pregnant and lactating women
- Patient of special population like pediatric patient etc

### Method of collection of data/Study procedure:

A Prospective and Observational study was conducted in the department of General medicine. The patients who meet the criteria was enrolled for the study. Baseline information such as demographic details like age, sex, weight, date of admission and date of discharge of the patients were obtained. Drug related data such as name of drugs, doses, route of administration, duration & other laboratory data were collected and documented in a suitable designed data collection form. The follow - ups were also documented up to discharge. The standard references like MICROMEDEX and LEXICOMP software available in the department and standard text books like Textbook of Pharmacotherapy by Joseph T. Dipiro, Textbook of Pharmacotherapy by Herfindal, Applied Therapeutics by Koda Kimble were used. Data was evaluated by using suitable statistical tools.

## Results:

**Table 1: Demographic details**

| <i>DEMOGRAPHIC DETAILS</i>                       | <i>CONTROL</i>      | <i>TEST</i>           | <i>p value</i> |
|--|---------------------|-----------------------|----------------|
| <b>Number of patients</b>                        | <b>21</b>           | <b>26</b>             |                |
| <b>Age in years</b>                              | 51.19 ± 8.31        | 52.92 ± 9.34          | 0.26           |
| <b>Gender</b>                                    | <b>8 M (38.1 %)</b> | <b>14 M (53.85 %)</b> | 0.15           |
| <b>Smoking history</b>                           |                     |                       |                |
| <i>Smoker</i>                                    | <b>3 (14.28 %)</b>  | <b>5 (19.23 %)</b>    | 0.33           |
| <i>Non smoker</i>                                | <b>11 (52.38 %)</b> | <b>14 (53.84 %)</b>   |                |
| <i>Past smoker</i>                               | <b>7 (33.33 %)</b>  | <b>7 (26.92 %)</b>    |                |
| <b>Alcohol history</b>                           |                     |                       |                |
| <i>Alcoholic</i>                                 | <b>4 (19.05 %)</b>  | <b>5 (19.23 %)</b>    | 0.37           |
| <i>Non Alcoholic</i>                             | <b>12 (57.14 %)</b> | <b>17 (65.38 %)</b>   |                |
| <i>Past Alcoholic</i>                            | <b>5 (23.81 %)</b>  | <b>4 (15.38 %)</b>    |                |
| <b>Average duration of hypertension in years</b> | <b>4.42 ± 2.48</b>  | <b>6.73 ± 4.77</b>    | <b>0.03</b>    |
| <b>Number of medicines</b>                       | <b>2.76 ± 0.76</b>  | <b>2.53 ± 0.85</b>    | 0.17           |

out of 58 patients enrolled in the study, Eleven patients (18.96 %) were lost to follow up. There was no significant difference ( $p > 0.05$ ) seen between the baseline values of the two groups with respect to age, gender, education level, smoking history, alcohol consumption history and number of medicines being taken. However, the patients in the test group had had hypertension for a significantly ( $p = 0.03$ ) longer duration of time. The demographic details of the 47 patients who have completed the study is presented in Table.

**Table 2: Incidence of blood pressure with age – Control verses Test**

| <b>AGE in years</b> | <b>CONTROL</b> | <b>TEST</b> | <b>p value</b> |
|---------------------|----------------|-------------|----------------|
| <b>30 – 39</b>      | 2              | 2           |                |
| <b>40 – 49</b>      | 6              | 8           |                |

|              |           |           |             |
|--------------|-----------|-----------|-------------|
| 50 – 59      | 11        | 10        |             |
| 60 – 69      | 2         | 4         |             |
| 70 – 79      | 0         | 2         |             |
| <b>Total</b> | <b>21</b> | <b>26</b> | <b>0.26</b> |

Note: p value  $\leq 0.05$  is significant as calculated by t-test.

Figure 1: Mean systolic blood pressure seen at each follow-up: Control versus Test group

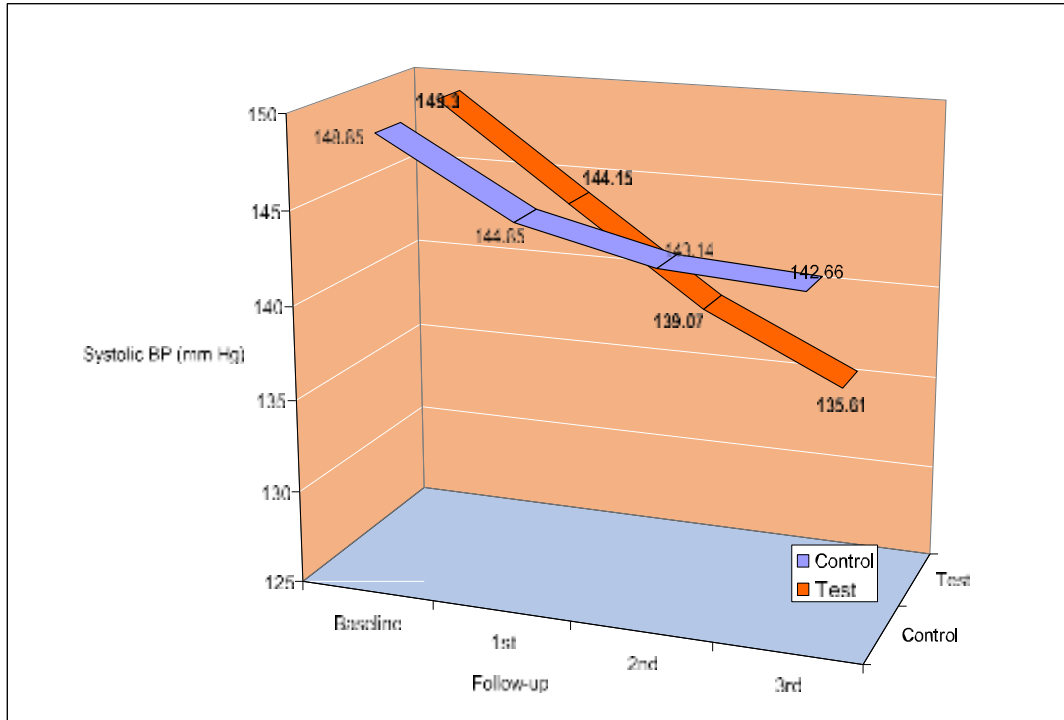


Figure 2: Mean diastolic blood pressure seen at each follow-up: Control versus Test group

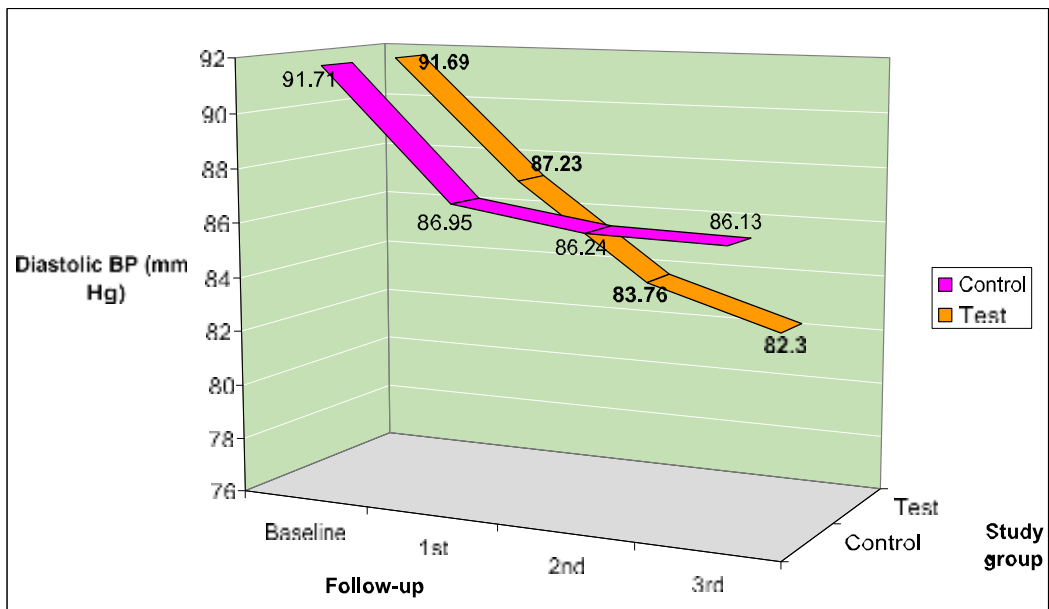


Table 3: Change in systolic blood pressure seen at each follow-up: Control versus Test group

| Follow up | Control                              |         | Test                                |              |
|-----------|--------------------------------------|---------|-------------------------------------|--------------|
|           | Change in SBP(mm Hg) mean $\pm$ S.D. | p value | Change in SBP(mm Hg) mean $\pm$ S.D | p value      |
| 1st       | 4.12 $\pm$ 4.3                       | 0.18    | 5.15 $\pm$ 3.74                     | <b>0.008</b> |

|     |             |      |              |                  |
|-----|-------------|------|--------------|------------------|
| 2nd | 5.7 ± 5.44  | 0.09 | 10.23 ± 4.35 | <b>0.003</b>     |
| 3rd | 6.19 ± 6.02 | 0.07 | 13.69 ± 6.02 | <b>&lt; 0.01</b> |

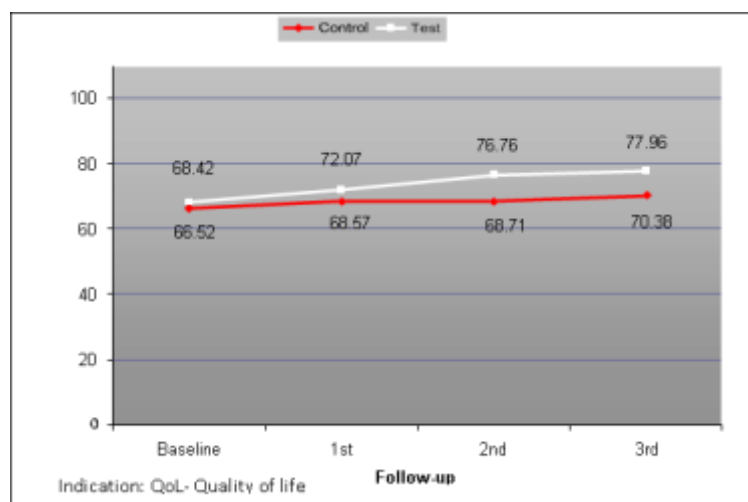
Indication: SBP- systolic blood pressure, mmHg- millimeter of mercury, S.D.- standard deviation Note: p value ≤ 0.05 is significant as calculated by t-test.

**Table 4: Change in diastolic blood pressure seen at each follow-up: Control versus Test group**

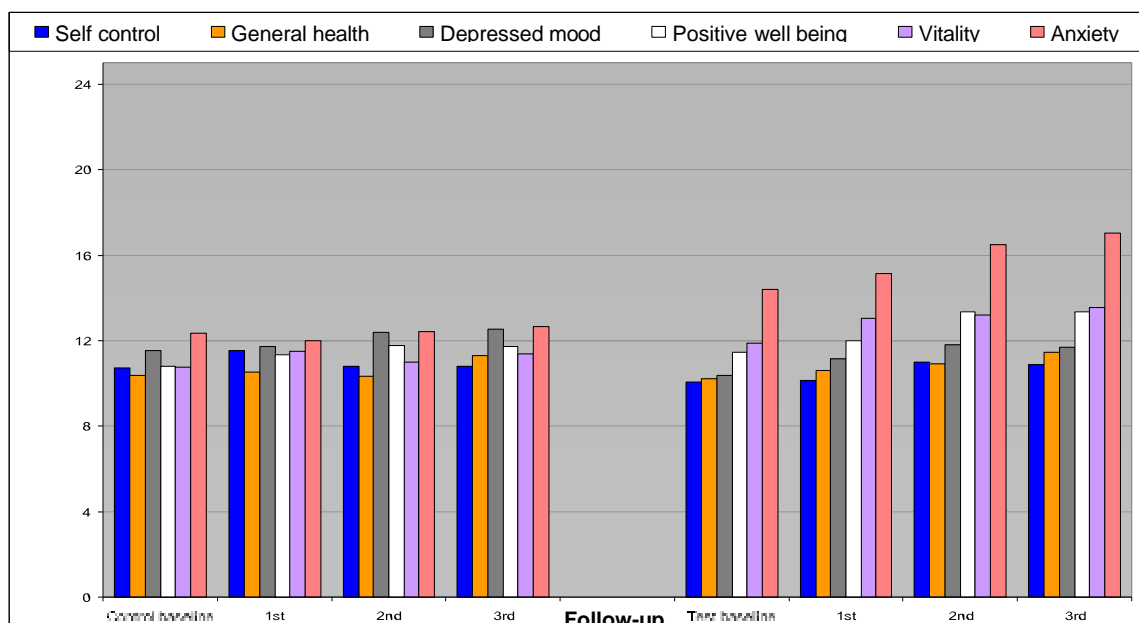
| Follow up | Control                             |             | Test                                |                  |
|-----------|-------------------------------------|-------------|-------------------------------------|------------------|
|           | Change in DBP (mm Hg)<br>mean ± S.D | p value     | Change in DBP (mm Hg)<br>mean ± S.D | p value          |
| 1st       | 4.76 ± 2.8                          | <b>0.03</b> | 4.46 ± 4.02                         | <b>0.04</b>      |
| 2nd       | 4.85 ± 3.13                         | <b>0.03</b> | 7.92 ± 6.02                         | <b>&lt; 0.01</b> |
| 3rd       | 3.52 ± 3.56                         | 0.08        | 9.38 ± 6.71                         | <b>&lt; 0.01</b> |

Indication: DBP- diastolic blood pressure, mmHg- millimeter of mercury, S.D. standard deviation Note: p value ≤ 0.05 is significant as calculated by t-test.

**Figure 3: Mean Total QoL score seen at different follow-ups: Control versus Test group**



**Figure 4: Mean Scores for individual subscales of the PGWBI at each follow-up: Control versus Test group**



The Psychological General Well Being Index (PGWBI) has six subscales: anxiety, depressed mood, vitality, general health, positive well being and self control. In the test group, at second and third follow up, there was a significant increase in, the scores of all the subscales of the PGWBI when compared to baseline. In the control group there was no significant change observed in the scores of the individual subscales. This is depicted in figure 4.

**Table 5: Mean scores in the various QoL subscales seen at different follow ups and significance of change seen from baseline: Control versus Test group**

| PGWBI Subscale |         | Baseline<br>mean $\pm$ S.D. | 1st<br>follow-up<br>mean $\pm$ S.D. | <i>p</i> value<br><i>B</i> vs <i>1</i> | 2nd<br>follow-up<br>mean $\pm$ S.D. | <i>p</i> value<br><i>B</i> vs <i>2</i> | 3rd<br>follow-up<br>mean $\pm$ S.D. | <i>p</i> value<br><i>B</i> vs <i>3</i> |
|----------------|---------|-----------------------------|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|
| Total score    | Control | 66.52 $\pm$ 13.0            | 68.57 $\pm$ 11.75                   | 0.29                                   | 68.71 $\pm$ 10.94                   | 0.27                                   | 70.30 $\pm$ 11.43                   | 0.15                                   |
|                | Test    | 68.42 $\pm$ 11.8            | 72.07 $\pm$ 11.97                   | 0.13                                   | 78.53 $\pm$ 11.94                   | <b>0.006</b>                           | 81.15 $\pm$ 11.60                   | <b>0.002</b>                           |
| Anxiety        | Control | 12.33 $\pm$ 2.26            | 12 $\pm$ 2.44                       | 0.32                                   | 12.42 $\pm$ 1.56                    | 0.43                                   | 12.66 $\pm$ 1.90                    | 0.30                                   |
|                | Test    | 14.38 $\pm$ 3.41            | 15.11 $\pm$ 3.98                    | 0.24                                   | 16.5 $\pm$ 4.31                     | <b>0.02</b>                            | 17.03 $\pm$ 4.77                    | <b>0.01</b>                            |
| Depressed Mood | Control | 11.52 $\pm$ 3.31            | 11.71 $\pm$ 2.21                    | 0.41                                   | 12.38 $\pm$ 2.80                    | 0.18                                   | 12.52 $\pm$ 2.67                    | 0.14                                   |
|                | Test    | 10.38 $\pm$ 2.36            | 11.15 $\pm$ 2.50                    | 0.13                                   | 12.23 $\pm$ 2.00                    | <b>0.01</b>                            | 12.69 $\pm$ 1.89                    | <b>0.002</b>                           |
| Positive well  | Control | 10.80 $\pm$ 1.91            | 11.33 $\pm$ 1.87                    | 0.18                                   | 11.76 $\pm$ 1.84                    | <b>0.05</b>                            | 1.71 $\pm$ 1.73                     | <b>0.05</b>                            |
|                | Test    | 11.46 $\pm$ 2.45            | 12 $\pm$ 2.13                       | 0.2                                    | 13.42 $\pm$ 2.08                    | <b>0.002</b>                           | 13.84 $\pm$ 1.99                    | <b>0.001</b>                           |
| Self control   | Control | 10.71 $\pm$ 3.64            | 11.52 $\pm$ 2.60                    | 0.20                                   | 10.80 $\pm$ 3.93                    | 0.46                                   | 10.80 $\pm$ 2.94                    | 0.46                                   |
|                | Test    | 10.07 $\pm$ 2.03            | 10.15 $\pm$ 1.71                    | 0.44                                   | 11 $\pm$ 2.71                       | 0.08                                   | 12 $\pm$ 1.76                       | 0.07                                   |
| General health | Control | 10.38 $\pm$ 2.72            | 10.52 $\pm$ 3.07                    | 0.4                                    | 10.33 $\pm$ 1.55                    | 0.47                                   | 11.28 $\pm$ 2.72                    | 0.14                                   |
|                | Test    | 10.23 $\pm$ 1.14            | 10.61 $\pm$ 1.83                    | 0.18                                   | 11.57 $\pm$ 1.30                    | <b>0.01</b>                            | 11.73 $\pm$ 1.56                    | <b>0.001</b>                           |

Note:  $p$  value  $\leq$  0.05 is significant as calculated by t-test. Indication :QoL- quality of life, S.D.- Standard deviation, B – Baseline, 1 – First follow-up, 2 – Second follow-up, 3- Third follow-up

**Table 6: KAP scores seen at baseline and final follow-up: Control versus Test Group**

| Sr. No | BASELINE |         | FINAL FOLLOW-UP |         |
|--------|----------|---------|-----------------|---------|
|        | Test     | Control | Test            | Control |
| 1      | 19       | 10      | 24              | 13      |
| 2      | 8        | 12      | 16              | 12      |
| 3      | 11       | 12      | 16              | 13      |
| 4      | 9        | 11      | 14              | 13      |
| 5      | 10       | 16      | 15              | 16      |
| 6      | 20       | 8       | 25              | 9       |
| 7      | 22       | 22      | 29              | 25      |
| 8      | 15       | 9       | 13              | 11      |
| 9      | 14       | 18      | 19              | 18      |
| 10     | 16       | 20      | 21              | 22      |
| 11     | 11       | 21      | 19              | 21      |

|                 |                  |                  |               |                  |
|-----------------|------------------|------------------|---------------|------------------|
| 12              | 8                | 22               | 13            | 22               |
| 13              | 22               | 8                | 27            | 11               |
| 14              | 9                | 13               | 14            | 13               |
| 15              | 15               | 9                | 20            | 9                |
| 16              | 16               | 10               | 21            | 10               |
| 17              | 12               | 17               | 20            | 17               |
| 18              | 14               | 14               | 19            | 14               |
| 19              | 13               | 19               | 18            | 22               |
| 20              | 17               | 11               | 22            | 11               |
| 21              | 18               | 16               | 23            | 16               |
| 22              | 24               |                  | 29            |                  |
| 23              | 17               |                  | 25            |                  |
| 24              | 10               |                  | 15            |                  |
| 25              | 18               |                  | 23            |                  |
| 26              | 13               |                  | 21            |                  |
| Mean $\pm$ S.D. | 14.65 $\pm$ 4.54 | 14.19 $\pm$ 4.75 | 20 $\pm$ 4.74 | 15.14 $\pm$ 4.84 |
| p value         | 0.367            | 0.0005           |               |                  |

Note: p value  $\leq$  0.05 is significant as calculated by t-test.

Indication : KAP – knowledge, attitude and practice, S.D.- standard deviation

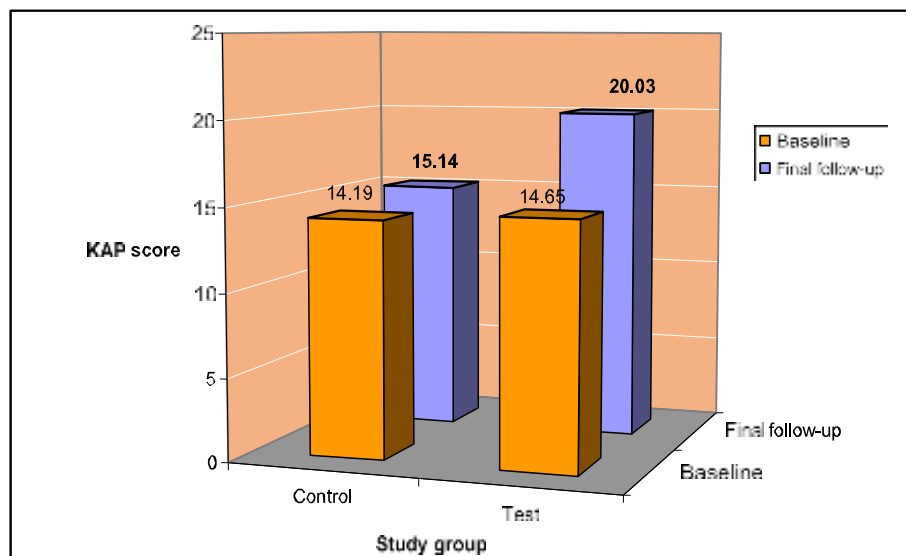


Figure 5: Comparison of mean KAP scores for each group at baseline and final follow-up

Indication : KAP – knowledge, attitude and practice

The mean KAP scores for the control and test group, at baseline and final follow-up are presented in figure. The test group patients showed a significant improvement in KAP scores at final follow-up. There was a difference seen in control group scores at final follow-up but this was not significant ( $p=0.36$ ). This is depicted in the figure.

## DISCUSSION:

### Knowledge, Attitude and Practice of the study patients

Patients' knowledge, attitude and beliefs have been shown to affect their medication taking behavior. Medication adherence is essential to achieve better therapeutic outcomes in chronic and asymptomatic diseases like hypertension. An understanding of the cause of high blood pressure and the changes in

habits required to control hypertension also helps to improve treatment outcomes. At baseline only a few patients in either group were aware about the signs, symptoms, complications and management of hypertension and the dietary and life style modifications essential to control high blood pressure. [6]

At the final follow, the test group, who had received extensive education regarding their disease, its management and the dietary and life style modification necessary to control their disease, showed a statistically significant improvement in KAP score ( $p = 0.003$ ). Though the patients in the control group did show a slight increase in score, this was not statistically significant ( $p > 0.05$ ). [7]

As the test group patients showed a greater control in their blood pressure, it can be inferred that enhancing a hypertensive patients' knowledge about their disease and its treatment, can have a positive impact on their attitude towards their disease and can improve their adherence to treatment and life style changes necessary to control their high blood pressure. [9]

HRQoL is increasingly viewed as a therapeutic outcome and is gradually gaining the same level of importance as clinical or physiological outcome parameters (e.g. blood pressure). In the case of hypertension, a definite cure cannot be provided by medicine and therefore decreased symptoms, limitation of disease progression and improvement in function became the main goals of therapeutic strategies. Patients must be educated to accept that making life style changes is essential to BP reduction. They must be able to understand the need for treatment and the benefits and risks offered by the prescribed medication in order to enable them to participate in their health care and gain concordance with their treatment plan. [13]

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## CONCLUSION:

The purpose of this study was to determine how pharmacist-provided patient education affected hypertensive patients' treatment outcomes and quality of life. At baseline all patients had very poor knowledge and attitude towards their disease and this was probably why they exhibited poor adherence to their therapy. This was reflected in their inadequate blood pressure control. At the end of the three month study period, the patients in the test group who had received extensive counseling from a pharmacist regarding their disease and its management showed a greater improvement in treatment outcomes, adherence, KAP and QoL than patients in the control group.

Although reductions in systolic and diastolic blood pressure were seen at each of the three follow ups, in the control and the test group, the patients in the test group showed a statistically significant decrease in blood pressure as they were being educated by a pharmacist in addition to receiving the usual care that the control patients were receiving.

Our study confirms that improvement in knowledge of the disease and its management, improves medication adherence, which in turn has a positive impact on treatment outcomes and Quality of Life of hypertensive patients. This study also emphasizes the potential of the pharmacist to play an important role, as a patient educator, in the management of hypertensive patients.

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