

## The Impact of Educational Sessions on Knowledge and Medication Adherence Among Hypertensive Patients

Saddar Badshah<sup>1</sup>, Sehrish Naz<sup>2</sup>, Yaser Ud-din<sup>3</sup>, Muhammad Qasim<sup>4</sup>, Dildar Muhammad<sup>5</sup>.

<sup>1</sup> Principal Mardan Institute of Nursing and Allied Medical sciences.

<sup>2</sup> Assistant Professor Institute of Nursing sciences (KMU).

<sup>3</sup> Principal royal college Of Nursing sawat.

<sup>4</sup> Senior Nursing Lecturer Mardan Institute of Nursing and Allied Medical sciences.

<sup>5</sup> Associate Professor Institute of Nursing sciences (KMU).

### Corresponding author:

Saddar Badshah

Mardan Institute of Nursing and Allied Medical sciences.

### Abstracts

#### Introduction

Hypertension is one of the most preventable risk factors for heart disease and a major problem around the world. It has a significant negative effect on public health and may cause unnecessary morbidities and premature mortalities. Lowering blood pressure reduces the risk of cerebrovascular accidents and acts as a reversible functional precursor of target organ damage. Hypertension is best treated with a combination of lifestyle modifications and medication to prevent strokes and other complications. Knowledge of prevention of its complications has been shown to have a favorable impact on health habits. Patients' lack of knowledge and medication adherence is one cause of ineffective secondary prevention. **The objective of the study:** The main objective of the study was to evaluate the impact of educational sessions on knowledge and medication adherence among hypertensive patients. **Methodology:** A quasi-experimental study was conducted on 64 Patients at WAPDA hospital by using consecutive sampling techniques. The study duration was six months from (November 2021 to May 2022). Pre-test data were obtained using the hypertension knowledge level scale and Morisky Medication Adherence scale. **Results:** The findings of the study revealed that 32 (50%) were males and 32(50%) were females. The mean age of the participants was  $48.47 \pm 2$  years. The findings showed a significant difference between pre and post interventions data. Pre-intervention mean  $\pm$  SD knowledge score was  $8.187 \pm 2.442$  and the post-intervention means knowledge score was  $11.79 \pm 2.463$ . Pre-

intervention mean $\pm$  SD adherence score was 5.296 $\pm$ 1.4329 and Post-intervention means adherence score was 6.8906 $\pm$ 1.1. There was a significant difference between pre and post-intervention knowledge and medication adherence score with a P value of 0.000.**Conclusion:** Findings of the study indicated that educational interventions were significantly effective in improving knowledge and medication adherence among hypertensive patients. The study provided evidence for the efficacy of an educational intervention in hypertensive patients' knowledge and medication adherence.

**Keywords:** Education session, Hypertension, Impacts, Knowledge, Medication Adherence,

## INTRODUCTION

Hypertension is one of the most preventable risk factors for heart disease and a major problem around the world. It has a significant negative effect on public health and may cause unnecessary morbidities and premature mortalities(1).it cannot be defined solely by blood pressure thresholds since the earliest symptoms of the condition can show before a sustained rise in blood pressure. The advancement of hypertension is strongly linked with structural and functional cardiac and vascular issues, which can harm the kidneys, brain, heart, and other organs and cause early morbidity and mortality(2). Lowering blood pressure lowers the likelihood of cerebrovascular accidents in the presence of vulnerable organ damage or a reversible functional precursor of target organ damage(3). Based on their cardiovascular (CV) health, individuals are classed as normal or hypertensive. Stages I, II, and III hypertension can be used to characterize the transition from early to advanced hypertension(4-7).

It is estimated that 1.28 billion persons (aged 30-79) globally have hypertension, with the majority (66%) from poor and middle income countries. According to the numbers, nearly half of those who suffer from hypertension are entirely unaware that they have the disease(9,10). Hypertension contributes to mortality as the "silent killer," damaging the heart, brain, and kidneys asymptotically. Failure to manage its complications is a global problem. Hypertension raise the fatality rate, care costs, and hospital stays(10,11).

Hypertension is best treated with a combination of lifestyle changes and medication. To prevent strokes and other complications, it is critical to maintain proper blood pressure (BP) regulation. Knowledge of stroke prevention has been shown to have a favorable impact on health habits. Patients' lack of knowledge is one cause of ineffective secondary prophylaxis. Patient education

has been used in numerous trials to increase secondary stroke prevention(12,13) Studies shown that many people who have recovered from a stroke due to hypertension were engaged in less-than-ideal health behaviors such as not getting enough exercise, eating poorly, drinking excessively, and smoking. (13–15).

Similarly, proper medication adherence has a significant role in the prevention of complications. (16).Concerning medication adherence and improving knowledge through Interventions for enhancing adherence to antihypertensive medication are also important.(17).Increased understanding regarding hypertension and its treatment has been linked to better adherence to the treatment regimen and overall success in treating the disease(18,19).

## **METHODOLOGY**

### **Study design:**

A quasi-experimental pre and post-test study design was aimed to appraise the impacts of educational sessions on knowledge and medication adherence among hypertensive patients at WAPDA hospital Tarbela Dame. A consecutive sampling technique was used for the recruitment of study participants. The estimated Sample size for the study was  $n=64$ , calculated by an online G-power sample size calculator by using effect size of 0.5,  $\alpha$  0.05, and power of 0.8..The study duration was six months from November 2021 to May 2022.An adapted valid and reliable hypertension Knowledge level (HKL) questionnaire for checking knowledge and Morisky Medication Adherence scale for medication adherence were used for pre and post intervention data collection(21,22).

The data collect was parted into -pre-intervention, intervention, and post-intervention. Data was collected two times as per the study protocol. Verbal as well as written informed consent was taken from each participant.

The sample of 64 patients was divided into three groups 22, 22, and 20 for effective sessions. The principal investigator delivered educational interventions that consisted of multimedia power point presentations regarding blood pressure knowledge and medication adherence along with pamphlets and charts. Educational interventions were carried out for each group separately. After the teaching session, all study participants were re-evaluated after 2 weeks of interventions with the same tool to evaluate the efficacy of the educational session.

An application for ethical clearance was made from the University ASRB and the medical superintendent of the concerned hospital. Written consent was also obtained from each participant once they had been informed of the study's goal. Data analysis was carried through descriptive and inferential statistics through SPSS version 22. Paired t-test was applied for comparison of pre and post interventions knowledge and medication adherence means.

## RESULTS

Overall, 64 participants were included in the study. The mean age of the participants was  $48.47 \pm 2.6$  years ranging from 18 years and maximum age of 61 years. According to gender distribution, 32 (50%) were males and 32 (50%) were females. The majority of the participants were married 60 (88.2%) and only 4 (5.9%) were unmarried. The majority of 14 (20.6%) participant's education status was middle class followed by matriculation 11 (16.2%) with the same participants in intermediated 11 (16.2%) followed by primary level 8 (11.8%) followed by Master level 3 (4.4%) whereas in last 8(11.8%) were uneducated. The majority of the participants 36 (52.9%) were employed followed by 28 (43.2%) who were unemployed. Results are shown in Table 1.

**Table I: Socio-Demographic profile of the participants, n=64.**

|                                   | Frequency (N) | Percentage (%) | Valid Percent | Cumulative % |
|-----------------------------------|---------------|----------------|---------------|--------------|
| <b>Age of the Participants</b>    | 5             | 7.4            | 7.8           | 7.8          |
| 35 to 44 Years                    |               |                |               |              |
| 45 to 54 Years                    | 47            | 69.1           | 73.4          | 81.2         |
| More than 55 Years                | 12            | 17.6           | 18.8          | 100.0        |
| <b>Gender of the Participants</b> |               |                |               |              |
| Male                              | 32            | 50.0           | 50.0          | 50           |
| Female                            | 32            | 50.0           | 50.0          | 100          |
| <b>Marital status.</b>            |               |                |               |              |
| Unmarried                         | 4             | 5.9            | 6.2           | 6.2          |
| Married                           | 60            | 88.2           | 93.8          | 100          |

| Education Status. |    |      |      |       |
|-------------------|----|------|------|-------|
| Primary           | 8  | 11.8 | 12.5 | 12.5  |
| Middle            | 14 | 20.6 | 21.9 | 34.4  |
| Matriculation     | 17 | 25.0 | 26.6 | 60.9  |
| Intermediate      | 11 | 16.2 | 17.2 | 78.1  |
| Master            | 11 | 16.2 | 17.2 | 95.3  |
| Uneducated        | 3  | 4.4  | 4.7  | 100.0 |
| Employment Status |    |      |      |       |
| Employed          | 36 | 52.9 | 56.2 | 56.2  |
| Unemployed        | 28 | 41.2 | 43.8 | 100   |

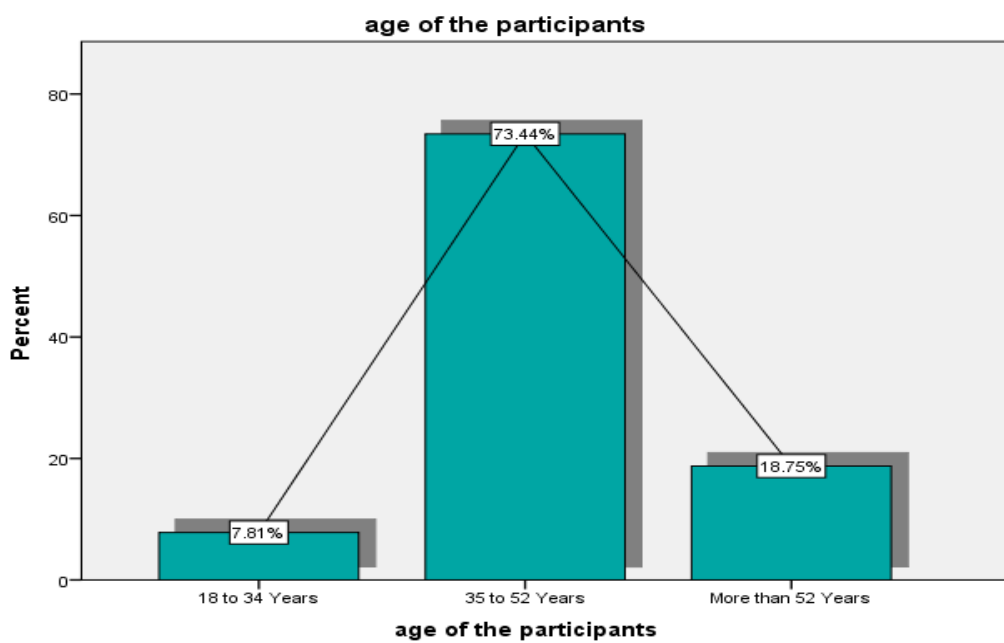


Figure I Age of the participants

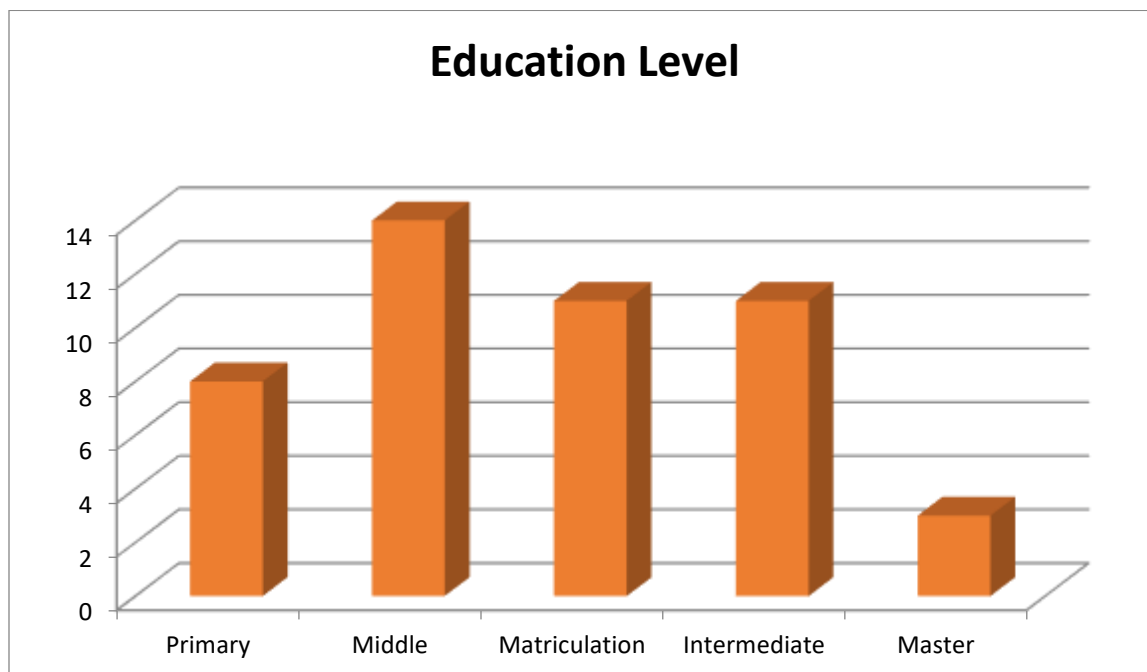


Figure II Education level

#### 4.4.1 Table II Pretest/Pre intervention knowledge levels

| Pre-intervention knowledge level | Number of participants | Frequency | Percentage |
|----------------------------------|------------------------|-----------|------------|
| Poor knowledge                   | 27                     | 27/64     | 42.4%      |
| Average Knowledge                | 33                     | 33/64     | 51.56      |
| Adequate knowledge               | 4                      | 4/64      | 6.25%      |

#### Pretest/Pre intervention knowledge levels of the study Participants.

The study revealed pre and post-intervention knowledge and medication adherence. By calculating pre and post-intervention knowledge, (42.1 % ) had poor knowledge, (51.56%+4.68%) had average or adequate knowledge while in post-intervention only (7.81%) had poor knowledge and a significant number of the participants (37.5%+53.126%) reported average or adequate knowledge as shown in Table II & III.

#### Table III: Posttest/Post intervention knowledge levels of the study Participants.

| Post-intervention knowledge level | Number of participants | Frequency | Percentage |
|-----------------------------------|------------------------|-----------|------------|
| Poor knowledge                    | 5                      | 5/64      | 7.81%      |
| Average Knowledge                 | 24                     | 24/64     | 37.5%      |
| Adequate knowledge                | 34                     | 34/64     | 53.126%    |

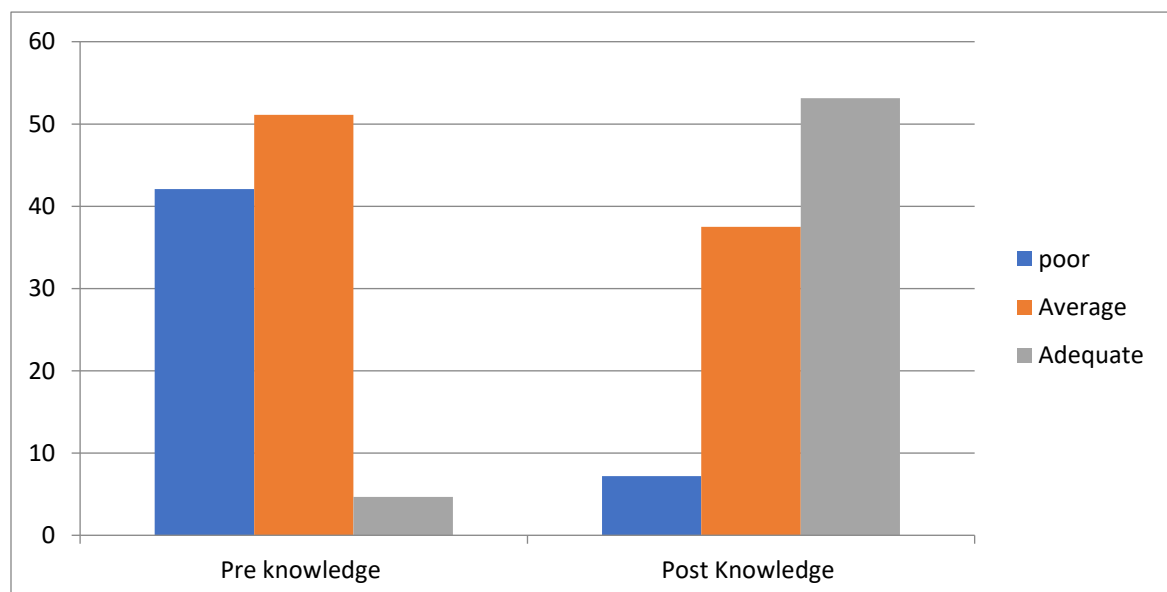


Figure III pre and post knowledge

Similarly, the frequencies of pre and post-intervention medication adherence shown that the majority (59.37%) of the participants had low medication adherence while (31.25% +7.81%) had medium or high medication adherence prior to interventions as shown in table IV and V.

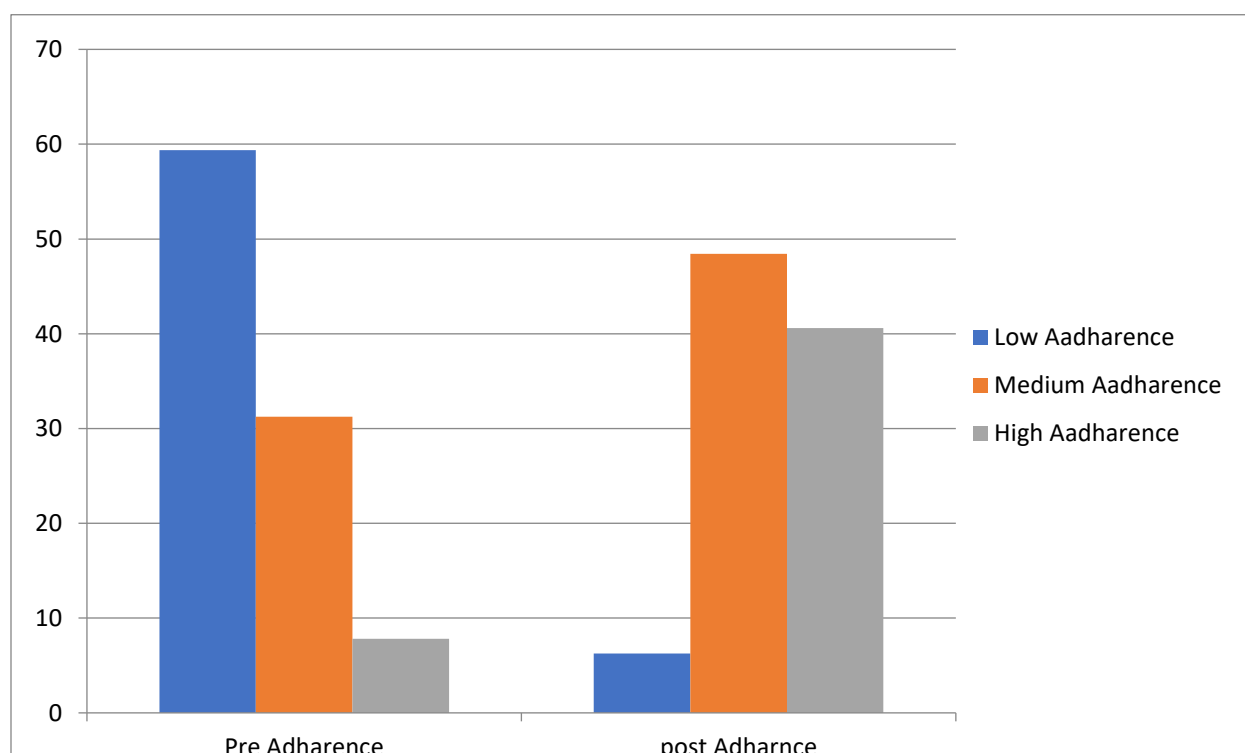
**Table IV: Pretest/Pre Intervention Medication Adherence among study Participants.**

| Pre-intervention Adherence | Number of participants | Frequency | Percentage |
|----------------------------|------------------------|-----------|------------|
| Low Adherence              | 38                     | 38/64     | 59.37%     |
| Medium                     | 20                     | 20/64     | 31.25%     |
| High medication adherence  | 5/64=                  | 5/64      | 7.81%      |

While in post-intervention only (6.25%) had low medication adherence and a significant proportion (48.43% +40.6%) of the study participants were having medium or high medication adherence as shown in Table V.

**Table V: Posttest/Post Intervention Medication Adherence among study Participants.**

| Post Intervention Adherence | Number of participants | Frequency | Percentage |
|-----------------------------|------------------------|-----------|------------|
| Low Adherence               | 4                      | 4/64      | 6.25%      |
| Medium                      | 31                     | 31/64     | 48.43%     |
| High Medication adherence   | 26                     | 26/64     | 40.6%      |



**Figure IV Pre and post Medication Adherence**

### Comparison of Mean Pre and posttest knowledge and Medication adherence scores of the study participants

Paired t-Test was applied to identify any significant differences between pre and post-knowledge and pre and post-medication adherence scores. The findings revealed a significant difference between pre and post interventions data. Pre-intervention mean  $\pm$  SD knowledge score was  $8.187 \pm 2.442$  and the post-intervention mean  $\pm$  SD knowledge score was  $11.79 \pm 2.463$ . Pre-intervention mean  $\pm$  SD adherence score was  $5.296 \pm 1.4329$  and the Post-intervention mean  $\pm$  SD adherence score was  $6.8906 \pm 1$ . The knowledge and medication adherence score was statistically significant before and after the intervention, with a P value of 0.000 as shown in Tables VI and VII.

|        |  | Mean    | N  | Std. Deviation | Std. Error Mean |
|--------|--|---------|----|----------------|-----------------|
| Pair 1 | Pre-intervention Knowledge score             | 8.1875  | 64 | 2.44219        | .30527          |
|        | post-intervention Knowledge Score            | 11.7969 | 64 | 2.46357        | .30795          |
| Pair 2 | Pre-intervention medication Adherence score  | 5.2969  | 64 | 1.43294        | .17912          |
|        | post-intervention Medication adherence score | 6.8906  | 64 | 1.10003        | .13750          |

**Table VII**

#### Paired Samples Test

|        |  | Paired Differences |                |                 |   | t        | df     | Sig. (2-tailed) |       |
|--------|--|--------------------|----------------|-----------------|---|----------|--------|-----------------|-------|
|        |  | Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference |          |        |                 |       |
|        |  |                    |                |                 | Lower                                     |          |        |                 | Upper |
| Pair 1 | Pre-intervention Knowledge score - post-intervention Knowledge Score                       | -3.60938           | 1.06335        | .13292          | -3.87499                                  | -3.34376 | 27.155 | 63              | .000  |
| Pair 2 | Pre-intervention medication Adherence score - post-intervention Medication adherence score | -1.59375           | .75000         | .09375          | -1.78109                                  | -1.40641 | 17.000 | 63              | .000  |



## DISCUSSION

### 5.1 Discussion

The basic objective of our work was to appraise knowledge and medication adherence in hypertensive patients and to test whether an educational session may improve their knowledge and medication adherence. Overall, 64 people participated. The participants' mean age was 48.47 years, ranging from 36 and a maximum of 61. The majority of participants (52%) were aged 45 to 55, followed by 35 to 44 and 55 and older (17.6%). 36 (56%) were male, 28 (43%) female. The current findings of the study were supported by a similar study conducted by Saleem et al. in Quetta, Pakistan. The study revealed that the mean age of the participants was  $39.0 \pm 6.6$ . According to the findings, the majority of patients (61.3 percent) possessed average knowledge of hypertension, whereas the majority of patients (64.7 percent) were classified as poor adherents. No patient in the research was regarded as having good adherence to the protocol. It was shown that there was a significant correlation coefficient between the total score in knowledge portion and total adherence with a p value of  $p < 0.001$ , which indicates that there is a link between knowledge scores and adherence level(23).

The results of our research showed that before the intervention, the majority of participants (59.37 percent) had low medication adherence, while the remaining participants (31.25 percent + 7.81 percent) had medium or high medication adherence which represents a significant gap. In terms of pre-intervention knowledge, 42.1% of participants had inadequate knowledge, while 51.56 % + 4.68 % had average or adequate knowledge indicating that a major proportion of the study participants had inadequate knowledge regarding their disease and its medical management. The findings of the study are supported by a similar study conducted by Manal Ibrahim Hanafi. The study reported that the mean age of the study participants was 47.3 (12.46), and also revealed a mean score of 35.1% for medication compliance(24). In contrast, a different study found that hypertensive patients in Turkey showed good medication adherence, with 78 percent of patients reporting adhering to the recommended anti-hypertensive medication compared to 42 percent for lifestyle adjustments. This contrast in findings may indicate that the majority of participants in the study project conducted in Turkey (32 percent) were recruited with a high level of education, and the change in findings may be attributable to a change in the investigation's context(25).

Additionally, the current study's results indicated a notable increase in hypertension knowledge following the intervention. At the pre-intervention level mean score of knowledge was 8.187 with a standard deviation of 2.442 while after intervention mean score of knowledge was 11.79 with a standard deviation of 2.463. Eventually, the calculated mean difference was measured at 3.609 with a standard deviation of 1.06335. This suggests that patients have gained more knowledge about their illness since beginning treatment. It is reasonable to anticipate that an increase in patients' knowledge will lead to a shift in their perspective on their medications, which will ultimately lead to an increase in patients' willingness to take their medications as prescribed. According to the findings of earlier studies, the participants showed a considerable rise in their level of knowledge regarding hypertension and the management of the disease(26). Likewise, another study by Ragavan et al supported the findings of our study. The findings reported that Greater hypertension awareness and knowledge were individually and additively associated with blood pressure control in three distinct populations in rural India. Even basic level education has a significant effect on consciousness and understanding. The findings highlight the importance of universal access to education among hypertensive patients(27).

Changes in people's thoughts and attitudes, as well as the behaviors of an entire population, can be brought about through the use of interventions, which are quite effective. Patients are given the opportunity to comprehend their concerns and clarify any misconceptions they may have regarding their illness and the treatment for it as a result of such interventions. According to the findings of a study, patients' perspectives about illness and the treatment of it do not, fortunately, remain static. Furthermore, patients' ideas are sometimes founded on misconceptions regarding diseases and the application of pharmaceuticals. According to the findings, giving patients with education through an intervention that is carefully developed will result in increased disease awareness, medication adherence, and patient knowledge. (27–29)

In addition, the findings of the current study are supported by a study that was conducted in India by Sivasankaran Ponnusankar. The study recruited Ninety patients were randomly allocated in two groups: counseled or regular care group. A questionnaire was used to measure their medical knowledge, and pill counting and self-assessment were used to assess their adherence. The results revealed that the counseled group demonstrated a statistically significant improvement in their medication adherence and knowledge .The patients' compliance behavior showed a good

trend. Since both the pill count approach and the self-assessment method yielded positive compliance assessments at baseline for each patient, we may conclude that patient adherence was good. (30).

Moreover, the findings of our study revealed the frequencies of pre and post-intervention medication adherence significantly increased after interventions. The findings are supported by another study carried out by Jia-Rong Wu on 477 participants to study the impact of a health-coaching intervention on patients' adherence to their medications as well as their blood pressure. According to the findings, patients who had a poorer medication adherence at the beginning of the trial experienced a substantially bigger progress in medication adherence after the intervention, ranging from 5.75 to 5.94 with a P value of .04. The results show that it is important to focus on people who don't take their medicines as prescribed because they have more room to improve and are more likely to have bad outcomes. The study also found that patients who didn't take their medicines as prescribed at the start improved a lot more than those who didn't (31).

Similarly, another study supported the findings of our study. The study included 600 individuals, with 300 (50%) from intervention and 300 from control group. At the start, there was no big difference between the two groups, but at the one-month follow-up, there was a big difference ( $p=0.0001$ ). The number of people who followed the rules in the intervention group went up statistically significantly, both within the group and compared to the control group. The study's results showed that patients in the intervention group had a much higher rate of compliance. The "good" compliance rate increased from 61.7% to 89.3%, which shows that the teaching session helped improve medication adherence(32).

According to the findings, educational intervention has an affirmative impact on enhancing knowledge level and outcomes. As indicated by pre and post-intervention knowledge. It has been determined that hypertension patients and older individuals need to have adequate awareness of HTN and its prevention to successfully modify their lifestyles, stick to their drug regimens, and bring their blood pressure under effective control(33,34).

Moreover, the results of our study are congruent with a prior study that was carried out in 2014 by Roopa and G.Ramadevi. There were a total of 80 participants, with equal representation of men and women. The posttest scores of knowledge regarding hypertension were greater than the pretest levels in both the group of men and the group of women who responded to the survey.

Additionally, individual disparities in the scores were reduced significantly during the posttest(35).

In addition, several studies have demonstrated that older persons tend to have a widespread lack of understanding regarding HT (36,37). Therefore, it is essential to have a well-developed and culturally context-specific health education intervention on hypertension-related knowledge to increase understanding among older individuals who have hypertension as well as those who do not have hypertension. It is possible that the prevalence of hypertension (HTN) and the associated infirmity, mortality, and morbidity in this subpopulation could be reduced through the implementation of health education interventions that target the improvement of knowledge and adherence to medication among older adults in the selected region. These interventions would target the improvement of knowledge among older adults in the selected region(38).

## 5.2 LIMITATION OF THE STUDY

- As master's students, we are required to finish the course within the allotted time frame of six months. Therefore, the most significant limitation was time.
- The study was conducted at WPDA hospital Tarbela Dam, which had a smaller sample size, with 64 individuals. Only one hospital was surveyed for this study. The results would be more exact if data were obtained from multiple hospitals in the chosen district.
- We used a self-reported questionnaire to measure medication adherence, which may have led to some response bias. But we think that the bias would be less if well-validated scales were used.

## 5.3 STUDY STRENGTHS

- This was the first study in the chosen area to be an interventional study, and it was also the first study to look at hypertensive patients' knowledge and how well they did take their own medications.
- The current study was an experimental study that estimated significant findings in improving knowledge and medication adherence in hypertensive patients.
- The primary investigator carried out the study and all the data was collected and interventions were applied by the primary investigator.

- The hospital administration was very cooperative and all patients happily participated in the study.
- The main strength of this study was that it was an experimental study, which provides the most reliable evidence and no similar study was found in the relevant literature about the effect of an educational session on hypertensive patients' knowledge and adherence to their medications.
- Also, the results of these kinds of studies may be helpful to policymakers when the intervention is done in real life without changing anything about the research.

## 5.4 Conclusion

It is concluded that the educational session was highly effective in improving the knowledge of hypertensive patients and their medication adherence as determined by a significant improvement in the post-intervention knowledge and medication adherence scores of the participants. Therefore, it is recommended that such type of educational sessions must be implied by nurses in their routine care of hypertensive patients to have a positive effect on their health.

## 5.5 RECOMMENDATIONS

**Based on the study's results, the researcher suggests the following recommendations:**

- The role of health care professionals is very crucial; they should evaluate patients' educational needs and the need for a particular intervention, which can eventually raise patients' understanding of their disease and treatment regimen.
- Health care professionals, particularly nurses, could perform community-based group education to promote and reinforce hypertension patients' knowledge and adherence to medication.
- According to study implications, the health promotion approach may have a considerable impact on medication adherence among hypertension patients. Future studies could investigate the model's effect on lifestyle modification and medication adherence.
- For more effective findings, it is advised that experimental research with a large sample size be conducted in the selected and other tertiary care hospitals to evaluate the efficacy of educational intervention for a longer period.

- The feasibility of the study has established that healthcare providers can adopt an educational intervention to treat hypertension. However, additional research is required to acquire a deeper knowledge of the issue.

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