



“Effectiveness of Breathing Exercise to reduce stress among Hypertensive patients in selected rural village at Greater Noida.”

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ABSTRACT

A Study to Assess the Effectiveness of Breathing Exercise to Reduce Stress among Hypertensive Patients in Selected Rural Village at Greater Noida. Objectives for the study were to assess the level of stress among hypertensive clients before administering breathing exercise in experimental and control group, to determine the effectiveness of breathing exercise on reducing stress among hypertensive clients in experimental group and control group and to determine the association between the stress among hypertensive clients with their selected demographic variables. A descriptive research design was used to conduct the study. Samples were selected through is non-randomized convenient sampling technique and the total Sample size was 40 hypertensive patients control group 20 and experimental group 20, the study revealed that majority (50.00%) of respondents were in the age group between 41-50 years, (17.50%) of the responds were in the age group of 51-60 years. The prevalence of hypertension urban adults in Greater Noida is 14%. Hypertension is directly responsible for 57% of all stroke deaths and 24% of all Coronary heart disease deaths in India. Pooling of epidemiological studies shows that hypertension is present in 25% urban and 10% rural subjects in India. At an underestimate, there are 31.5 million hypertensives in rural and 34 million in urban population

Keywords: Breathing Exercise, Hypertensive, stress

Introduction

Hypertension (HTN or HT), also known as high blood pressure (HBP), is a long-term medical condition in which the blood pressure in the arteries is persistently elevated. High blood pressure usually does not cause symptoms. Long term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, peripheral vascular disease, vision loss, and chronic kidney disease.

The two measurements used to express blood pressure are the diastolic pressure, which is the lowest pressure, and the systolic pressure, which is the maximum pressure. A normal resting blood pressure ranges from 60 to 90 mmHg diastolic and 100 to 140 mmHg systolic. When the resting blood pressure for the majority of adults is consistently at or above 140/90 mmHg, high blood pressure is present. For children, different numbers apply. 24-hour ambulatory blood pressure monitoring period seems to be a more reliable measurement of blood pressure than the office best.

Signs and symptoms of hypertension:

- ✓ Rarely does hypertension have symptoms; instead, it is typically discovered through screening or while a patient is being treated for an unrelated issue.

- ✓ Some people who have high blood pressure also experience lightheadedness, vertigo, tinnitus (a buzzing or hissing sound in the ears), altered vision, and fainting episodes.
- ✓ They also report headaches, especially in the morning and in the back of the head. Nonetheless, rather than being caused by high blood pressure, these symptoms could be linked to related anxiety.

Prevention of hypertension:

- ✓ Adults should maintain a normal body weight, such as a body mass index of 20–25 kg/m².
- ✓ Cut back on sodium consumption to less than 100 mmol/day (or less than 6 g of sodium chloride or less than 2.4 g of sodium).
- ✓ Do moderate aerobic exercise on most days of the week, such as brisk walking, for at least 30 minutes each day.
- ✓ Men should not consume more than three units of alcohol per day, and women should not consume more than two units.
- ✓ Eat a diet high in fruits and vegetables, consuming five or more servings daily;

Stress:

Your body reacts to demands and threats by going into stress. Your nervous system reacts to a threat by triggering the release of adrenaline and cortisol, two stress hormones that wake the body up for action.

Prolonged stress throws off almost all of your body's systems. It can cause your immune system to shut down, disrupt your reproductive and digestive systems, elevate blood pressure, increase your risk of heart attack and stroke, hasten the aging process, and expose you to a variety of physical and mental health issues.

Stress can have physical, psychological, and emotional effects. Everybody exhibits stress in different ways. While some people show more physical symptoms, such as weariness or elevated blood pressure, others show more emotional or psychological symptoms, such as depression or irritability.

Signs of stress:

- ✓ Sleeplessness
- ✓ Anorexia
- ✓ Restlessness
- ✓ Irritability
- ✓ Social Withdrawal
- ✓ Lethargy

These are the common signs appear during the first stage, more signs can be seen if not treated at early stage.

Effects of stress in day to day life

Stress can cause headaches, muscle tenseness, chest pain, exhaustion, altered sex drive, stomach upset, and sleep issues. Common emotional effects include anxiety, restlessness, and lack of concentration, anger, and depression.

Relation between Stress and Hypertension:

Stress, "Pressure", "Tension", and "Anxiety" are often synonymous. Therefore, it is not surprising that hypertension is viewed by many as also being indicative of a state of increased emotional tension, anxiety, or stress. Although a stressful situation temporarily raises blood pressure by releasing stress hormones that quicken heart rate and narrow blood vessels, blood pressure eventually returns to normal levels once the stress trigger disappears. Stress can impair your overall immune system, leading to frequent colds and infections, for example. Other stress symptoms, such as headache, constipation and diarrhea, insomnia, and heartburn, can negatively impact your overall health.

Literature Review: Studies Related to Breathing Exercises on Reducing Stress

131 participants with mild to moderate levels of stress participated in a ten-week study to assess the efficacy of breathing exercises in reducing stress and anxiety. The study showed that a ten-week intervention consisting of one hourly breathing exercise lowers blood pressure, tension, and anxiety while also improving quality of life. When compared to relaxation, breathing exercises seem to offer a similar improvement in stress, anxiety, and health status.¹¹

A four-month stress management program based on cognitive behavioural therapy was compared to a breathing exercise program in a study with a sample of 26 women and 7 men. The study showed a significant improvement in both the physiological (blood pressure, heart rate, urine catecholamines, and salivary cortisol) and psychological (self-rated stress, stress behaviour, anger weariness, and quality of life) domains. The findings suggest that breathing exercises and cognitive behavioural therapy are both effective methods for managing stress.¹²

Twenty-four self-referred female subjects who thought they were emotionally upset participated in the study. A three-month, twice-weekly programme of targeted lip breathing exercises was given to the subjects. Subjects with headache or back pain reported remarkable pain alleviation, and the study showed notable and significant reductions in perceived stress ($p < 0.02$), vigor ($p < 0.02$), weariness ($p > 0.02$), and depression

($p > 0.01$). It is necessary to look into the underlying mechanisms and how breathing exercises relate to the prevention and treatment of diseases linked to stress.¹³

Studies Related to Breathing Exercises on the Management of Hypertension

A study details the benefits of specific breathing techniques for the control of high blood pressure. Four variables were examined in the study, which included 33 hypertensive clients in the age range of 35 to 65: body weight, pulse rate, and systolic and diastolic pressure. Three groups were randomly selected from among the participants. For a week, the experimental group I underwent a specific breathing exercise regimen that involved one hour of breathing exercises each morning and evening, the experimental group II received medical attention from a physician, and the control group did not engage in any of the stimuli. The results of the pre-post ANCOVA test showed that the medication and breathing exercises used as treatment stimuli were both successful in reducing the variables associated with hypertension.¹⁴

In order to determine whether breathing exercises could effectively manage 25 patients with essential hypertension who underwent six months of "pranayam," a study was carried out. Of those, five patients had to start taking antihypertensive medication before being included in the study (group B), and the remaining twenty patients (group A) received no antihypertensive medication treatment at all. For both groups, there was a statistically significant decrease in mean systolic and diastolic blood pressure. Additionally, patients in group B received significantly lower doses of antihypertensive medications. According to the study's findings, breathing exercises can help treat hypertension as an adjuvant and even eliminate the need for antihypertensive medications.¹⁵

Studies Related to Breathing Exercise on Reducing Stress among Hypertensive clients

Seven hypertensive clients participated in a study to determine whether transcendental meditation was beneficial. Transcendental meditation students saw a doctor once a week and took self-pressure multiple times a day. Following a 12-week period of transcendental meditation, six participants exhibited altered psychological states and decreased anxiety levels. Significant drops in blood pressure were also seen in six subjects' at-home and four subjects' clinic readings. Six months later, two of the subjects demonstrated significant reductions in blood pressure and four of the subjects continued to receive psychological benefits from transcendental meditation at home and in the clinic.¹⁶

According to a study, non-pharmacological therapy can help prevent and manage hypertension. According to the study, a busy family doctor today doesn't have enough time to counsel patients on different dietary and lifestyle changes; instead, they just write prescriptions. All hypertension patients, ranging from pre-hypertension to grade 2 hypertension, ought to adhere to non-pharmacological treatment. If non-drug therapy is rigorously followed, cases of prehypertension can be prevented from developing into hypertension, and in cases of grade I (mild) hypertension; medication can be reduced or stopped. The effects of a low-salt, high-potassium diet, coffee consumption, calcium and magnesium supplements, fish oil consumption, alcohol consumption, cigarette smoking, physical activity, stress management, and bio.¹⁷

Materials and Methods: -

Quantitative Research approach was used and Quasi-experimental non-randomized convenient sampling technique. The study was conducted in selected Rural Village at Greater Noida. This study employed a convenient non-randomized sampling technique. Forty hypertensive clients were the suggested sample size for this investigation. There were 20 groups—20 experimental and 20 control.

Result:

Findings according to the objectives of study

Section 1- Analysis of the level of stress among hypertensive clients before administering breathing exercise in experimental and control group

Section 2- Analysis of effectiveness of breathing exercise on reducing stress among hypertensive clients in experimental and control group.

Section 1: Analysis of the level of stress among hypertensive clients before administering breathing exercise in experimental and control group

TABLE 1: Distribution of distribution of subjects according to socio -demographic variables in experimental and control group:

N=40

Age	Female	Male	Total	Percentage
30-40Y	4	2	6	15.00%
41-50Y	13	7	20	50.00%
51-60Y	7	0	7	17.50%

61-70Y	4	0	4	10.00%
71-80Y	2	1	3	7.50%
Religion				
Hindu	29	10	39	97.50%
Muslim	1	0	1	2.50%
Educational Status				
Illiterate	7	0	7	17.5%
Primary School	9	0	9	22.5%
Occupational Status				
Housewife	30	0	30	75%
Private Work	0	6	6	15%
Self-Employment	0	3	3	7.5%
Government Job	0	1	1	2.5%
Intake of Antihypertensive Drugs				
Yes	21	8	29	72.5%
No	10	1	11	27.5%

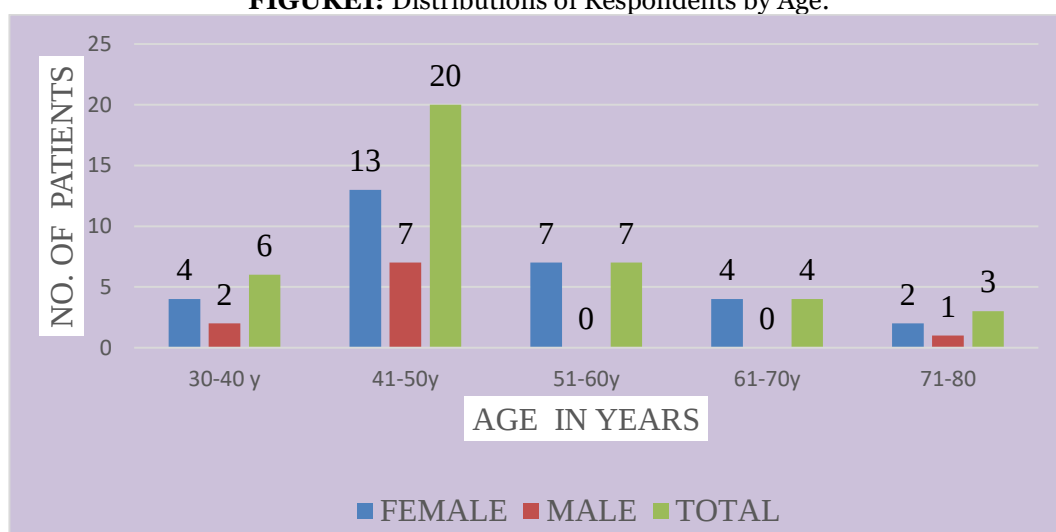
FIGURE1: Distributions of Respondents by Age:

FIGURE1: The data revealed that majority (50.00%) of respondents were in the age group between 41-50 years, (17.50%) of the respondents were in the age group of 51-60 years, (15.00%) of the respondents were in the age group of 30-40 years, (10.00%) of the respondents were in the age group of 61-70 years and remaining (7.50%) of respondent were in the age group between 71-80 years

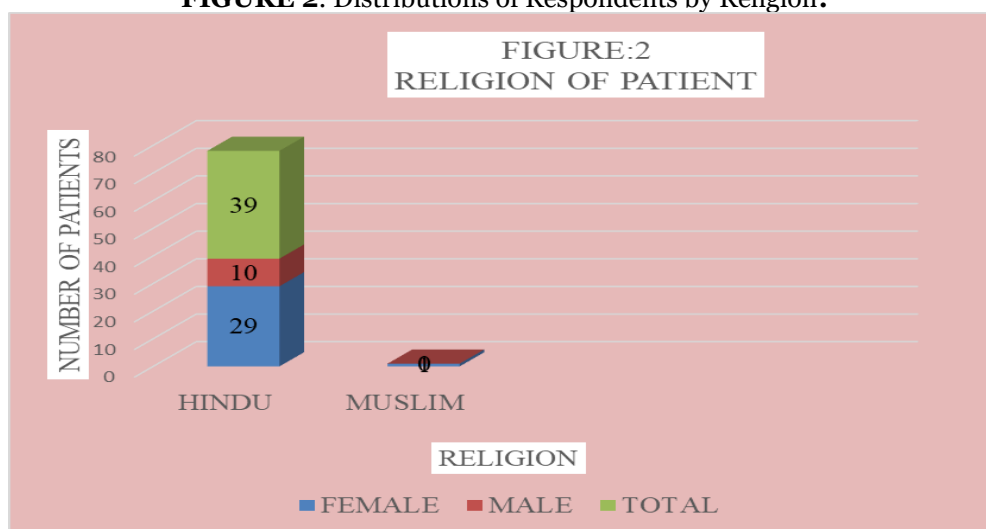
FIGURE 2: Distributions of Respondents by Religion:

FIGURE2: Distribution of subject according to Religion. The data reveal that majority (97.50%) of the respondents were Hindu and the remaining (2.50%) of respondents were Muslim

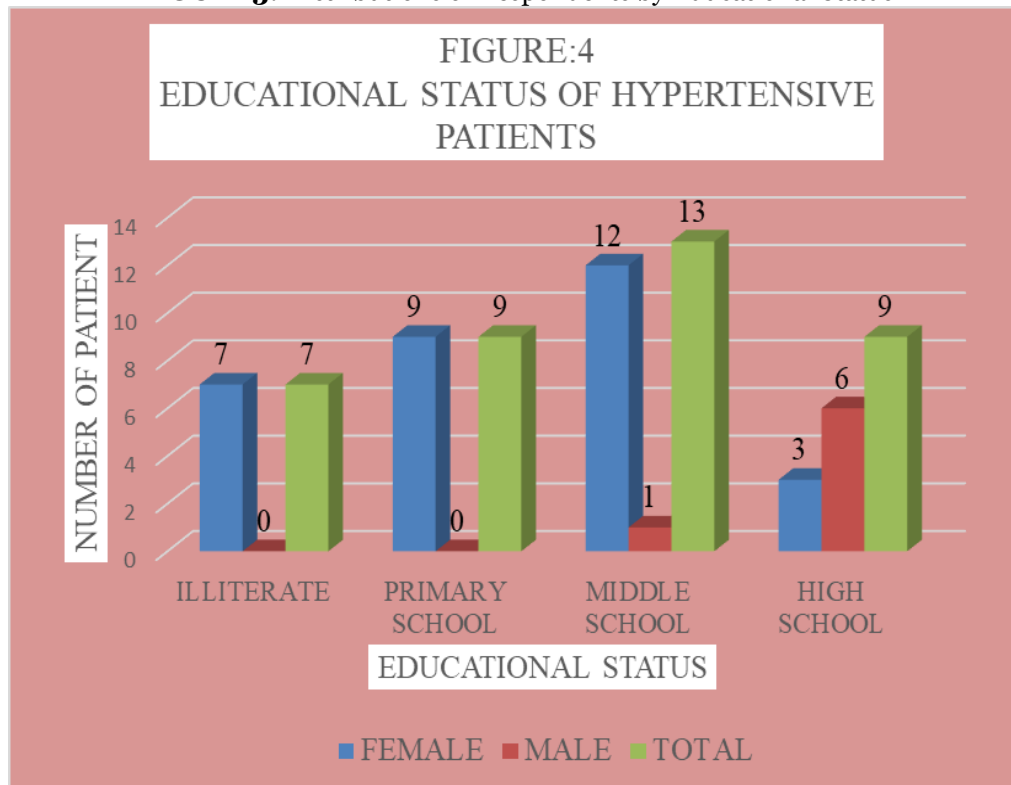
FIGURE3: Distributions of Respondents by Educational Status

FIGURE3: The Distribution of Respondents according to the Educational Status. The data revealed that the majority (32.50%) of the respondents were have Middle School Level education qualification and remaining (22.50%) of the respondents were having Primary and High School Level education qualification and the least (17.50%) and (5.00%) of the respondents were Illiterate and Graduate level education respectively

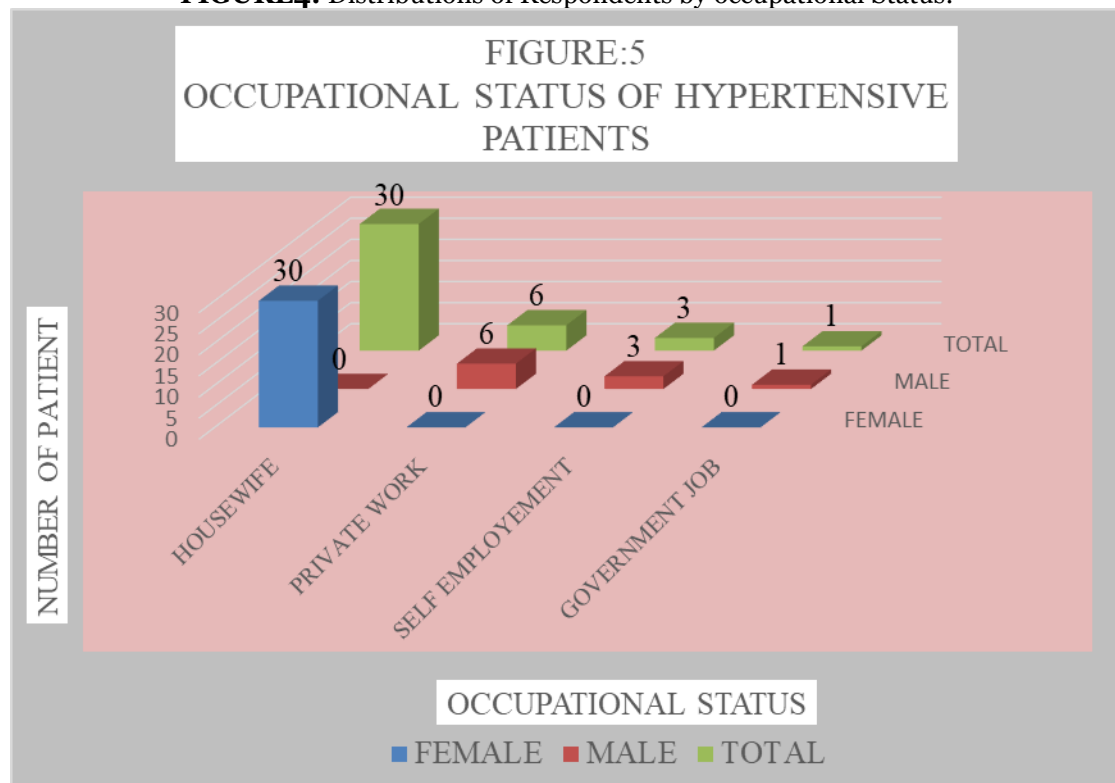
FIGURE4: Distributions of Respondents by occupational Status:

FIGURE5: Show the Distribution of Respondents according to Occupational Status. The Data revealed that the majority (75%) of the respondents were Housewife and (15%) of the respondents were in Private work. The remaining (7.5%) were in Self Employment and (2.5%) were in Government job.

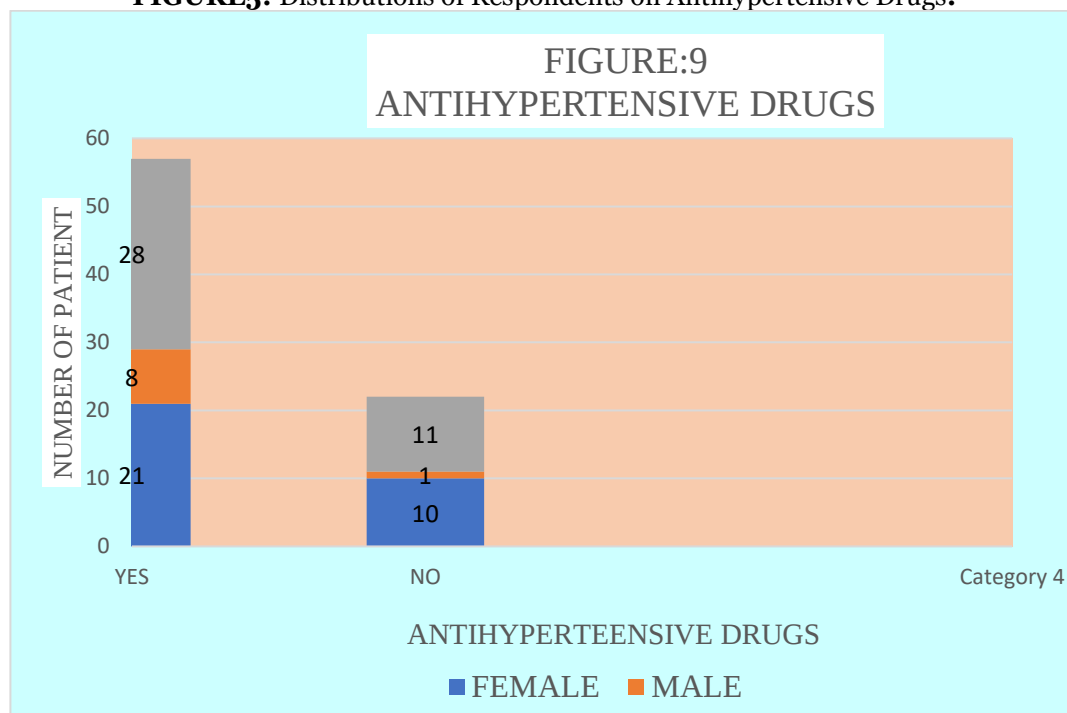
FIGURE5: Distributions of Respondents on Antihypertensive Drugs:

FIGURE5: Show the Distribution of the Respondents according to Antihypertensive Drugs taken by them. The data revealed that the majority (72.5%) of the respondents were taking Antihypertensive Drugs and the remaining (27.5%) of the respondents were not taking antihypertensive drugs

Section 2- Analysis of effectiveness of breathing exercise on reducing stress among hypertensive clients in control group.

TABLE 2: Total Sample Range of Experimental GroupN=20

Scale	Pretest	Percentage	Post-test	Percentage
Mild	3	0.15%	11	0.55%
Moderate	12	0.6%	8	0.4%
Severe	5	0.25%	1	0.05%

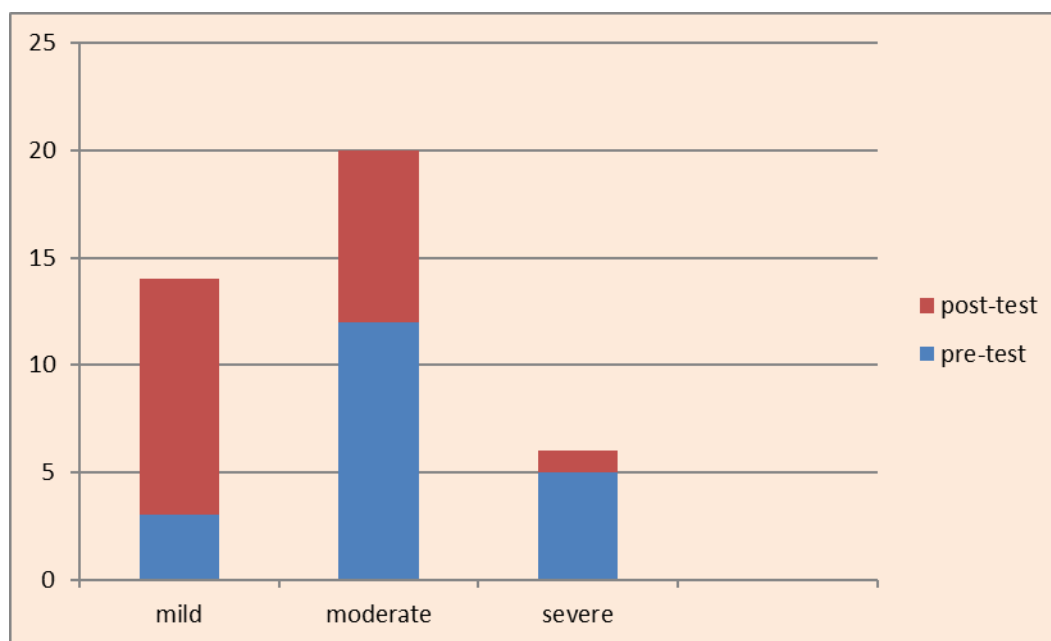
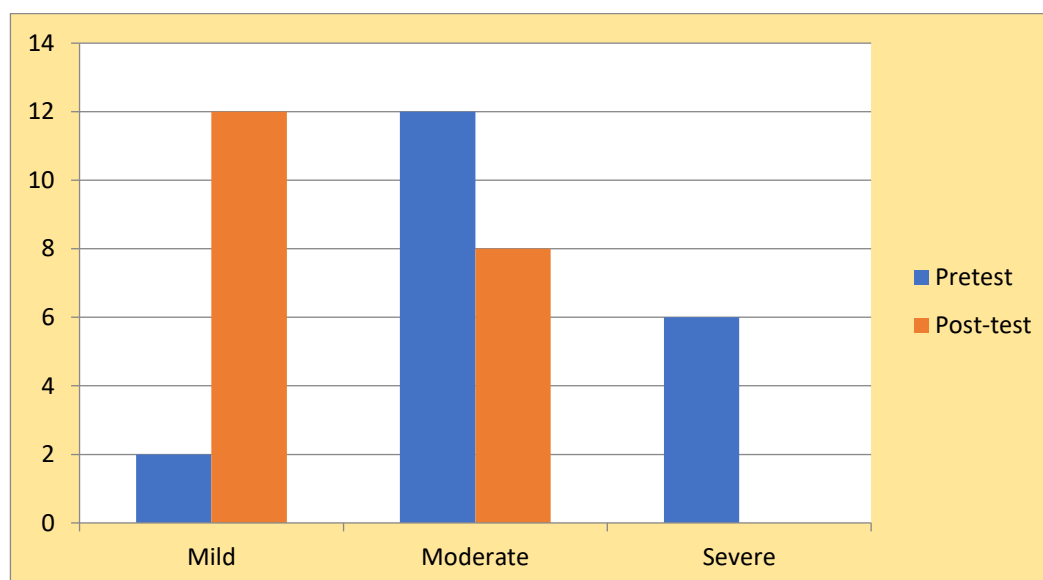


FIGURE6: The data revealed that the majority (0.25%) of the respondents were in Severe and (0.15%) or (0.6%) of the respondents were in mild and moderate range of data in pre-test experimental group.

The data for post-test experimental group have (0.55%) of the respondents were in mild and the remaining (0.4%) of the respondents were in moderate and (0.05%) respondents were in severe range.

TABLE 3: Total Sample Range of Experimental Group
N=20

Scale	Pre test	Percentage	Post-test	Percentage
Mild	2	0.1%	12	0.6%
Moderate	12	0.6%	8	0.4%
Severe	6	0.3%	0	0%
Total	20		20	

**Figure 7:** Distribution of the Respondents according to the Total Sample Range of Experimental Group

Show the Distribution of Respondents according to total sample range of experimental group. The data revealed that the majority (0.6%) of the respondents were in Moderate and (0.3%) or (0.1%) of the respondents were in severe and mild range of data in pre-test experimental group. The data for post-test experimental group have (0.6%) of the respondents were in mild and the remaining (0.4%) of the respondents were in moderate and no respondents were in severe range.

CONCLUSION:

Based on the analysis of the findings of the study, the following inferences were drawn. The overall finding showed that Breathing Exercise helps reducing stress among hypertensive patient from high level to moderate level and this is favourable for hypertensive patients in reducing their blood pressure. Therefore Breathing Exercise is a rehabilitative modality for hypertensive patients in reducing stress corresponding blood pressure of the patients.

REFERENCES:

1. Fortmann B. Breathing Exercise as a Moderator on the Effects of Stress on Hypertension. 1996.
2. Mccall T. The Scientific Basis of Breathing Exercise. 2006.
3. Gupta R. Trends in hypertension epidemiology in India. J Hum Hypertens. 2004; 18(2):73–8. Available from: <http://dx.doi.org/10.1038/sj.jhh.1001633>.
4. Breathing Exercises as a Moderator on the Effects of Stress on Hypertension.2000. 2000.
5. Mc Caffery R, Ruknui P, Hatthakit U, Kasetomboon P. The effects of yoga on hypertensive person. 2005; 173–83.
6. Damodaran A, Malathi A, Patil N, Shah N. Therapeutic potential of breathing exercise in modifying cardiovascular risk profile in middle aged men and women. 2002; 50:631–2.
7. Prasad O. Role of breathing exercise in stress management. 2004; 53:191–4.
8. Schwickert M, Langhorst J, Paul A, Michalsen A, Dobos GJ. Stress management in the treatment of essential arterial hypertension. MMW Fortschr Med [Internet]. 2006; 148(47):40–2; quiz 43. Available from: <http://dx.doi.org/10.1007/bf03364845>.
9. Smith C, Hancock H, Black-Mortimer J, Eckert K. A randomized comparative trial of breathing exercise and relaxation to reduce stress and anxiety. 2007; 15:77–83.
10. Thelancet.com. Available from: [https://www.thelancet.com/article/S0140-6736\(21\)01330-1/fulltext](https://www.thelancet.com/article/S0140-6736(21)01330-1/fulltext).

11. Ma X, Yue Z-Q, Gong Z-Q, Zhang H, Duan N-Y, Shi Y-T, et al. The effect of diaphragmatic breathing on attention, negative affect and stress in healthy adults. *Front Psychol* [Internet]. 2017; 8:874. Available from: <http://dx.doi.org/10.3389/fpsyg.2017.00874>.
12. Stults-Kolehmainen MA, Sinha R. The effects of stress on physical activity and exercise. *Sports Med* [Internet]. 2014; 44(1):81–121. Available from: <http://dx.doi.org/10.1007/s40279-013-0090-5>
13. Bakhshani NM, Amirani A, Amirifard H, Shahrakipoor M. The effectiveness of Mindfulness-Based Stress reduction on perceived pain intensity and quality of life in patients with chronic headache. *Glob J Health Sci* [Internet]. 2015; 8(4):142. Available from: <http://dx.doi.org/10.5539/gjhs.v8n4p142>.
14. Herawati I, Mat Ludin AF, Mutalazimah, Ishak I, Farah NMF. Breathing exercise for hypertensive patients: A scoping review. *Front Physiol* [Internet]. 2023; 14. Available from: <http://dx.doi.org/10.3389/fphys.2023.1048338>.
15. Dhungana RR, Khatiwoda SR, Gurung Y, Pedišić Ž, de Courten M. Yoga for hypertensive patients: a study on barriers and facilitators of its implementation in primary care. *Glob Health Action* [Internet]. 2021; 14(1). Available from: <http://dx.doi.org/10.1080/16549716.2021.1952753>.
16. Hartley L, Mavrodaris A, Flowers N, Ernst E, Rees K. Transcendental meditation for the primary prevention of cardiovascular disease. *Cochrane Libr* [Internet]. 2017; 2017(11). Available from: <http://dx.doi.org/10.1002/14651858.cd010359.pub3>.
17. Verma N, Rastogi S, Chia Y-C, Siddique S, Turana Y, Cheng H-M, et al. Non-pharmacological management of hypertension. *J Clin Hypertens (Greenwich)* [Internet]. 2021; 23(7):1275–83. Available from: <http://dx.doi.org/10.1111/jch.14236>