International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Effectiveness of Deep Breathing Exercises Versus Abdominal Breathing exercise on Blood pressure among patients with Hypertension

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ABSTRACT

In India, hypertension is the most important risk factor for chronic disease. Hypertension is common in India, according to studies from various sections of the country. The goal of this study was to compare the effects of deep breathing exercise with abdominal breathing exercise on blood pressure in hypertensive patients. An experimental study with a cross-over design was conducted in selected areas of Puducherry using a quantitative technique. Thirty samples were chosen using a targeted sampling strategy. For one week, each sample was advised to complete 10 cycles of deep breathing and abdominal breathing exercises for five minutes in the morning and evening. A sphygmomanometer was used to measure blood pressure before and after the procedure, and the results were recorded on a blood pressure monitoring sheet. The difference in blood pressure between the deep breathing and abdominal breathing exercises was found to be statistically significant.

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Introduction

Raised blood pressure (BP) has emerged as the leading cause of morbidity and mortality worldwide. High systolic blood pressure, inadequate food intake, and tobacco use are the most important risk factors for death and morbidity, according to the latest Global Burden of Diseases (GBD) study [1]. According to GBD, high systolic blood pressure was the top cause of mortality and disability adjusted life years worldwide in 2017, accounting for 10.2 million [95 percent uncertainty intervals (UI) 9.16–11.3 million] deaths and 208 million (UI 188–227 million) disability adjusted life years (DALYs). High SBP was responsible for 8.61 percent (UI 7.66–9.56) of overall DALYs. Ischemic heart disease and stroke accounted for the majority of the burden, with high SBP accounting for 55.5 percent (UI 48.0–62.7) and 56.5 percent (UI 49.0–63.2) of DALYs owing to ischemic heart disease and stroke, respectively.

In India, hypertension was found to be prevalent in 29.8% of the population (95 percent confidence interval: 26.7-33.0). Hypertension prevalence was shown to differ significantly between rural and urban areas [27.6% (23.2-32.0) and 33.8 percent (29.7-37.8); P = 0.05]. The prevalence of hypertension in rural north, east, west, and south India was estimated to be 14.5 percent (13.3-15.7), 31.7 percent (30.2-33.3), 18.1 percent (16.9-19.2), and 21.1 percent (20.1-22.0), respectively; and 28.8 percent (26.9-30.8), 34.5 percent (32.6-36.5), 35.8 percent (35.2-36.5), and 31.8 percent (30.4-33.1) in urban north, east, west, and south India, respectively. Hypertension affects around 33% of urban Indians and 25% of rural Indians. Of them, 25% of rural Indians and 42% of urban Indians are aware of their hypertension. Only 25% of rural Indians and 38% of urban Indians are treated for hypertension. One-tenth of hypertensive people in rural India and one-fifth of hypertension people in cities get their blood pressure under control.

Hypertension can be controlled through a variety of methods, including a nutritious diet, lifestyle changes such as quitting alcoholism, smoking, and drug usage, and regular exercise. Exercise is one of the most efficient ways to keep blood pressure under control among various management techniques. Many research have shown that practicing breathing exercises reduces hypertension and heart rate, particularly deep breathing and abdominal breathing exercises.

Statement of Problem

“A comparative study to evaluate the effectiveness of deep breathing exercises versus abdominal breathingexerciseon bloodpressureamongPatients with hypertension in selected areas at Puducherry.”

Objectives

1. To assess the level of blood pressure among patients with hypertension.
2. To compare the effectiveness of deep breathing exercises versus abdominal breathing exercises on blood pressure among patients with hypertension.
3. To determine association between the level of blood pressure among patients with hypertension with their demographic variables.

Hypothesis

1. H1: There will be a significant difference in pre assessment mean blood pressure and post assessment mean blood pressure among hypertensive patients.
2. H2: There will be a significant association between mean blood pressure and selected demographic factors of hypertensive patients.

Methodology

An experimental investigation with a cross-over design was conducted for a week using a quantitative approach. Purposive sampling was used to choose the subjects. This study comprised clients who are conscious and well-oriented, both male and female, between the ages of 35 and 60, and who can understand, speak, read, and write Tamil and English.

This study excluded patients with communication issues, respiratory sickness, heart surgery, and neurological impairment. This research includes 30 samples. A sphygmomanometer was used to measure blood pressure prior to the intervention, and then it was used to measure blood pressure after the intervention. Deep breathing and abdominal exercises are performed five times for five minutes in the morning and evening, respectively. After 10 minutes of interventions, blood pressure was measured post-intervention.

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Instruments used for data collection

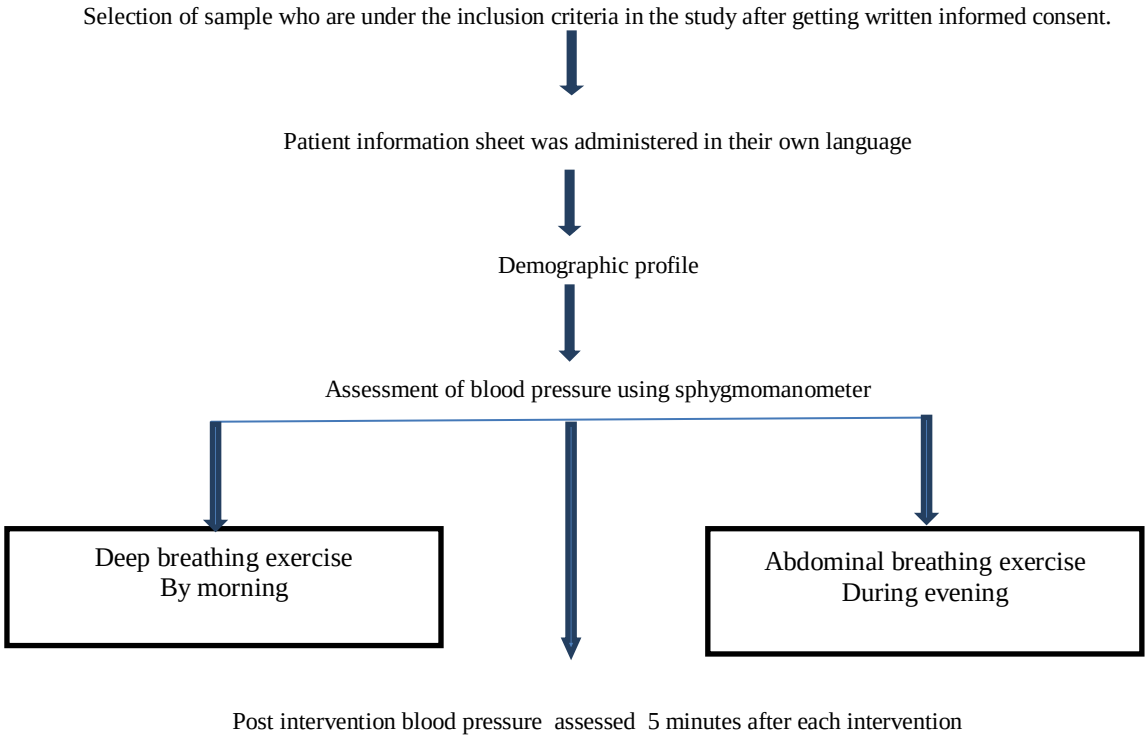
Tool 1: Demographic data includes age, gender,educational status, occupation, history of hypertension, medication history, nature of physical activity, quality of sleep.

Tool 2: Blood pressure monitoring sheet by using sphygmomanometer.

Ethical considerations

The study was conducted after getting approval by institutional review board of Kasturba Gandhi Nursing College, Puducherry. A written informed consent was obtained from participants in language known to them after explaining the purpose of the study.

Data collection procedure



Results and Discussion

Sl.No.	Demographic factors	Frequency		Percentage
1	Age	35-45	3	5
		46-55	10	33.33
		56-60	7	28.33
		>60	10	33.33
2	Gender	Male	20	66.66
		Female	10	33.33
3	Education	Graduate	9	31.66
		PUC	6	15
		Elementary	7	28.33
		Illiterate	8	25
4	Occupation	Heavy worker	4	6.66
		Moderate worker	6	26.66
		Sedentary worker	20	66.66
5	Physical activity	Sitting	22	70
		Walking	8	30
6	Anti -hypertensive drugs	Yes	25	95.66
		No	5	8.33
7	Exercise	Cycling	0	0
		Walking	8	35
		Swimming	0	0
		Yoga	2	15
		Nil	20	50
8	Hours of sleep per day	< 5hrs	6	60
		5-6hrs	16	26.66
		6-7hrs	5	8.33
		7-8hrs	3	5
		>8hrs	0	0
9	Quality of sleep	Sound	13	21.66
		Disturbed	17	78.33

The table shows frequency and percentage distribution of the patients with hypertension. The patients between 35-45 years of age group are very less representingonly5%andthepatientsbetween46-55 and>65years ofagegroup are more representing 33.33%, whereas the patients between 56-60 years of age represents 28.33% in the total sample size.Male gender is widely suffering from hypertension with 66.66% compare to female gender with33.33%. According to education status, it reveals that 31.66% of the patients were graduates, 10% of the patients are PUC, 28.33% of the patients and 30% of the patients areilliterate.Occupation of the majority of patients suffering with hypertension are sedentary worker with 66.66%, 26.66% of the patient are moderate worker and 6.66% of the patients are heavy worker. It is found that 70% of the hypertensive patients were sitting and doing their physical activities where as 30%of the patients were walking and doing their physical activity.It reveals that 91.66% of patients are on anti -

hypertensive medications and 8.33% of the patients are not taking any anti -hypertensivedrugs. Its reveals that 50% of the patients are not doing anyexercise, 35% of the patients are on walking, and 15% of the patients are going for yoga classes.It reveals that 60% of the patients sleep < 5 hours, 26%of the patients sleep for 5-6 hours, 8.33% of the patients sleep for 6-7 hours, 5% of the patients sleep for 5 hours per day. Quality of sleep of patients reveals that 78%of the patients have disturbed sleep and 21% of the patients have sound sleep.

Table 1.2 Comparison of Mean Post Test Blood Pressure Level of Patients with Hypertension

Blood pressure	Deep Breathing Exercise		Abdominal Exercise	
	Pre test	Post test	Pre test	Post test
	116.77	111.16	120.77	118.16

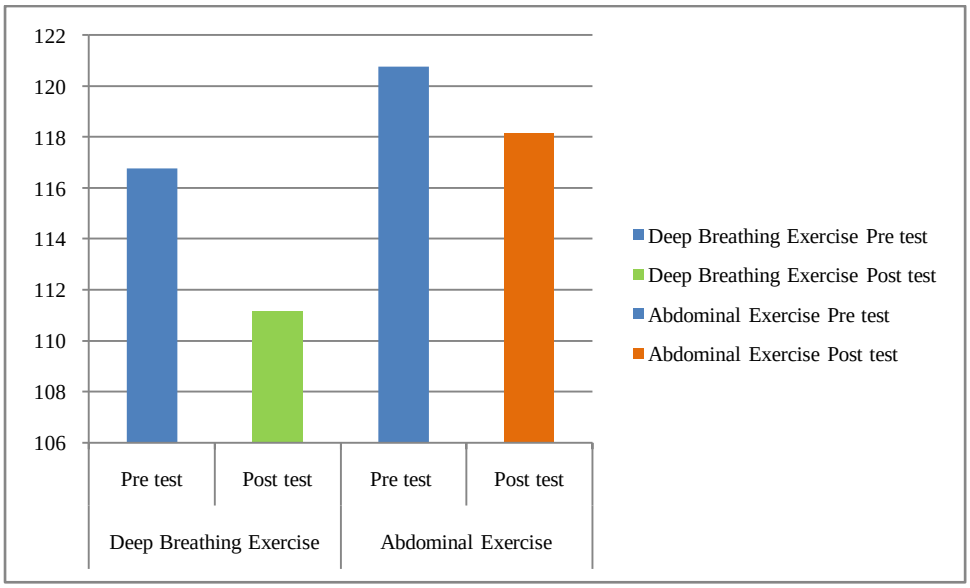


Figure 1,2 Comparison of Mean Post Test Blood Pressure Level of Patients with Hypertension

Table 1.2 and Figure 1.1 depicts the post- test level of blood pressure after Deep Breathing Exercises is 111.16, and the post -test value of abdominal breathing exercise is 118.16. Withthis table we find that deep breathing exercise is reducing the blood pressure than the abdominal breathing exercise.

Major findings of study

The study revealed that patients with hypertension had decreased blood pressure on post-test after deep breathing exercise. It is statistically significant ($p<0.001$) which proved that Deep breathing exercises was highly effective on blood pressure among patients with Hypertension.The study revealed that patients with hypertension had decreased blood pressure on post-test after abdominal breathing exercise. It is statistically significant ($p<0.001$) which proved that Abdominal breathing exercises was highly effective on blood pressure among patients with Hypertension.

To compare the effectiveness of deep breathing exercise and abdominal breathing exercise, difference value of both pre- test and post- test value of interventions, the result showed that the deep breathing exercises statistical significance ($p<0.001$) which proved that it is highly effective on blood pressure than the abdominal breathing exercise.The study revealed that there is no significant association between the level of blood pressure and their demographic variables.

Conclusion

Prevalence of hypertension is increasing day by day even in young adults. Treatment modalities of hypertension in early stage may have some side effects. This study was aimed to help the hypertensive patients to reduce the high blood pressure through breathing exercises. Since the breathing exercises are easy to perform and cost effective, and to find out the effectiveness among deep breathing exercise and abdominal breathing exercise will aid the nurses who provide secondary care to the hypertensive patients should implement to provide the evidence based comprehensive nursing care.

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