



ORIGINAL RESEARCH ARTICLE

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EFFECTIVENESS OF ABDOMINAL BREATHING EXERCISE ON REDUCTION OF BLOOD PRESSURE AMONG PATIENTS WITH HYPERTENSION

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ABSTRACT

Aim of the study: To assess the the effectiveness of abdominal breathing exercise on blood pressure among patients with hypertension.

Background: Hypertension is a major public health problem in India and world, because of its high frequency and concomitant, there is a risk of cardiovascular and kidney disease. The hypertension makes people five times more prone to stroke and three times more likely to have heart attacks. The prevalence for hypertension in India was 29.8% and about 33% urban and 25% rural Indians are hypertensive. Abdominal breathing exercise is one of the exercise and relaxation technique which helps to decrease the blood pressure and maintain their health in optimal state.

Design: Pre experimental one group pre-test – post-test design.

Methods: Non probability sampling technique - convenience sampling technique was used. A total of 30 hypertensive patients participated in the study. Abdominal breathing exercise trained and initiated to the subjects. The level of blood pressure was measured by sphygmomanometer before as well as after the intervention.

Result: The pre test, the mean score of systolic BP was 152.67±9.67 and the post mean score of systolic was 145.67±9.12 and the pre test mean score of diastolic BP was 95.67±5.96 and the post mean score of diastolic was 82±4.67. The calculated paired 't' value of $t = 4.263$ and $t = 4.540$ was found to be statistically significant at $p < 0.05$ level. This clearly indicates that after abdominal breathing exercise there was a significant reduction in the level

Conclusion: There was a reduction in the level of blood pressure after abdominal breathing exercises. This study revealed that continuous practicing of abdominal breathing exercise can reduce medicine usage thereby it can be used routinely as a complementary method of treatment for hypertension.

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INTRODUCTION

Hypertension is a major public health problem in India and world, because of its high frequency and concomitant, there is a risk of cardiovascular and kidney disease. The hypertension makes people five times more prone to stroke and three times more likely to have heart attacks. In most part of the world non communicable diseases have become major epidemic. Blood pressure is the pressure exerted on the walls of the arteries during ventricular systole and diastole which is affected by

factors such as cardiac output, blood vessel elasticity, volume, velocity, viscosity of the blood and peripheral resistance. The prevalence for hypertension in India was 29.8% and about 33% urban and 25% rural Indians are hypertensive

Background

High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia

(2010). Hypertension exerts a substantial public health burden on cardiovascular health status and healthcare systems in India. The WHO rates hypertension as one of the most important causes of premature death worldwide. Hypertension is presently affecting about 32 million rural Indians and 34 million urban Indians. Anoop Mishra (Fortis group of hospitals) had stated that hypertension was directly responsible for 57% deaths due to stroke and 24% of deaths caused by heart attack. Treatment for hypertension includes lifestyle modifications and drug therapy. Lifestyle factors that increase the risk include excess salt, excess body weight, smoking, and alcohol. Lifestyle changes and medications can lower blood pressure and decrease the risk of health complications. Lifestyle modifications include losing weight, having regular physical activity, eating a healthy diet, low salt and caffeine intake, quit smoking and alcohol intake.² Since the antihypertensive drugs have, as many as side effects and complications, the rate of non-compliance is high. As complementary therapy is proved to be one of the effective treatments for most of the disease conditions. Abdominal breathing exercise is considered to be most beneficial effect in reducing blood pressure

Abdominal breathing improves vagal activity and therefore decreases baseline heart rate and blood pressure. This is associated by improving vagal tone and by decreasing sympathetic discharge. Improvement in both sympathetic and parasympathetic reactivity may be the mechanism that is associated in those practicing the abdominal breathing exercises. Abdominal Breathing increases baroreflex sensitivity and reduces sympathetic activity and chemoreflex activation, it suggest a potentially beneficial effect in hypertension; where, baroreflex is the system in the body that regulates blood pressure by controlling heart rate, strength of heart contractions, and diameter of blood vessels. It reduces blood pressure and enhances baroreflex sensitivity in hypertensive patients. Abdominal breathing increases blood and oxygen flow to the brain to function in its optimal state. It creates a connection between mind and body that can lead to greater self-awareness, mindfulness and clear thinking, improves circulation, which improves heart health, energy levels and helps the body eliminate toxins, as well as reduces blood pressure. Hence the investigators interested to examine the effectiveness of abdominal breathing exercises on hypertension as a non-pharmacological complementary approach to treat hypertensive patients.

Aim of the study

To assess the the effectiveness of abdominal breathing exercise on blood pressure among patients with hypertension.

MATERIALS AND METHODS

Total 30 hypertensive patients admitted at Saveetha Medical College and Hospital participated in the study. Pre experimental one group pre-test – post-test design was carried out and samples were selected with non probability sampling technique – convenience sampling technique. After selecting the sample, the procedure was explained to the subjects by the investigator and written consent was obtained from the subjects. was collected by using questionnaire and the pre test level of blood pressure was assessed by using sphygmomanometer The demographic data was collected by using questionnaire and the pre test level of blood pressure

was assessed by using sphygmomanometer. After the pre-test, the investigator trained the subjects on abdominal breathing exercises on the next day. Repetitive trails were given to the subjects 10-20 minutes twice a day, for 5 consecutive days. On the 6th day, the post test level of blood pressure was assessed by using sphygmomanometer

Ethical consideration

The project has been approved by the ethics committee of the institution. Informed consent was obtained from the participants before initiating the study.

RESULTS

Section 1: Frequency and percentage distribution of demographic variables of patients with hypertension showed that out of 30 samples, 7(23.33%) belongs to age group of 30-40 yrs, 14(46.67%) belongs to 41-50 yrs and 9(30%) belongs to 51-59 age group, 13(43.33%) male and 17(56.67%) female, regarding education, 6(20%) has primary school, 10(33.33%) has middle school, 9(20%) has high school, 5(16.67%) has higher secondary school, 5(16.67%) is unemployed, 14(46.67%) is skilled workers and 4(13.33%) is professionals, 5(16.67%) has less than 3000 income per month, 7(23.33%) has 3001-5000 income per month, 11(36.67%) has 5001-7000 income per month and 6(20%) has more than 7000 income per month, 6(20%) is single, 18(60%) is married and 6(20%) is widow, 9(30%) has nuclear family and 21(70%) has joint family, 4(13.33%) is vegetarian and 26(86.67%) is non vegetarian, 10(33.33%) has smoking habits, 7(23.33%) has alcohol consumption habits and 5(16.67%) has none, regarding source of health information, 7(23.33%) through mass media, 8(26.67%) through health professionals, 8(26.67%) through relatives and 10(100%) through friends or neighbours.

Section 2:

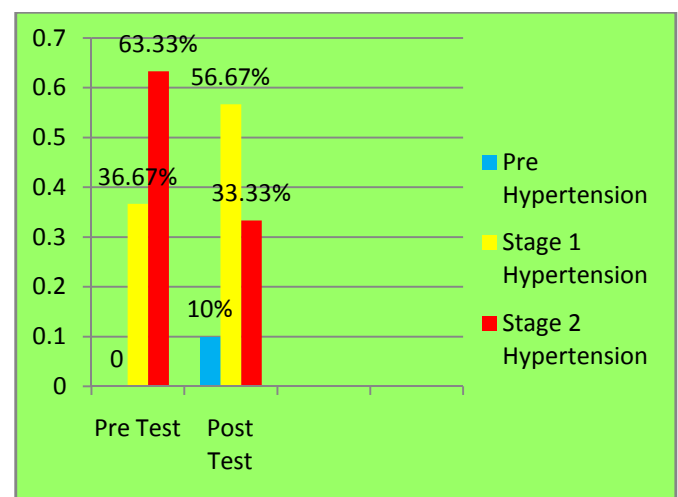
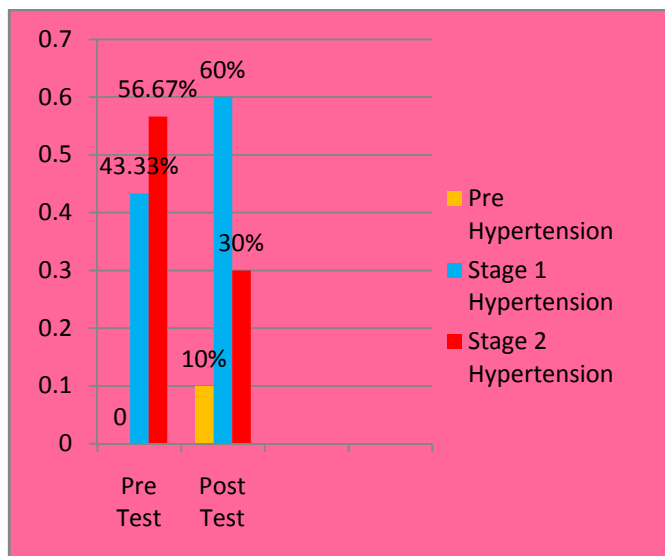


Figure 1. Percentage distribution of pre test and post test level of systolic blood pressure among patients with hypertension

Section 3: The results showed that in the pre test, the mean score of systolic BP was 152.67 ± 9.67 and the post mean score of systolic was 145.67 ± 9.12 and the mean score of diastolic BP was 95.67 ± 5.96 and the post mean score of diastolic was 82 ± 4.67 . The calculated paired 't' value of $t = 4.263$ and $t = 4.540$ was found to be statistically significant at $p < 0.05$ level. This clearly indicates that after abdominal breathing exercise

there was a significant reduction in the level of systolic blood pressure and diastolic blood pressure.



DISCUSSION

The first objective was to assess the level of blood pressure among patients with hypertension

Hypertension is a major public health problem in India and world, because of its high frequency and concomitant, there is a risk of cardiovascular and kidney disease. Hypertension is one of the most common lifestyle diseases today, with every third person we meet, having suffered from it. And experts say that even kids can be victims of high blood pressure. A study was conducted in cardiology male and female ward at Saveetha Medical College and Hospital.

The total of 30 hypertensive patients who met the inclusion criteria was selected for the study by using convenience sampling technique. After selecting the sample, the hypertensive patients were explained about the procedure of the study and written inform consent was obtained. The pre test level of blood pressure in hypertensive patients was assessed by using sphygmomanometer. It was revealed that the systolic blood pressure in pre test, majority 63.33% had Stage – 2 hypertension whereas in the post test after abdominal breathing exercise, majority 56.67% had Stage 1 hypertension, and 10% had Pre-Hypertension. Also it was revealed that the diastolic blood pressure in the pretest, majority 56.67% had Stage – 2 hypertension whereas in the post test after abdominal breathing exercise, majority 60% had Stage 1 hypertension 10% had Pre-Hypertension

Khatib R.et.al (2017) reported those participants from 52 urban and 35 rural communities from four countries in the Middle East. A total of 3270 participants had hypertension (age-standardized rates, 33%), and n=1807 (49%) of these participants were aware of their diagnosis. The prevalence was higher in rural communities; however, awareness, treatment, and control were significantly higher among urban dwellers.⁸ Hence it is concluded that in the present study, majority of the hypertensive patients had Stage – 2 hypertension. It is observed that various complementary therapy can be implemented to manage blood pressure among hypertensive patients.

The second objective was to determine the effectiveness of abdominal breathing exercise on level of blood pressure among patients with hypertension

High blood pressure (BP) is ranked as the third most important risk factor for attributable burden of disease in south Asia (2010). Hypertension exerts a substantial public health burden on cardiovascular health status and healthcare systems in India. The WHO rates hypertension as one of the most important causes of premature death worldwide. Hypertension is presently affecting about 32 million rural Indians and 34 million urban Indians. Abdominal breathing is slow and deep breathing and it can help lower blood pressure. It relaxes the body and lowers the heart rate, reduces chronic stress and tension that raises the blood pressure. Various studies regarding the effect of abdominal breathing exercise and slow breathing exercise on Hypertension are conducted and it is found that there is a significant reduction in the blood pressure after exercise. The investigator assessed the pre test level of blood pressure by using sphygmomanometer.

The investigator trained on abdominal breathing exercises on the next day. After the pre-test, the investigator trained the subjects on abdominal breathing exercises on the next day. Repetitive trails were given to the subjects 10-20 minutes twice a day, for 5 consecutive days. On the 6th day, the post test level of blood pressure was assessed by using sphygmomanometer. The present study findings revealed that in the pretest, the mean score of systolic BP was 152.67 ± 9.67 and the post mean score of systolic was 145.67 ± 9.12 after abdominal breathing exercises and the mean score of diastolic BP was 95.67 ± 5.96 and the post mean score of diastolic was 82 ± 4.67 after abdominal breathing exercises which indicates that there was a significant difference in the reduction of blood pressure ($p < 0.05$). Sung et al (2016) 40 hypertensive patients were selected by random sampling method Pre-test and intervention through video module was done at OPD and post test done at houses of hypertensive patients. Results shows that there was a significant reduction in post test mean systolic blood pressure ($t=3.45, p=0.001$) and diastolic pressure ($t=3.5, p=0.001$) after abdominal breathing exercises between experimental group that control group. Finally based on the present study findings, it was concluded that abdominal breathing exercises is an effective intervention in reduction of blood pressure among patients with hypertension. It can be implemented and practiced by hypertensive patients in day to day live in order to reduce blood pressure and promote healthy. Hence the hypothesis of the study was accepted.

The third objective was to find the association between the selected demographic variables and post test level of blood pressure among patients with hypertension

The present findings showed that there was a significant association between age and level of blood pressure. There is a significant difference in the level of systolic blood pressure and diastolic blood pressure among patients with hypertension. Hence the null hypothesis was accepted.

Conclusion

In general, abdominal breathing exercise is one of the non-pharmacological, cost effective methods to use in reducing the blood pressure among patients with hypertension Continuous practicing of abdominal breathing exercise can reduce medicine

usage thereby it can be used routinely as a complementary method of treatment for hypertension.

Recommendations

Similar study can be done using a larger sample with hypertension. A true experimental study can be done with the presence of a control group and similar intervention can be administered for chronic obstructive pulmonary disease.

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