

EFFECTIVENESS OF DEEP BREATHING EXERCISE ON BLOOD PRESSURE AMONG PATIENTS WITH HYPERTENSION

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ABSTRACT

High blood pressure (BP) is a major public health problem in India and its prevalence is rapidly increasing among both urban and rural populations. In fact, hypertension is the most prevalent chronic disease in India. A survey of 26,000 adults in South India showed a hypertension prevalence of 20% (men 23% and women 17%) but 67% of those with hypertension was unaware of their diagnosis. In this world, stress is a main factor for hypertension. Hypertension can be treated by pharmacological, non-pharmacological and also by alternative therapies. In that Deep breathing exercise is one of the exercise and relaxation technique which helps to maintain the normal blood pressure. The goal of the study is to determine the effectiveness of deep breathing exercise on blood pressure among patients with hypertension. A research design engaged for this study was pre-experimental design with the sample size of 30 included pretest and post test for the selected sample. Sample was selected by using convenient sampling technique. Deep breathing exercise was given to the population twice daily for one hour for one week during their hospitalization. Their blood pressure was measured by electronic sphygmomanometer before as well as after the intervention in each sample. Data were analyzed by using descriptive and inferential statistics. Deep breathing exercise was found to be effective in reducing both systolic and diastolic blood pressure at the level of $p < 0.05$. The study findings concluded that deep breathing exercise will maintain the normal blood pressure (120/80mm Hg) and also incessant active deep breathing exercise can reduce medicine usage there by it can be used habitually as a balancing method of management for hypertension.

Key words: *Blood pressure, hypertension, deep breathing exercise, systolic blood Pressure diastolic blood pressure, hypertensive patients*

INTRODUCTION:

Blood pressure is the pressure exerted on the walls of the arteries. Recent (2012) studies show that for every known person with hypertension there are two persons with either undiagnosed hypertension or pre hypertension. Reducing blood pressure can decrease cardiovascular risk and this can be achieved by lifestyle measures in mild cases and should be the initial approach to hypertension management in all cases. This includes dietary interventions weight reduction, tobacco cessation, and physical activity. There are many risk factors for essential hypertension such as advance in age, sex and family history of hypertension, obesity and atherosclerosis.

It is also named as silent killer because many of the people don't know they are hypertensive. A number of safe and effective medications are available for treatment of high blood pressure. These include older molecules such as thiazide diuretics, beta-blocking agents, calcium channel blockers (CCB) and newer molecules, such as, angiotensin converting enzyme (ACE) inhibitors, and angiotensin receptor blockers (ARB). In view of the recent clinical trials data, some international guidelines suggest that CCB, ACE inhibitors or ARB and not beta-blockers or diuretics should be the initial therapy in hypertension management. The former however, are much more expensive and beyond the affordability in many poor income countries.

In an analysis of worldwide data for the global burden of HTN, 20.6% of Indian men and 20.9% of Indian women were suffering from HTN in 2005. The rates for HTN in percentage are projected to go up to 22.9 and 23.6 for Indian men and women, respectively by 2025. Therefore Deep breathing exercise one of the measure will

overcome these issues in management of Hypertension. Regular practices of Deep breathing exercise increases blood and oxygen flow to the brain to function normally.

The process of breathing is the essence of a human being's existence. It involves contraction and expansion and the constant influx of change. As against other bodily functioning, the breath can communicate with systems to provide a positive transformation. Breathing is the only function of the body that is both voluntary and uncontrollable. Breath is used to control the functions of the body, over which we generally lack a hold. Breathing can consciously be used to influence the sympathetic nervous system for regulating heart rate, circulation, blood pressure and other body functions. When we are stressed out, the stimulation of the sympathetic nervous system stimulates many responses. These include a rising BP, perspiration, tension in the muscles and rapid and shallow breathing. This can lead to stimulation of the parasympathetic nervous system resulting in reversal and relaxation of the changes observed in SNS. It can be seen how the body does this naturally when stress is relieved through deep breathing or a long sigh.

Breathing process can impact health positively. Rising stress can restrict connective and muscular type chest tissue. This can ensure that there is a fall in chest wall's range of motions. Breathing can be opted for in a deep way to prevent the ill effects of shallow breathing. Chest breathing lacks efficiency as the most amount of blood flow takes place in the lung's lower lobes resulting in shallow breaths. Breathing from the abdomen is a way to breathe deeply.

The benefits mainly are it increases stamina by the abdomen to expand. This leads to a negative pressure within the chest leading to air within the lungs. This negative pressure also leads to enhanced stamina in diseased states and athletic activities. Deep breathing becomes a means of increasing energy and can be incorporated into the natural breathing system of the person. If practiced over time, this breathing exercise can increase energy across the day. The body is designed to release a majority percentage of its toxic materials through breathing. If a breath is not effectively carried out, you could be eliminating toxins from the body. When air is exhaled from the body, carbon dioxide is released from the bloodstream into the lung. Carbon dioxide is a toxin that is released from the body. Oxygenating the brain lowers levels of anxiety. Heed your breathing. Take slow, deep breaths and release the tension in tightened muscles. Breathing creates clarity and brings deep insights to a person as well. Clear uneasy, negative tension from the body without losing out on muscle strength. Avoid medication because it can have side effects. Realize the connection between thinking, feeling and experiencing life. When you breathe deeply, while anticipating pain, it becomes easy to overcome the symptoms. Studies have shown that deep breathing can lower pain. Movements of the diaphragm during breathing exercises massage the internal organs of the body such as the heart. When the air is inhaled, the abdomen expands. Massaged organs experience improved circulation. Controlled breathing is critical for toning and strengthening the abdominal muscles. As the muscles let go of tension, there is dilation of blood vessels and the BP can return to a normal stage. This cuts down on hypertension and reduces the chances of developing heart problems later. By considering the mentioned benefits of breathing exercise on hypertension investigators interested to examine the effectiveness of deep breathing exercises on hypertension as a alternative approach to treat hypertensive patients.

MATERIALS AND METHODS

Research Design used for this study is Pre experimental research design. The study was conducted at Government general hospital at Karaikal. The target population of the study was patients with hypertension of both sexes of male and female aged between 40- 60 years who were under the treatment of Hypertension and met the Inclusion criteria such as Patients who had increased blood pressure from 130/90 mm Hg to 160/100 mm Hg and Those who were willing to participate in the study. The sample size was 30, Sample was selected by using convenient sampling technique

ETHICAL CONSIDERATION:

Prior to data collection informed consent was obtained from the subjects after explaining the purpose of the study.

Demographic variables was assessed and blood pressure was assessed during pretest session and at the same time Deep breathing exercise was given for experimental group twice a day for one week and the blood pressure was checked and recorded twice daily. Post test blood pressure was measured by using sphygmomanometer and stethoscope at the end of one week. The data were analyzed by using descriptive and inferential statistics.

RESULTS

Table 1

Describes the distribution of frequency and percentage of demographic variables among patients with hypertension

S.NO	DEMOGRAPHIC VARIABLE	FREQUENCY	PERCENTAGE
1	Age in years		
	a)20-30	-	-
	b)33-40	-	-
	c)40-50	20	66.7%
	d)50 and above	10	33.3%
2	Duration of hospitalization		
	a) < 1 week	12	40%
	b) < 2 week	14	46.6%
	c) < 3 week	04	13.3%
	d) more than a month	-	-
3	Duration of hypertension		
	a) < 1 month	-	-
	b) < 1 year	12	40%
	c) < 5 year	15	50%
	d) more than 5 years	03	10%

The above table reveals that majority of them were belongs to the age group of 40-50 and had hypertension less than 5 years are high in concentration

Table II

Frequency and percentage of distribution of pretest and posttest level of hypertension

Level of hypertension (mm of Hg)	Pretest		Post test	
	Frequency	Percentage	Frequency	Percentage
Normal	-	-	7	23.3%
Pre-Hypertension	25	83.3%	21	70%
Stage I hypertension	05	16.7%	2	6.7%

The table II reveals that out of 30 samples during Pretest 25 (83.3%) were in pre-hypertension & 05(16.7%) were in stage-I hypertension with mean score of systolic blood pressure is 136.5 and SD was 8.98 and Mean score of diastolic blood pressure was 95.32 with 7.05 SD. In Post test 7 (23.3%) were in normal, 21(70%) were in pre-hypertension and 2 (6.7%) were in stage-I hypertension. The mean score of systolic blood pressure was 126.66 with 9.74 SD and mean score of diastolic blood pressure was 87.32 with 7.97 SD.

Table IV

Determine the effectiveness of deep breathing exercise on level of blood pressure among patients with hypertension

	EXPERIMENTAL GROUP			
	Pre test		Post test	
	Systolic BP	Diastolic BP	Systolic BP	Diastolic BP
MEAN	136.5	95.32	126.66	87.32
SD	8.98	7.05	9.74	7.97
't' test	t=1.580		t=0.0294	

Above table reveals that the calculated 't' value for systolic blood pressure in experimental group was t=1.580 which is found to be statistically significant at p<0.05 level. Then the calculated 't' value for diastolic blood pressure was t=0.0294 which is found to be statistically significant at p<0.05 level. So the deep breathing exercise was effective on blood pressure among patients with hypertension in experimental group.

DISCUSSION

Diet and exercise are basic elements to maintain blood pressure. Although many alternative therapies are promoted for the management of hypertension, few are truly therapeutic. The present analysis examined the effect of deep breathing exercise intervention on the reduction of blood pressure among hypertensive patients. Present study findings reveal that practicing deep breathing exercise twice a day for a week leads to major reduction in systolic blood pressure. Numbers of studies related to the effects of breathing exercise in reduction of blood pressure undertaken and which proven the positive effect. Matayan et.al had conducted a fast and slow breathing exercise interventional study with 60 samples for 3 months and the findings reveal that BP decreased longitudinally over a 3-month period with both interventions

CONCLUSION

The study findings reveals that deep breathing exercise is one of the non-pharmacological, successful methods to use in maintain the normal blood pressure among patients with hypertension and also Continuous practicing of deep breathing exercise can reduce medicine usage thereby it can be used routinely as a corresponding method of treatment for hypertension. Deep breathing exercise will reduce the side effects of medicine in case of decreased usage of it.

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