

A Study to Assess the Effectiveness of Deep Breathing Exercise on Blood Pressure and Heart Rate Among Hypertensive Patients in Selected Area of Kheda District

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Abstract

Background of Study: Despite the significance of the problem with respect to overall health and its undesirable health consequences, high blood pressure still is not adequately controlled and far from being optimal. An estimated 1.13 billion people worldwide have hypertension (WHO may 2019). In India incidence rate of hypertension is 29.8% (WHO September 2018). In Gujarat incidence rate of hypertension is 27.1% (JNC-7). Quasi experimental research design (pre test post test research design), Quantitative research approach was used to assess the effectiveness of deep breathing exercise on blood pressure and heart rate among hypertensive patients in selected area of Kheda district. The collected data was tabulated and analyzed using descriptive and inferential statistics. Mean, and standard deviation was calculated by the obtained data in which mean score of blood pressure was 127.46 in pre test and 78.63 in post test and score of standard deviation was 5.44 in pre test and 4.88 in post test. The mean score of heart rate was 86.2 in pre test and 63.01 in post test and score of standard deviation was 3.86 in pre test and 2.59 in post test.

Keywords: - Deep breathing exercise, Blood pressure, Heart rate, Hypertensive patient.

Introduction

Hypertension is a widespread health problem and is called the “silent killer” because it often has no

warning signs or symptoms, and many people don't realize that they have it. Hypertension is another name for high blood pressure. It can lead to severe health complications and increase the risk of heart disease, stroke, and sometimes death. Many pharmacological and non- pharmacological interventions effective in treating essential hypertension, Pharmacological therapy depends on antihypertensive drugs, while

non - pharmacological therapy involved five lifestyle modifications are recommended by JNC 7 for reducing blood pressure: reducing sodium intake, increasing exercise, limiting alcohol consumption dietary changes, losing weight in addition to; other lifestyle interventions as smoking cessation, dietary supplements and meditation. The last one includes careful attention to the process of breathing, to achieve a state of inner calm, detachment, and focus (Mancia et al.,2013, McElroy, et al., 2012, a Deep breathing increases blood and oxygen flow to the brain to function in its optimal state. It improves circulation, which improves heart health, energy levels and helps the body eliminate toxins, as well as reduces

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stress (Shakeshaft, 2012). Hence, practicing deep breathing exercise influence autonomic functions and has therapeutic benefit to hypertensive patients (Almahrezi, et al., 2008) and (Ribeiro, et al., 2011).¹

Need of the Study:-

Hypertension is major health problem in India, contribute to significant morbidity as well as mortality among with the significant sociology economically losses. Study on the hypertensive patients either in community, inpatient, outpatient, or different hospital have shown that hypertension is the commonest medical health problems. Previously study has found that breathing exercise is very beneficial for hypertensive patients.⁷

Deep breathing is an easy exercise, non-invasive and painless. It can be done at any place, less time consuming, and cost effective. Therefore, this study was conducted to examine the efficacy of deep breathing exercises on hypertension and heart rate as a non- pharmacological complementary approach to treat essential hypertensive patients; make these gentle practices a worthwhile activity to incorporate into a healthy lifestyle. Hopefully this study could add an important evidence based practice to the concerned patients and health care providers.⁹

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 patient with hypertension.¹⁰

Objectives of the Study

1. To assess the blood pressure level of the hypertensive patient.
2. To evaluate the effect of deep breathing exercise on blood pressure among the hypertensive patients
4. To evaluate the effect of the deep breathing

exercise on heart rate among hypertensive patients.

3. To assess the pre test and post test level of blood pressure and heart rate among hypertensive patient between control and interventional group.

4. To find out the association of heart rate and blood pressure level with selected demographic variable among hypertensive patients.

Hypothesis

H1 There will be a statistical significant difference in blood pressure before and after deep breathing exercises intervention at the level of $p < 0.05$.

H2 There will be statistical significant difference in heart rate before and after deep breathing exercise intervention at the level of $p < 0.05$.

Material and Methods

Research Approach: Quantitative research approach is used for this present study.⁴

Research Design: Quasi experimental research design (pre test post test research design).⁴

Population:

Target population of study was all hypertensive patients in selected area of Kheda district.

Sample Technique:

Purposive non probability sampling technique used to select sample

Sample Size:

The sample size comprised of 60 hypertensive patient (30 experimental group and 30 control group)

Description Tool:

Part A: Demographic data

Part B: modified deep breathing exercise

Inventory was used.

Results and Finding of the Study

Table No. 1 Demographic variables

Demographic variable	N	%
Age		
a) 41-50	17	28.33
b) 51-60	19	31.66
c) 61-70	14	23.33
d) 71-80	10	16.66
Gender		
a)Male	27	45
b)Female	33	55
c)Transgender	0	0
Education		
a) Illiterate	1	1.66
b) Primary	12	20
c) Secondary	19	31.66
d) Higher secondary	17	28.33
e) Graduation	10	16.66
f) Post graduation	1	1.66
Occupation		
a) Unemployment	34	56.66
b) Self employment	4	6.66
c) Private employment	5	8.33
d) Govt employment	8	13.33
E) Business	1	1.66
f) Retired	8	13.33
Year of suffering from HTN		
a) <5yr	23	38.33
b) 5-10yr	27	45
c) 11-15yr	10	16.66
d) >15yr	0	0
Year of taking medicate on of HTN		
a) <3yr	22	36.66

Cont... Table No. 1 Demographic variables

b) 3-7yr	12	20
c) 8-12	26	43.33
d) >12yr	0	0
Diet		
a) Vegetarian	37	61.66
b) Non-vegetarian	9	15
c) Mixed	14	23.33
Hereditary		
a) Yes	19	31.66
b) No	41	68.33
Regular exercise		
a) Yes	15	25
b) No	45	75
Habit		
a) Smoking	10	16.66
b) Alcohol	2	3.33
c) Non	48	80
Regular on medication		
a) Yes	44	73.33
b) No	16	26.66
Regular visit to hospital		
a) Yes	44	73.33
b) No	16	26.66
HTN associated with other disease		
a) Yes	23	38.33
b) NO	37	61.66
Previous Knowledge about breathing exercises		
a)Yes	15	25
b)No	45	75

Reveals with regard to age, the majority of the patients 19 (31.66%) belonged to 51-60 years, 14 (23.33%) patient belong to 61-70 years, 17 (28.33%) patients belong to 41-50 years and only 10 (16.66%) belonged to 71-80 years in group of hypertensive patients.

Regarding gender, 27(45%) were males and 33 (55%) were females in selected group. Regarding duration of hypertension, majority 27 (45%) were suffering from hypertension for 5-10 years duration, only 0 (0%) sample in group was suffering from hypertension below 15 years.

Regarding the number of years one is taking medication majority of 26 (43.33%) patients belongs to 8-12 years of age.

Assessment of dietary pattern revealed that regarding 37 (61.66%) of the m were vegetarian.

Table No. 2 Details of Samples Blood pressure level

Categories of blood Pressure	Systolic	Diastolic (mmHg)	*Mean Arterial pressure (MAP)
Normal blood Pressure	120-139	80-90	93-103
Mild Hypertension	140-159	90-99	107-119
Moderate Hypertension	160-179	100-109	120-132
Severe Hypertension	>180 mmHg	>110mmHg	133.3

Table No. 3 Blood pressure outcome among hypertensive patient in experimental group

Aspect	Pre-test		Post-test		Paired 't' test value
	Mean	Standard deviation	Mean	Standard deviation	
Outcome	127.46	5.44	78.63	4.88	45.73

Table No. 4 Heart rate outcome among hypertensive patient in control group.

Aspect	Pre-test		Post-test		Paired't' test value
	Mean	Standard deviation	Mean	Standard deviation	
Outcome	86.02	3.86	63.010	2.59	28.0031

Table No. 5 Blood pressure outcome among hypertensive patient in control group.

variable	Mean	SD
Blood pressure outcome	128.30	7.713

Table No. 6 Heart Rates outcome among hypertensive patient in control group

Variable	Mean	SD
Heart rateoutcome	73.10	2.894

MAJOR FINDINGS OF THE STUDY:-

Findings related to demographic variables of samples:

1. According to demographic variable of age, the majority of the patients 19(31.66%) belonged to 51-60years, 14(23.33%) patient belong to 61-70years, 17(28.33%) patients belong to 41-50 years and only 10(16.66%) belonged to 71-80 years in group of hypertensive patients.

2. Regarding gender, 27 (45%) were males and 33(55%) were females ins elected group.

3. Regarding duration of hypertension, majority 27(45%) were suffering from hypertension for 5-10 years duration, only 0(0%) sample in group was suffering from hypertension below 15 years.

4. Regarding the number of years one is taking medication majority of 26 (43.33%) patients belongs to 8-12 years of age.

5. Assessment of dietary pattern revealed that regarding 37 (61.66%) of them were vegetarian

6. According to blood pressure outcome among hypertensive patient, in experimental group, the mean pre-test score is 127.46 with standard deviation 5.44 and the post test mean is 78.63 with standard deviation

4.88. the obtained paired t test value is 45.73.

7. According to heart rate outcome among hypertensive patient, in experimental group, the mean pre-test score is 86.02 with standard deviation 3.86 and the post test mean is 63.010 with standard deviation 2.59. The obtained paired t test value is 28.0031.

8. According to variable of blood pressure outcome, mean is 128.30 with standard deviation of 7.713.

9. According to variable of heart rate outcome, mean is 73.10 with standard deviation of 2.894.

Conclusion

The main conclusion drawn from the present study was that most of the hypertensive patients had high level of Blood Pressure. After receiving breathing exercises there was a significant reduction in the level of Blood Pressure. Samples became familiar and found themselves comfortable and also expressed satisfaction. It is concluded that the breathing exercises is effective and a simple strategy to maintain the blood pressure and heart rate

Conflict of Interest: Nil

Source of Funding: Self Funding

Ethical Clearance: The study was approved by the research committee, IEC –DPCN/ 2019 and a formal written permission was gathered from the authority of hospital for study setting.

Statement of Informed consent: Informed consent was acquired from the participants

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