



# **“A Study To Assess The Effectiveness Of Breathing Exercise On Reduction Of Blood Pressure Among Primary Hypertensive Patient In Selected Village At Gorakhpur.”**

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**Abstract:** Hypertension is a significant general health issue in India and world, due to its high recurrence and corresponding, there is a danger cardiovascular and kidney disorder. The hypertension makes individuals multiple times more inclined to stroke and multiple times bound to have coronary failure. The purpose of this study was to evaluate the effect of breathing exercise on reduction of blood pressure among patient with primary hypertension. A quasi experimental one group pre test post test design was adopted. A sampling 60 primary hypertensive patient was selected using non probability purposive sampling technique at Siktaur village Gorakhpur. Data on demographic variable where assist breathing exercise was demonstrated to the participants and their level of blood pressure was measured by sphygmomanometer before and after the intervention. The result display that in pre test out of 30 sample mean value is (138.4) and post test value (128.84) in systolic blood pressure with standard deviation 6.52. In diastolic blood pressure pre test mean is 92.67, post test mean is 82.66 with standard deviation 4.43. The calculated t value is  $t = 7.971$  was found to be statistically significant at P value  $< 0.05$ . Thus, there was a reduction in the level of blood pressure after breathing exercise among post test group patient.

**Index Terms** - Assess Effectiveness , Breathing exercise, Primary hypertensive patient

## I. INTRODUCTION

### **‘Calming breathing exercises that will relieve stress and improve health’**

Hypertension 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 typically does not cause symptoms. 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 they have it. It has been estimated that hypertension accounts 6% of deaths worldwide.

Long- term high blood pressure, however, is a major risk factor for coronary artery disease, stroke, heart failure, arterial fibrillation, peripheral vascular disease and vision problem.

Classification of hypertension for adults ages 18 and older has been provided by the Seventh Report of the Joint National Committee of High Blood Pressure (JNC 7 Classification, 2013), patients with sustained rise in blood pressure above 140/90 mmHg. Essential hypertension is the most prevalent type, affecting 90-95% of hypertensive patients.

Breathing exercise is one of the exercise and relaxation technique which increases blood and oxygen flow to the brain to function in its optimal state. During breathing exercise on inhalation the abdomen, lower ribcage and lower back all expand thus drawing the diaphragm down deeper into the abdomen and retract on exhalation, allowing the diaphragm to move fully upward toward the heart and also while the diaphragm moves downward it massages the liver, stomach and other organs and tissues below it, and upward to massage the heart.

Breathing can be trained for both positive and negative influences on health. Chronic stress can lead to a restriction of the connective and muscular tissue in the chest resulting in a decrease range of motion of the chest wall.

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, mind fullness and clear thinking , improves circulation, which improves heart health , energy level and helps the body eliminate toxins as well as reduces the stress . Hence practicing breathing exercises influence autonomic function and has therapeutics benefit to primary hypertensive patient and despite the important relationships between heart rate and hypertension there is a lack of evidence supporting heart rate lowering as a therapeutic strategies in hypertension. Therefore, this study is undertaken to find a Non – pharamacological methods for managing essential hypertension by using breathing exercises.

## PROBLEM STATEMENT

**A study to assess the effectiveness of Breathing exercise on reduction of Blood Pressure among Primary Hypertensive patient in selected Village at Gorakhpur.**

## OBJECTIVE OF THE STUDY –

1. To assess the blood pressure level among primary hypertensive patient at selected village area Gorakhpur.
2. To assess the pre – test level of blood pressure among primary hypertensive patient at selected village area Gorakhpur.
3. To assess the post - test level of blood pressure among primary hypertensive patient at selected village area Gorakhpur.
4. To compare the pre – test and post- test level of blood pressure among primary hypertensive patient at selected village area Gorakhpur.
5. Evaluate the effectiveness of breathing exercise reduction of Blood pressure.
6. To find out association with pre - test with selected demographic variables

## II. MATERIAL AND METHODS

**Research approach-** It is a plan and procedure that consist of the steps of broad assumption to detailed method of data collection analysis, problem being addressed.

In this study, quantitative research approach will be used.

**Research design -** It is a blue print for conducting a study that maximizes the control over factors that could interfere with validity of the findings.

The research design selected for the present study is quasi experimental research design one group pre test post test.

**Research variables-** These are the qualities, properties or characteristic that are observed or measured in natural setting without manipulating and establishing causes and effect.

**Study population -**Target population people who had diagnosed as primary hypertension in selected village area in Siktaur-Bazar.

**Sample size-** In this study sample size is 60 primary hypertensive patient.

Experimental group 30 sample and control group 30 sample.

**Sampling techniques-** In this study sampling technique is non probability purposive sampling technique.

**CRITERIA FOR SAMPLE SELECTION:****Inclusion criteria**

- People whose blood pressure were > 120 by 80 mmHg.
- Willing to participate in this study.
- Available at the time of data collection.
- Those who having primary hypertension.

**Exclusion criteria**

- Already performing breathing exercise.
- Communicate Hindi and local language.
- No available at the time of data collection.
- Person who have surgical condition.
  - Those who does not living in Siktaur Bazar.

**III. TOOLS AND TECHNIQUES**

**Section A-** Demographic variable, it consist of age, gender, education, occupation, types of diet, sleeping pattern in a day, source of knowledge about breathing exercise, any bad habit, duration if innless, years of taking hypertensive medication, previous knowledge of breathing exercise.

**Section B-** Blood Pressure Chart

<b>BLOOD PRESSURE CATEGORY</b>	<b>SYSTOLIC mm Hg</b>	<b>DIASTOLIC mm Hg</b>
<b>Normal</b>	<b>Less than 120</b>	<b>Less than 80</b>
Prehypertension	120-139	80-89
High Blood Pressure (Hypertension) Stage 1	140-159	90-99
High Blood Pressure (Hypertension) Stage 2	160 or higher	100 or higher
Hypertensive Crisis (Emergency care needed)	Higher than 180	Higher than 110

The range for primary hypertension is typically defined as systolic blood pressure (the top number) of 130 mmHg or higher, or diastolic blood pressure (the bottom number) of 80 mmHg or higher.

The blood pressure chart used to mark the blood pressure of patient before intervention in experimental and control group at day 1 and blood pressure is check after intervention in experimental group and without intervention in control group at day 7.

### Section C-Breathing Exercises Checklist

Sr.No.	Procedure	Score
1.	Poor	0-25
2.	Average	26-50
3.	Good	51-75
4.	Very good	76-100

The breathing exercise checklist having range from 1-5, total score is 100 and in deep breathing exercise have 7 steps, pursed lip exercise have 4 steps, breathing exercise have 6 steps and 4-7-8 breathing exercise have 4 steps. These breathing exercise helps to reduce the blood pressure at patients.

**CONTENT VALIDITY-** A total 5 expert consisting of 1 Doctor- Physiotherapist, 4 Nursing Experts have validated tool.

**RELIABILITY-** The suggested by the expert will be finalized, then the tool will be finalized for main study.

### DATA COLLECTION PROCEDURE

Data collection process is the systematic gathering of information relevant to the research purpose or specific objective of the study.

After obtaining formal ethical clearance from the Gram-Panchayat of Siktaur village Gorakhpur.

As per research study non probability purposive sampling technique was used. In this study data collection should be collected as per inclusion criteria (People whose blood pressure were >120/80mmHg, Willing to participate in this study, Available at the time of data collection, Those who having primary hypertension.)

30 sample were selected as experimental group and 30 sample as control group. Pre-test was conducted for both the experimental and control group. After pre test the experimental group given breathing exercise (deep breathing exercise, diaphragmatic breathing exercise & pursed lip exercise) and its role in reducing of blood pressure then the investigator teach the experimental group to practice breathing exercise for 20 min daily in the morning and ask them to perform exercise in evening also for 7 consecutive days. Post – test will be conducted to them on 7<sup>th</sup> day after the performance of breathing exercise.

The control group given no intervention. Post test was conducted to them on 7<sup>th</sup> day. The pre test and post test conducted during the morning around 10am-11am among all patients in the experimental and control group to avoid variation in blood pressure.

**DATA ANALYSIS-** Analysis means competition of certain incidence of major along with searching pattern for relationship that exist among the data groups.

## IV. RESULT AND DISCUSSION

### SECTION I: The finding related to Demographic Data:

- The distribution of sample according to age indicate that 11.60% samples were in age group 31-35 years, 20% samples were in the age group 36-40 years, 30% samples were in the age group 40-45 years and 38.34% samples were in age group >45 years.
- The distribution of sample according to gender indicates that 60% samples were in the male gender, 40% samples were in the female gender and 0% samples were in the transgender.
- The distribution of sample according to education indicates that 53.3% samples were not educated, 25% samples were primary educated, 13.33% samples were secondary educated, 5% samples were graduate and 3.33% samples were post graduate.
- The distribution of sample according to occupation indicates that 16.7% samples were self employed, 23.3% samples were farmer, 11.66% samples were in government job, 25% samples were in private job 25% samples were unemployed and 1.66% samples were retired.
- The distribution of sample according to types of diet indicates that 38.34% samples were vegetarian and 61.66% samples were vegetarian and non vegetarian both.
- The distribution of sample according to sleeping pattern in a day indicates that 11.60% samples were sleep 3-4 hours, 25% samples were sleep 5-6 hours and 63.33% samples were in sleep 6-8 hrs.
- The distribution of sample according to source of knowledge about breathing exercise indicates that 0% samples were got knowledge from news paper , 15% samples were got knowledge from mass media, 85% samples were got knowledge from health care worker.
- The distribution of sample according to any bad habit indicates that 28.33% samples were smoked, 30% samples were alcoholic, 46.66% samples were no bad habit and 0% samples were addicted with other bad habits.
- The distribution of sample according to duration of illness indicates that 36.66% samples were ill <1 year, 52% samples were ill 1-5 year, 11.60% samples were ill 5-10 year and 0% samples were ill >10 years.
- The distribution of sample according to years of taking hypertension medication indicates that 31.66% samples were taking hypertension medication 0-1 years, 41.66% samples were taking hypertension **medication** 1-2 years, 13.33% samples were taking hypertension medication 2-3 years and 8.33% samples were taking hypertension medication 3-4years.

- The distribution of sample according to previous knowledge of breathing exercise indicates that 12% samples have previous knowledge of breathing exercise, 88% samples have not previous knowledge of breathing exercise.

## SECTION II: FINDING RALATED TO PRE TEST AND POST TEST LEVEL OF BLOOD PRESSURE AMONG PRIMARY HYPERTENSIVE PATIENT IN EXPERIMENTAL AND CONTROL GROUP

Mean value of systolic is 138.4, diastolic is 92.67 of pre test, mean value of systolic is 128.34 , diastolic is 82.66 in post test in experimental group.

Mean value of systolic is 134.6, diastolic is 93.03 of pre test, mean value of systolic is 132.4 , diastolic is 91.02 in post test in control group.

N=60

(Experimental group=30,  
Control group=30)

Sr. No.	BLOOD PRESSURE	EXPERIMENTAL GROUP		CONTROL GROUP	
		Pre test mean	Post test mean	Pre test mean	Post test mean
1.	Blood Pressure (Systolic) (130-140)	138.4	128.34	134.6	132.4
2.	Blood Pressure (Diastolic) (80-100)	92.67	82.66	93.03	91.02

## SECTION III: FINDING RALATED TO COMPARE THE PRE TEST AND POST TEST VALUE OF EXPERIMENTAL AND CONTROL GROUP

Mean value of systolic is 138.4 with standard deviation 11 and diastolic is 92.67 with standard deviation 5.0 of pre test in experimental group

Mean value of systolic is 128.34 with standard deviation 6.52 and diastolic is 82.66 with standard deviation 4.43 of post test in experimental group

Mean value of systolic is 134.6 with standard deviation 10.8 and diastolic is 93.03 with standard deviation 5.3 of pre test in control group.

Mean value of systolic is 132.4 with standard deviation 11.4 and diastolic is 91.02 with standard deviation 5.11 of post test in control group.



Sr. No.	BLOOD PRESSURE	EXPERIMENTAL GROUP						CONTROL GROUP					
		Pre test		Post test		Mean difference		Pre test		Post test		Mean difference	
		Mean	S.D	Mean	SD	Mean	S.D	Mean	S.D	Mean	S.D	Mean	S.D
1.	Blood Pressure (Systolic) (130-140)	138.4	11	128.34	6.52	10.06	4.48	134.6	10.8	132.4	11.4	2.2	0.6
2.	Blood Pressure (Diastolic) (80-100)	92.67	5.0	82.66	4.43	10.01	0.52	93.03	5.3	91.02	5.11	2.01	0.19

#### SECTION IV: FINDING RELATED TO EVALUATE THE EFFECTIVENESS OF BREATHING EXERCISE ON REDUCTION OF BLOOD PRESSURE AMONG EXPERIMENTAL AND CONTROL GROUP

Systolic t value 19.0  $t > 2.05$  so the effectiveness is seen. Diastolic t value 2.204  $t > 2.05$  so the effectiveness is seen

Sr. No.	BLOOD PRESSURE	EXPERIMENTAL GROUP				CONTROL GROUP			
		Pre test	Post test	t value	P Value	Pre test	Post test	t value	P Value
1.	Blood Pressure (Systolic) (130-140)	138.4	128.34	19.0	0.0001	134.6	132.4	21.01	0.259
2.	Blood Pressure (Diastolic) (80-100)	92.67	82.66	2.204	0.05	93.03	91.02	4.20	0.50



## SECTION V: FINDING RALATED TO ASSOCIATION BETWEEN THE PRE TEST WITH SELECTED DEMOGRAPHIC VARIABLES

Chi square was calculated to find out the association between the pre test value with their selected demographic variables.

Significant association was found between the physiological variable sample among primary hypertensive patient with their demographic variable such as (gender, occupation, types of diet , source of knowledge about breathing exercise, any bad habit and previous knowledge of breathing exercise)  $P < 0.05$

The present study was aimed to A study to assess the effectiveness of Breathing exercises on reduction of blood pressure among primary hypertensive patient in selected village area at Gorakhpur. This chapter discusses the present study findings were discussed in accordance with the objectives of the present study.

Sr. No	DEMOGRAPHIC VARIABLES	MILD	MODERAT E	X <sup>2</sup>	df	P value	Infe renc e
1.	AGE						
A	a) 31-35 year	3	4	1.02	3	0.878	NS
B	b) 36-40 year	7	5	8			
C	c) 40-45 year	8	10				
D	d) >45 year	10	13				
2.	GENDER						
A	a) Male	15	21	0.84	4	2.78	NS
B	b) Female	10	14	9			
C	c) Transgender	0	0				
3.	EDUCATION						
A	a) No education	18	14	11.9	5	2.57	S*
B	b) Primary education	7	8	69			
C	c) Secondary education	3	5				
D	d) Graduate	2	1				
E	e) Post graduate	1	2				
4.	OCCUPATION						
A	a) Self employed	4	6	11.9	5	2.57	S*
B	b) Armer	7	7	69			
C	c) Government job	5	2				
D	d) Private job	7	8				
E	e) Unemployed	6	7				
F	f) Retired	1	0				
5.	TYPES OF DIET						
A	a) Vegetarian	11	12	1.42	1	12.71	S*
B		12	25	4			

	b) Vegetarian & non vegetarian						
6.	SLEEPING PATTERN IN A						
A	DAY	3	4	0.24	2	6.966	NS
B	a) 3-4 hour	6	9	87			
C	b) 5-6 hour	18	20				
	c) 6-8 hours						

7.	SOURCE OF KNOWLEDGE ABOUT BREATHING EXERCISES						
A		0	0	6.96	2	4.30	S*
B	a) Newspaper	7	2	6			
C	b) Mass media	16	35				
	c) Health care worker						
8.	ANY BAD HABIT						
A	a) Smoking	7	7	22.2	2	4.30	S*
B	b) Alcoholism	5	13	57			
C	c) No bad habit	10	8				
D	d) others	0	0				
9.	DURATION OF ILLNESS						
A	a) <1year	11	11	0.49	3	0.878	NS
B	b) 1-5 year	15	16	92			
C	c) 5-10 year	3	4				
D	d) >10 year	0	0				
10.	YEARS OF TAKING MEDICATION						
A	a) 1 year	10	9	1.49	3	0.878	NS
B	b) 1-2year	10	18	6			
C	c) 2-3 year	4	4				
D	d) 3-4 year	2	3				
11.	PREVIOUS KNOWLEDGE OF BREATHING EXERCISE						
A	a) Yes	5	2	1.95	1	12.71	S*
B	b) No	23	30	7			

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