



# “EFFECTIVENESS OF PRANAYAMA ON OCCUPATIONAL STRESS OF NURSES: QUANTITATIVE STUDY”

Amruta Janardhan Pohare<sup>1</sup>, Meena Ganapathy<sup>2</sup>

<sup>1</sup>Ph.D Scholar, MUHS, Nashik, <sup>2</sup> Principal, MKSS'S BakulTambat Institute of Nursing Education, Pune

**Abstract:** Occupational Stress is a chronic disease caused by conditions at the workplace that negatively affect an individual's performance and overall well-being of body and mind. Many studies related to the Occupational Stress of nurses have shown that Occupational Stress decreases the quality of nursing care and increases the hospital stay of patients. Various research studies have also demonstrated prolonged stress on nurses causes not only physical disorders of the musculoskeletal system but also increases their vulnerability to mental illnesses such as depressive and anxiety disorders. The objective of study: to identify the Occupational Stress of nurses in selected hospitals of an urban area. To assess the effectiveness of Pranayama on Occupational Stress of nurses in selected hospitals of an urban area. To find out the difference between Occupational Stress experimental and control group, and to describe the association between Occupational Stress and selected background variables. Material and method: one group pretest and posttest with a control group experimental research design was applied. Ten samples were selected by simple random sampling method and data was assessed by the standardized tools as expanded nurses stress scale and tool to assess and classify work related stress. Result: the data analysis was done by descriptive and inferential statistics. In Pranayama t value was 7.2 with 4 degree of freedom. The corresponding p value was small and null hypothesis were rejected. Average Occupational Stress score reduced after practicing Pranayama.

**Index Terms** - ENSS; TAWS; Occupational Stress; Nurses; Pranayama.

## INTRODUCTION

Occupational Stress in nursing is prevalent and significantly impacts physical, mental, and social well-being. These factors contribute to elevated stress levels among nurses, resulting in adverse outcomes such as absenteeism, depression, fatigue, and diminished job performance, which ultimately compromise the quality of care provided. Job-related stress has a detrimental impact on individual physiology, psychology, and behaviors, including job performance. Stress can be categorized into two dimensions: challenge stress, which nurses can manage and utilize for career development examples include job load and time urgency and hindrance stress, which is beyond nurses' control and adversely affects their career progression, such as work insecurity and role conflict. (1)

Globally, Occupational Stress of healthcare professionals, particularly nurses, is a significant issue within healthcare systems. Occupational Stress in nursing correlates with elevated levels of job dissatisfaction, burnout, absenteeism, turnover, in addition to illnesses attributed to stress hence impacting performance along with patient safety. National survey conducted by Career Builder in US on anxiety levels amongst workers revealed that healthcare professionals have elevated stress levels, whereas nurses

exhibit highest stress within this category. A meta-analysis on the prevalence of Occupational Stress of nurses indicated that 69% of nurses in UAE encountered Occupational stress. Mwinga and Mugala discovered that 93% of nurses in Zambia experienced job-related stress. (2)

**Pavithramma Gangaram (2023)** examined Occupational Stress of nurses in Narayana General Hospital, Nellore. A descriptive research approach and convenient sampling have been employed with 200 nurses. Data was collected employing a 30-question work stress measure. Data has been examined and interpreted employing descriptive and inferential statistics. The research concluded that 140 (70%) respondents experienced mild Occupational Stress, 58 (29%) moderate, while 2 (1%) severe. Age, sex, experience, qualification, area of work, marital status, and religion had no impact on Occupational Stress; however designation, a place of living affected. In total, 70% of respondents had mild Occupational Stress, 29% moderate, as well as 1% severe, reject the null hypothesis. The investigator discovered that this necessitated an Occupational Stress management guide sheet for Narayana General Hospital, Nellore nurses. (3)

**Poonam Ben Yadav (2022)** studied the stress-reduction effects of Pranayama in a selected Ahmadabad neighborhood. The study examined how Pranayama relieved stress in specific locations. Pre-experimental research and purposeful sampling were used to choose the sample. The perceived stress scale measured stress. First, the PSS scale pre-test was given to three groups. Regular 15 days of Pranayama, the mean score reduced to 14.33. The paired t-test was 0.5. The study found that Pranayama reduced stress. Pranayama reduce stress, according to the findings. The researcher found that regular Pranayama reduced stress better. (4)

**Mrs. Sunitha Chinnam (2021)** studied Pranayama stress-reduction effects on secondary school students in Ranga Reddy District, Telangana. The study will use probability sampling to identify 600 adolescent children, 300 in the interventional group and 300 in the control group. Government and private schools in Balapur Mandal, Ranga Reddy District, were studied. We collected data using a perceived stress scale. 47 control teens exhibited excessive stress. Certain traits were linked to teens' stress levels. In pre-test scores, 210 adolescent children had moderate stress, 57 had low stress, and 33 had high stress. However, 211 control group children had moderate stress levels, 47 had high stress, and 42 had low stress in pre-test scores. After 30 days of Pranayama, none felt stressed. After testing, adolescents had 79.3%, 19.7%, and 1.0% stress. Kids who practice yoga and Pranayama may have less stress and improved physical, mental, and emotional health, report researchers. (5)

**Sharma V. A (2020)** studied Pranayama stress-management effects on Jaipur nurses. 60 nurses from chosen hospitals participated in the pretest-posttest study. Statisticians used descriptive and inferential statistics to examine stress rating scale data. Before the session, nurses reported medium stress (mean =  $50.6 \pm 7.9$ ), but after the intervention, they noticed a significant stress reduction ( $31.0 \pm 9.1$ ). Significant associations were discovered between age, gender, status, transportation facilities, Pranayama awareness, and source of knowledge. After an intervention, all themes had light stress, while 46.7% had moderate stress pre-intervention. The study found Pranayama reduced and managed nurses' stress. (6)

**Komila Singh Dr. C. Sushila (2021)** did a review on the effectiveness of Pranayama on stress. In yoga, Pranayama is a set of methods used to access and control prana, the universal energy. It supports several elements of physical health, such as force per unit area, brain function, and respiratory organ function, and strives to fortify the bond between the body and mind. According to nursing research, 83.33% of elderly patients reported mild stress on the post-test following Pranayama practice. Exercises in Pranayama, suited to particular states of mind and circumstances, can amp up the impact considerably. By purposefully changing the breath's tempo, rhythm, and space, these exercises assist in clearing the mind, lowering stress levels, and enhancing physical health. Yoga may have a short-term, temporary impact on stress, anxiety, and depression, but its long-term effects are still unknown. Researchers concluded that yoga effectively reduces stress, anxiety, and depression, potentially acting as a complementary medicine. However, the long-term effects of yoga's effects remain unclear, necessitating future research on its long-term effects. (7)

### STATEMENT OF THE STUDY:

"Effectiveness of Pranayama on Occupational Stress of nurses in selected hospitals of an urban area".

### OBJECTIVE OF STUDY:

1. To identify the Occupational Stress of nurses in selected hospitals of urban area.
2. To determine the effectiveness of Pranayama on Occupational Stress of nurses in selected hospitals of an urban area.
3. To find out the difference in Occupational Stress between the experimental and control group
4. To describe the association between Occupational Stress and selected background variables

The main aim of study was to assess the effectiveness of Pranayama on Occupational Stress of nurses in selected hospitals of an urban area.

### RESEARCH QUESTIONS:

1. Is there an effect of Pranayama on the Occupational Stress of nurses in selected hospitals of an urban area in the experimental group as compared to the control group post intervention?
2. Is there a relationship between Occupational Stress and selected background variables?

### HYPOTHESIS:

H<sub>01</sub>: There will be no significant effectiveness of Pranayama on Occupational Stress among nurses in selected hospitals of an urban area.

H<sub>02</sub>: There will be no significant relationship between the baseline level of Occupational Stress and with selected background variables of samples.

### OPERATIONAL DEFINITIONS:

**Assess:** In this present study, assess means to evaluate the effectiveness of Pranayama, on Occupational Stress of nurses in selected hospitals of an urban area. (8)

**Effectiveness:** In this study, the effectiveness is the intended result of Pranayama, on Occupational Stress of nurses in selected hospitals of an urban area. (9)

**Occupational Stress:** In this study, Occupational Stress means physiological and psychological response to events or conditions of staff nurse's in workplace that is detrimental to health and well-being. (10)

**Nurse:** In this context of study, a Nurse is a person formally educated and trained and registered staff nurse in the care of sick or injured people, working in selected hospitals of an urban area. (11)

**Pranayama:**

In this study, Current research examines Pranayama as deliberate awareness of breath, a vital force that both stimulates and relaxes the body, aiding in the alleviation of Occupational Stress of nurses. This study includes three methods of Pranayama Bhramari Pranayama, Kapalabhati Pranayama, and Anulom Vilom Pranayama. (12)

**METHODOLOGY:** A quantitative, pre-experimental one-group pre-test post-test with control group design was used for the present study. (13)

**Population:** population was the nurses working in selected hospital of an urban area.

**PLAN OF STUDY AND SAMPLING**

Researcher carried out a pilot study at the women's hospital in Latur. Ten samples were selected for pilot study. The population of the study was the nurses having occupational stress, working in women's hospitals. Sample selection was done by use of a simple random sampling technique. Inclusion criteria were 1) nurse has age group 21-60 yrs. 2) Nurses were willing to participate. 3) Nurses having experience 1 year or more. 4) Nurses had occupational stress. Exclusion criteria were 1) nurse not willing to participate. 2) Nurse suffering from mental disorder. 3) Nurse who had major illness. 4) Nurses who were practicing any relaxation technique.

**Method of Data Collection**

A self-reporting technique was used to collect data with a questionnaire of Expanded Nursing Stress Scale and Tool to Assess and Classify work-related Stress. Questionnaire was distributed to the respondents. Total three sections for data collection i.e. demographic variables containing 9 items as section I, Expanded Nursing Stress Scale and selected physiological parameters as section II and Tool to Assess and Classify work-related Stress, includes two parts Part A and Part B each part containing 16 questions as in section III. Tool validity was done by 15 subject experts. Reliability tested by test-retest method. Reliability For section II part A was 0.93, for section III part A was 0.91, and 0.99 for section III part B since the reliability value is greater than 0.70 the tool was found to be reliable.

**Data Collection Process and Intervention**

Institutional ethical committee had approved research study. Informed consent was taken from eligible participants. Written Permission was taken from competent authority of selected hospitals. Pretest was taken after taking consent from participants. Pranayama taught to the respondents. After 42 days the posttest was taken. In six weeks of period, the data collection process was completed. Data was collected and recorded by using Excel sheet, and data was analyzed using SPSS version.

**DATA ANALYSIS**

A plan of data analysis was done . for analysis descriptive and inferential statistics used. Statistical analysis was done by use of paired t- test. Fischer's exact test is used to find out association of demographic variables where appropriate  $p < 0.005$  was considered to indicate the statistical significance of variables. (14)

**RESULT:** The data analysis and interpretation were based on data collected by self-reporting technique. The results were computed using inferential statistics. The findings were as follows

**Section-I Frequency distribution and percentage showing selected demographic variable of nurses in selected hospitals of an urban area.**

Demographic variable	Pranayama		Control	
	Freq	%	Freq	%
<b>Age</b>				
31-40 years	3	60%	1	20%
41-50 years	1	20%	4	80%
51-60 years	1	20%	0	0%
<b>Gender</b>				
Male	0	0%	1	20%
Female	5	100%	4	80%
<b>Educational status</b>				
G.N.M	5	100%	4	80%
Bsc. Nursing	0	0%	1	20%
P.B.BSc. Nursing	0	0%	0	0%
Msc Nursing	0	0%	0	0%
<b>Marital status</b>				
Married	5	100%	5	100%
<b>Type of family</b>				
Nuclear	0	0%	3	60%
Joint	5	100%	2	40%
Single parent	0	0%	0	0%
<b>Year of Experience</b>				
6-10 years	1	20%	0	0%
11-15 years	1	20%	1	20%
16-20 years	2	40%	2	40%
21-25 years	0	0%	1	20%
26 years and above	1	20%	1	20%
<b>Income of staff</b>				
Rs.40000-50000	1	20%	1	20%
Rs.50001- 60000	4	80%	4	80%

Rs.60001-70000	0	0%	0	0%
Above 70000	0	0%	0	0%
<b>Area of work</b>				
General wards	0	0%	2	40%
I.C.CU./M.I.C.U/S.I.C.U/P.I.C.U	3	60%	2	40%
O.P.D	1	20%	1	20%
Operation Theatre	1	20%	0	0%
<b>Suffering from any chronic illness</b>				
Hypertension	1	20%	1	20%
Diabetes mellitus	0	0%	0	0%
Gynecological	0	0%	0	0%
Cancer	0	0%	0	0%
Other	4	80%	4	80%

The study analyzed the demographics of nurses in a hospital. It found that 100% of the nurses were female, 60% were GNM, and 100% had nursing and 100% had married from joint families. The majority of the nurses had 11–15 years of experience, 20% had 16–20 years, and 40% and above 26 yr were 20%. They had an income Rs. 40,000, were 20% and income 50,000 were 80%. Worked in ICCU, and 60% worked in OPD 20% and 20% in operation theater. The majority of the nurses had hypertension. In the control group, 80% of the nurses aged 41–50 were male, 20% were female, 60% were nuclear, 20% were joint, 20% were experienced, and 20% had incomes above Rs. 40,000.

## Section II Level of the Occupational Stress of nurses in selected hospitals of an urban area based on Expanded Nursing Stress Scale

Stress	Pranayama		Control	
	Freq	%	Freq	%
Mild (score 57-114)	4	80%	4	80%
Moderate (score 115-171)	1	20%	1	20%
Severe (score 172-228)	0	0%	0	0%

In Pranayama group, 80% of them had mild stress and 20% of them had moderate stress. In control group, 80% of them had mild stress and 20% of them had moderate stress.

**Occupational Stress of nurses in selected hospitals in an urban area based TWAS-16 Part A**

Stress	Pranayama		Control	
	Freq	%	Freq	%
No harmful (score 0-47)	0	0%	0	0%
Mild (score 47-59)	3	60%	1	20%
Moderate (score 60-73)	2	40%	4	80%
Severe (score >73)	0	0%	0	0%

In Pranayama group, 60% of them had mild stress and 40% of them had moderate stress. In control group, 20% of them had mild stress and 80% of them had moderate stress.

**Occupational Stress of nurses in selected hospitals in an urban area based TWAS-16 Part B**

Stress	Pranayama		Control	
	Freq	%	Freq	%
No harmful (score 0-47)	0	0%	0	0%
Mild (score 47-59)	5	100%	5	100%
Moderate (score 60-73)	0	0%	0	0%
Severe (score >73)	0	0%	0	0%

In all the four groups, all the staff nurses had mild symptoms suggestive of work-stress.

**Effect of Pranayama on Occupational Stress based on Expanded Nurses Stress Scale among the staff nurses in selected hospitals in an urban area.**

Stress	Pretest		Posttest	
	Freq	%	Freq	%
Mild (score 57-114)	4	80%	5	100%
Moderate (score 115-171)	1	20%	0	0%
Severe (score 172-228)	0	0%	0	0%

In the Pranayama group, in pretest, 80% of the staff nurses had mild stress (score 57-114) and 20% of them had moderate stress (score 115-171). In posttest, all the staff nurses had mild occupational stress. This indicates that there is remarkable improvement in the Occupational Stress score due to Pranayama.

## Effect of Pranayama on Occupational Stress of nurses in selected hospitals in an urban area based

## TWAS-16 Part A

Stress	Pretest		Posttest	
	Freq	%	Freq	%
No harmful (score <47)	0	0%	0	0%
Mild (score 47-59)	3	60%	5	100%
Moderate (score 60-73)	2	40%	0	0%
Severe (score >73)	0	0%	0	0%

In the Pranayama group, in pretest, 60% of the staff nurses had mild stress (score 47-59) and 40% of them had moderate stress (score 60-73). In posttest, all the staff nurses had mild Occupational Stress (score 47-59). This indicates that there is remarkable improvement in the Occupational Stress score due to Pranayama.

## Effect of Pranayama on Occupational Stress of nurses in selected hospitals in an urban area based

## TWAS-16 Part B

Stress	Pretest		Posttest	
	Freq	%	Freq	%
No symptoms suggestive of work-stress (score <16)	0	0%	4	80%
Mild Symptoms suggestive of work-stress (score 16-29)	5	100%	1	20%
Moderate Symptoms suggestive of work-stress (score 30-36)	0	0%	0	0%
Severe Symptoms suggestive of work-stress (score >36)	0	0%	0	0%

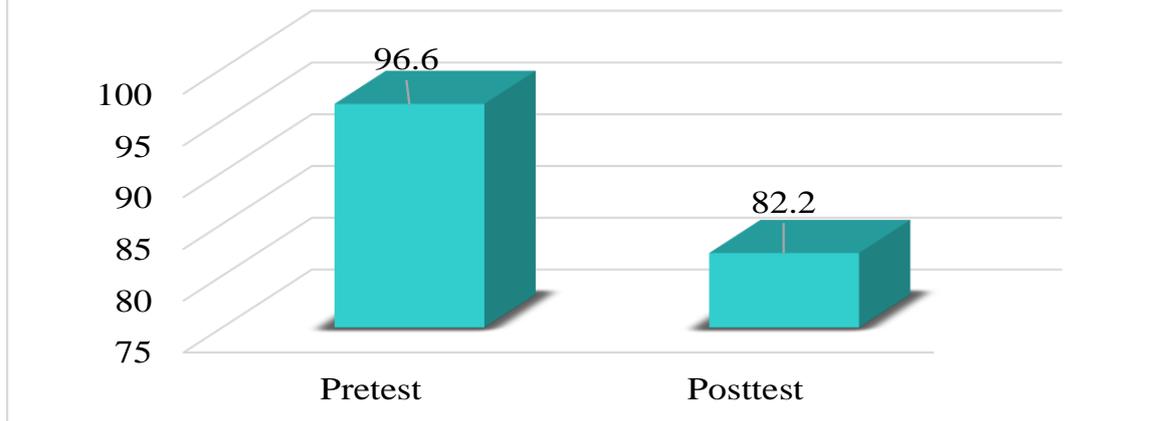
In the Pranayama group, in pretest, 80% nurses had mild symptoms suggestive of stress score (16-29) and 20% had no symptoms suggestive of stress (score <16). In posttest, 80% of the staff nurses had no symptoms suggestive of stress (score <16) and 20% of them had mild symptoms suggestive of stress (score 16-29). This indicates that there is remarkable improvement in the symptoms suggestive of stress due to Pranayama.

**Paired t-test for the effect of Pranayama on Occupational Stress based on Expanded Nurses Stress Scale among the staff nurses in selected hospitals in an urban area**

	Mean	SD	T	df	p-value
Pretest	96.6	18.6	5.5	4	0.003
Posttest	82.2	15.0			

The researcher applied paired t-test for the effect of Pranayama on Occupational Stress among the staff nurses in selected hospitals in an urban area. The average Occupational Stress score in the pretest was 96.6 which reduced to 82.2 in the posttest. The t-value for this test was 5.5 with 4 degrees of freedom. The corresponding p-value was small (less than 0.05), and the null hypothesis is rejected. Average Occupational Stress in the posttest was significantly lower than that in the pretest. It is evident that Pranayama is significantly effective in reducing Occupational Stress among staff nurses.

**Average occupational stress score among staff nurses in selected hospitals in an urban area in Pranayam group in pretest and posttest**

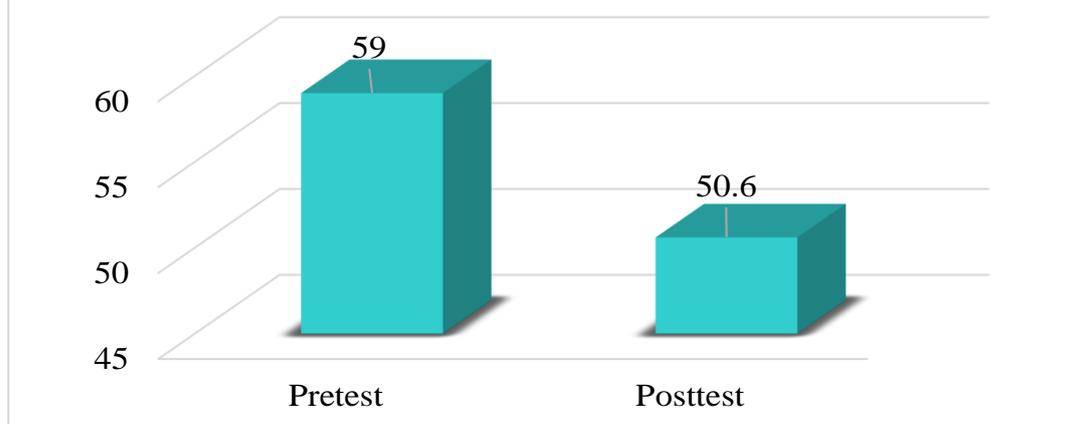


**Paired t-test for the effect of Pranayama on Occupational Stress based on TWAS-16 Part A Scale among the nurses in selected hospitals in an urban area**

	Mean	SD	T	df	p-value
Pretest	59	2.5	9.6	4	0.000
Posttest	50.6	2.6			

The researcher applied paired t-test for the effect of Pranayama on Occupational Stress among the staff nurses in selected hospitals in an urban area. The average Occupational Stress score in the pretest was 59 which reduced to 50.6 in the posttest. The t-value for this test was 9.6 with 4 degrees of freedom. The corresponding p-value was small (less than 0.05), and the null hypothesis is rejected. Average Occupational Stress in the posttest was significantly lower than that in the pretest. It is evident that Pranayama is significantly effective in reducing Occupational Stress among staff nurses.

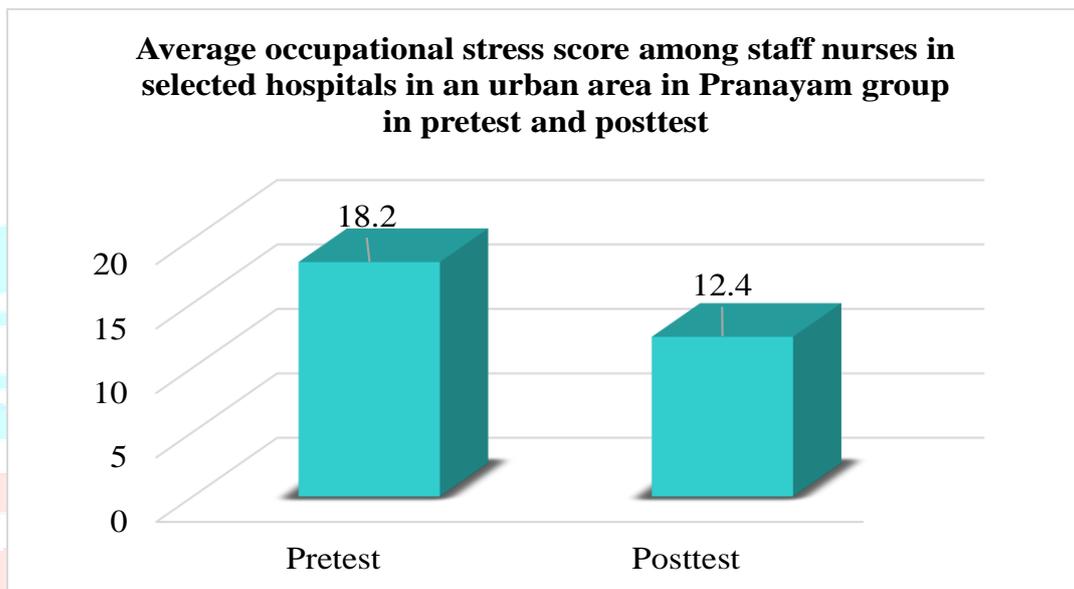
**Average occupational stress score among staff nurses in selected hospitals in an urban area in Pranayam group in pretest and posttest**



**Paired t-test for the effect of Pranayama based on TWAS-16 Part B Scale among the nurses in selected hospitals in an urban area**

	Mean	SD	T	df	p-value
Pretest	18.2	1.1	2.5	4	0.034
Posttest	12.4	5.9			

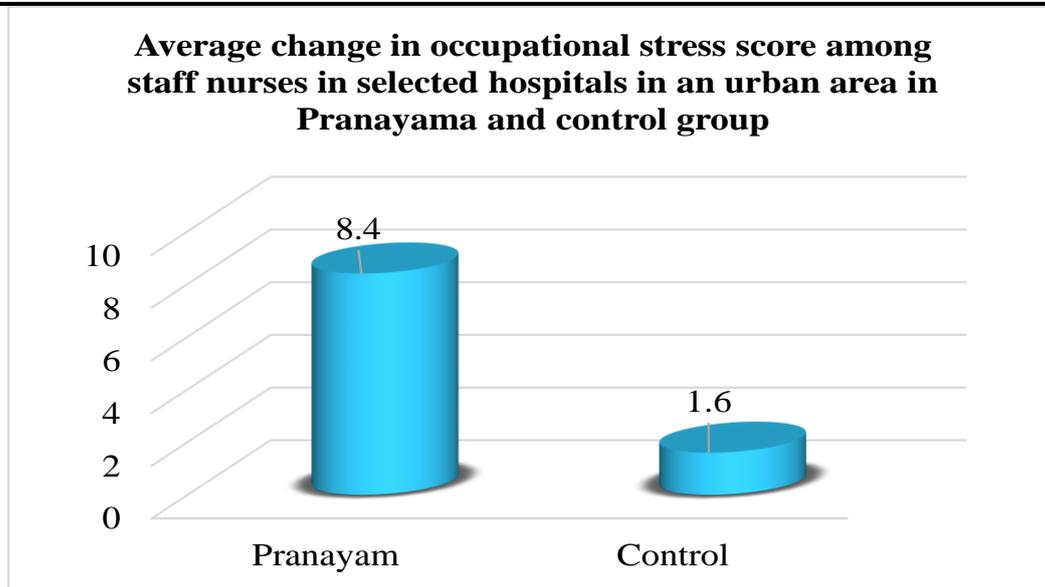
The researcher applied paired t-test for the effect of Pranayama on symptoms suggestive of stress among the staff nurses in selected hospitals in an urban area. The average symptoms suggestive of stress score in the pretest were 18.2 which reduced to 12.4 in the posttest. The t-value for this test was 2.5 with 4 degrees of freedom. The corresponding p-value was small (less than 0.05), and the null hypothesis is rejected. Average symptoms suggestive of stress score in the posttest were significantly lower than that in the pretest. It is evident that Pranayama is significantly effective in reducing symptoms suggestive of stress among staff nurses.



**Two sample t-test for the comparison of change in stress score among staff nurses in Pranayama group and control group.**

	Mean	SD	T	df	p-value
Pranayama	8.4	1.9	4.6	8	0.001
Control	1.6	2.7			

The researcher applied two sample t-test for the comparison of change in stress score among staff nurses in Pranayama and control group. The average change in Occupational Stress score in the Pranayama group was 8.4 which was 1.6 in control group. The t-value for this test was 4.6 with 8 degrees of freedom. The corresponding p-value was small (less than 0.05), and the null hypothesis is rejected. Average change in Occupational Stress in the Pranayama group was significantly higher than that in the control group. It is evident that Pranayama is significantly effective in reducing Occupational Stress among staff nurses.



## Discussion

The aim of present study was to assess the effectiveness of Pranayama on Occupational Stress of nurses in selected hospitals of an urban area. To achieve the desired goal researcher constructed a tool which consisted of 9 demographic variables and also selected two standardize tools. Reliability is done by test-retest method. Tool was further validated by 15 experts in the field of Clinical Research and Educational Research for validity. Further the researcher conducted a Pilot Study on 20/4/2023 to 05/06/2023 for a period of 42 days on 10 samples. Data was collected from selected hospitals. Participants were selected based on the sampling criteria to check the feasibility of the study.

In present study 100% of the nurses were female, 60% were GNM, and 100% had Nursing and 100% had joint families. The majority of the nurses had 11–15 years of experience, 20% had 16–20 years, and 40% and above 26 yr were 20%. They had an income Rs. 40,000, were 20% and income 50,000 were 80%. Worked in ICU, and 60% worked in OPD 20% and 20% in Operation Theater. The majority of the nurses had hypertension. In the control group, 80% of the nurses aged 41–50 were male, 20% were female, 60% were nuclear, 20% were joint, 20% were experienced, and 20% had incomes above Rs. 70,000.

Occupational Stress of nurses based on Expanded Nursing Stress Scale. In the Pranayama group, 80% of the nurses had mild stress and 20% had moderate stress. In the control group, 80% of mild stress, and 20% of them had moderate stress.

Occupational Stress of Nurses based on TAWS-16 PART A. In Pranayama group, 60% of them had mild stress and 40% of them had moderate stress. In control group, 20% of them had mild stress and 80% of them had moderate stress.

Occupational Stress of Nurses based on TAWS-16 PART B. In both groups, all the staff nurses had mild symptoms suggestive of work-stress

Effect of Pranayama on Occupational Stress of nurses based on Expanded Nurses Stress, In the Pranayama group, in the pre-test, 80% of the nurses had mild stress (score 57-114) and 20% of them had moderate stress (score 115-171). In the post-test, all the nurses had mild Occupational Stress. This indicates that there is a remarkable improvement in the Occupational Stress score due to Pranayama.

Effect of Pranayama on Occupational Stress of the nurses based on TAWS-16 PART A In the Pranayama group, in pretest, 60% of the staff nurses had mild stress (score 47-59) and 40% of them had moderate stress (score 60-73). In posttest, all the staff nurses had mild Occupational Stress (score 47-59).

Effect of Pranayama on Occupational Stress of the nurses based on TAWS-16 PART B In the Pranayama group, in pretest, 80% nurses had mild symptoms suggestive of stress score (16-29) and 20% had no symptoms suggestive of stress (score <16). In posttest, 80% of the staff nurses had no symptoms suggestive of stress (score <16) and 20% of them had mild symptoms suggestive of stress (score 16-29).

Finding from This study indicates that there is remarkable improvement in the Occupational Stress score due to Pranayama. Findings from another study also support, Shalini Singh, et al. (2020) study investigated that the Pranayama helped reduce Pranayama reduces stress in college students (15) Jaimika Patel et al. (2019) Pranayama reduces stress in older persons from high to moderate. (16) Anand A. et al. (2018) found that Pranayama improved mental and physical wellness in healthy university students. (17) Scores related to Occupational Stress were significantly reduced after practicing Pranayama in the current study.

### Conclusion

Occupational Stress was different in study group and control group. This study explores the Occupational Stress of nurses. Pranayama is significantly effective to reduced level of Occupational Stress of nurses in selected hospitals of an urban area. Analysis of data showed that there was significant difference between pretest and posttest Occupational Stress score.

### Limitations

The study was limited to women's hospital labor colony, Latur. The study was limited to the nurses working in women's hospital. Data collection period was limited.

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