

# "Effect Of Yoga On Stress Among Nurses At Multi-Speciality Hospital, Uae"

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## Abstract

**Introduction:** The amount and kind of stress that an individual experience might differ substantially depending on their unique circumstances. COVID-19 added additional strain on the nurses. In the health care system, nurses play a crucial role. In order to safeguard this workforce and provide better patient care, they need to release their tension. Yoga is a fun and energetic method that can help nurses unwind. The purpose of this research is to find out whether yoga helps alleviate stress among nurses.

**Methods:** In order to conduct this investigation, a quantitative, genuine experimental design was utilized. For three months, seventy nurses from multispeciality Government Hospital who volunteered to take part practiced yoga for thirty minutes every day. Prior to and during the intervention, data was collected using an online Impact Event Scale

**Results:** The experimental group of nurses experienced a lower mean post-intervention stress level on psychosocial status compared to the control group following the yoga intervention. ( $r=-0.252$ ) and a t-value of  $-9.412$  (based on 68 degrees of freedom at the 5% significant level). A link between the age group of nurses and the amount of stress on psychosocial measures after yoga is demonstrated by a chi-square value of 9.275.

**Conclusions:** Yoga was very effective in terms of reducing the nurses stress level and it can be safely used in the clinical setting

**Keywords:** Nurse, stress and yoga

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## I. Introduction

The globe has been hit hard by the 2019 coronavirus disease pandemic (COVID-19). Many nations and areas have implemented lockdowns and other preventative measures to control the spread of the epidemic and ensure that people stay home from work. Due to unanticipated dangers, nurses, who play a crucial role in the 2019 coronavirus disease (COVID-19) epidemic, are subject to a variety of psychosocial pressures. System overload is possible due to stressors such as inadequate testing, restricted treatment options, inadequate personal protective equipment (PPE), and long workloads. The emotional toll of seeing patients' suffering and deaths, especially for nurses who deal directly with coronavirus patients, can lead to compassion fatigue and PTSD symptoms. Therefore, there is an immediate need for mental health interventions to help nurses cope with the psychological fallout as soon as possible.

One of the most significant risks to workers' health on the job is stress. The alarming prevalence of moderate to severe stress has been shown in an increasing number of literatures. Perceived stress negatively impacts one's personal, professional, and social life, as demonstrated by the study. Nursing personnel that are exposed to continuous occupational stress may have immune system dysfunction. Both directly, through increased absenteeism and health care costs for employees, and indirectly, through a decline in treatment quality and an increase in patient health care costs, stress increases the financial burden. Nurses who are able to deal with stress through methods such as self-reflection, self-care, and resilience are better able to care for their patients. Gaining good coping mechanisms requires a shift in perspective and action in response to stressful situations. When nurses are under pressure, they often resort to unhealthy coping mechanisms, such as smoking, eating too much, or abusing narcotics.

Yoga strengthens and stretches the body and mind by reducing tension and anxiety. According to Manoj Sharma's systematic review, yoga shows promise as a stress-reduction method because most of the research he looked at showed improvements in stress-related psychological and physiological outcomes<sup>1</sup>.

More patients in the yoga groups showed a drop-in cortisol levels compared to the drug-only group, according to a study on the antidepressant effects of yoga by J. Thirthalli et.al. An antidepressant effect was observed in the yoga-only group, where a decrease in cortisol levels was associated with a decrease in HDRS

scores. examples are the depressive effects of yoga. In addition to its antidepressant benefits, yoga significantly and directly affected cortisol response<sup>2</sup>.

In 2020, Howard LeWine was a An elevated cortisol level at baseline may be an indication of significant chronic stress. Overactive sympathetic nervous system or fight-or-flight response is indicated by cortisol, which becomes less varied throughout the day in individuals who are persistently stressed. Naturally present in the body, brain derived neurotrophic factor (BDNF) controls neuroplasticity and encourages brain development; it is thus another biomarker. Low BDNF levels have been identified in patients suffering from anxiety, depression, or Alzheimer's disease<sup>3</sup>.

A large body of recent research suggests that yoga may help with a variety of issues, including better social bonds, less stress, and better sleep. Consistent yoga practice has several positive effects on the mind, including: As a means of relaxation, yoga typically incorporates mindful breathing and teaches a method called deep belly breathing. Research has shown that this breathing technique can reduce blood levels of the stress hormone. So, yoga helps nurses relax and reduce stress, which in turn allows them to think more clearly. Provide mental relief: Reducing mental "sound" and gaining control over what's really troubling you can be as simple as focusing on your breathing and the movements of your body. Make you more in tune with your body: Being more aware of your physical self can sometimes lead you to experiences you would have missed otherwise. Principles of mindfulness: Doubts might be future-oriented or rooted in the past. The practice of yoga teaches us to tune out all distractions and inhabit the present moment.

Nevertheless, no definitive data was found regarding the impact of organized yoga on stress levels or professional quality of life among UAE nursing professionals. Furthermore, both the individual and the context have a significant impact on the degree to which stress is felt. There is sufficient evidence to support the safety of yoga, but there is insufficient research to definitively say if it can lower stress among nursing staff. This calls for the conducting of this randomized controlled experiment at multispeciality government hospital to investigate potential therapeutic strategies.

## **II. Review Of Literature:**

The healthcare industry as a whole, ranks nursing as one of the most demanding occupations. Somewhere between nine percent and sixty-eight percent of nurse's experience stress on the job <sup>4</sup>.

People in different nations and with different medical backgrounds experience different levels of stress. Nursing managers struggle with higher rates of absenteeism, turnover, medical mistakes, and poor job performance as a result of the stressful work environment. This has a negative impact on most healthcare organizations. Both occupational and non-occupational variables were identified as contributors to nurses' reported mental health issues<sup>5</sup>.

Yoga, a well-known kind of mind-body exercise, integrates a person's physical, mental, and spiritual selves to improve health in many ways, especially those connected to stress. It enhances metabolic and autonomic integrity while promoting physical and mental health. As a result, the hypophyseal-pituitary adrenal axis becomes more stable, and oxidative stress in the body is decreased. Restoring self-compassion and reducing anxiety and tension are two benefits of yoga's parasympathetic nervous system-initiating relaxation response. Improved coping abilities, reduced emotional weariness, and less depersonalization are some of the professional quality outcomes. Consistent yoga practice also improved health care delivery among nursing staff. As a natural remedy and preventative measure, yoga is simple, inexpensive, and risk-free.

In their comprehensive analysis of yoga programs aimed at assisting medical students and practitioners, Sylwia D. Ciezar-Andersen, K. Alix Hayden, and Kathryn M. King-Shier (2021) wrote in *Complementary Therapies in Medicine*. Epub Ahead of Print, MEDLINE(R), PsycINFO, Embase, In-Process & Other Non-Indexed Citations and Daily were among the databases examined in this study through the OVID interface. Many databases hosted by EbscoHost were combed through, including: CINAHL Plus, SPORTDiscus, Alt HealthWatch, Education Research Complete, SocINDEX, ERIC, and Academic Search Complete. Additionally, Scopus was searched. After removing duplicates, 3,197 records remained from the original 4,973 that were returned by the search. After reviewing the abstracts and titles, a total of 82 full-text articles were retrieved and reviewed according to the inclusion and exclusion criteria. In total, twenty-five papers met the inclusion criteria for this study. Reductions in stress, anxiety, sadness, and musculoskeletal pain were the most commonly reported outcomes of yoga therapies in this group<sup>6</sup>.

In a 2019 study by Cocchiara et al. In order to help healthcare professionals cope with stress and prevent burnout, this systematic review aimed to summarize and assess what is already known about yoga's potential benefits in this area. We looked at eleven articles. Clinical experiments evaluating yoga's efficacy were seven in number, and they measured stress, sleep, and quality of life. Stress levels among Chinese nurses were shown to significantly decrease after a six-month yoga program ( $\chi^2 = 16.449$ ;  $p < 0.001$ ). Medical students' self-regulation and self-compassion scores improved after an 11-week yoga program (from 3.49 to

3.58;  $p = 0.04$ ) and 2.88 to 3.25;  $p = 0.04$ , respectively. Healthcare providers' perceptions of the positive effects of yoga on patients' emotional, mental, and physical well-being were highlighted in four observational studies<sup>7</sup>.

### III. Aims And Objectives

#### Aim

The aim of this study is to examine the effectiveness of Yoga on stress among nurses at multispeciality government hospital.

#### Objectives

1. To assess the pre and post intervention psycho social status on stress among experimental group of nurses who will have yoga.
2. To assess the pre and post intervention on stress among control group
3. To evaluate the effectiveness of yoga on stress among nurses.
4. To find out the association between yoga and selected demographic variables

### IV. Methodology:

**Research approach:** Quantitative research

**Study design :** A True experimental design.

**Study setting:** Multispeciality Government hospital, Dubai

#### Population:

Target population – All nurses who were working at Multispeciality Government hospital, Dubai

Accessible population – All nurses whoever willing to participate

#### Sample size calculation:

Sample Size: X-Sectional, Cohort, & Randomized Clinical Trials			
Two-sided significance level(1-alpha):			95
Power(1-beta, % chance of detecting):			80
Ratio of sample size, Unexposed/Exposed:			1
Percent of Unexposed with Outcome:			5
Percent of Exposed with Outcome:			32
Odds Ratio:			9
Risk/Prevalence Ratio:			6.4
Risk/Prevalence difference:			27
	<b>Kelsey</b>	<b>Fleiss</b>	<b>Fleiss with CC</b>
Sample Size - Exposed	33	32	39
Sample Size-Nonexposed	33	32	39
Total sample size:	66	64	78
References			
Kelsey et al., Methods in Observational Epidemiology 2nd Edition, Table 12-15			
Fleiss, Statistical Methods for Rates and Proportions, formulas 3.18 &3.19			
CC = continuity correction			
Results are rounded up to the nearest integer.			
REF: Korkmaz A, Bernhardsen GP, Cirit B, Koprucu Suzer G, Kayan H, Biçmen H, Tahra M, Suner A, Lehto SM, Sag D, Saatcioglu F. Sudarshan Kriya Yoga Breathing and a Meditation Program for Burnout Among Physicians: A Randomized Clinical Trial. JAMA Netw Open. 2024 Jan 2;7(1): e2353978. doi: 10.1001/jamanetworkopen.2023.53978. PMID: 38294813; PMCID: PMC10831575.			

#### Selection of study samples:

The questionnaire was created with consent in the Microsoft office forms and the link was send to all the nurses. The nurses whomever given consent was answered the questions. From that participants were collected and randomly assigned to the control and experimental group.

#### Criteria for sample selection:

Inclusion criteria:

- Full time nurses working at multispeciality Government hospital, DH
- Whoever willing to participate

Exclusion criteria:

- Temporary contract nurses
- Whoever was not willing to participate
- Whoever was on leave during the study

**Tool:**

The tool used for data collection consists of 2 parts.

Part 1: Demographic data

Part -2: Impact Event Scale - Revised.

**Intervention:**

Yoga was taught to the experimental group participants and continued for another 3 months, daily 30 minutes

**Pilot study:**

Pilot experiment was done and found that it was feasible to carry out the same intervention with no side effects

**Data collection:**

The questionnaire was created in the Microsoft office and the link was send to all the nurses. The consent, aim and purpose of the study were mentioned in the top of the question sheet. The nurses whomever willing to participate were answered the questions. From that the participants were collected and randomly assigned to the control and experimental group. The data was collected from march – July 2023. Study participants were reassessed by using the same scale via online.

**Data Analysis:**

Descriptive and inferential statistics were used to analyse the data.

Part 1: Demographic data were analysed by using frequency and percentage distribution

Part 2: Stress was analysed by using mean, mean difference, standard deviation and correlation coefficient.

**Ethical consideration:**

With the green light from the nursing department and the Dubai Scientific Research Ethics Committee (DSREC), the study could go on. Prior to beginning data collection, all participants were asked to provide their consent using an online form. Any subjects who wanted further explanation could get it by calling the numbers provided on the consent form. We assured the attendees that we would keep the subject matter confidential.

**V. Results:**

**The data were organized, analyzed and presented in the following ways:**

**Section I:**

The percentage and frequency Sampling strategies for both the experimental and control groups according on demographic criteria.

**Section II:**

Comparison of mean pre-intervention Vs post intervention of yoga on stress among nurses in the experimental group.

Comparison of mean pre-intervention Vs post intervention of yoga on stress among nurses in the control group.

Comparison of mean post intervention of yoga on stress among nurses in the experimental and control groups.

**Section III:**

Association between post-intervention stress level and selected demographic variable of nurses.

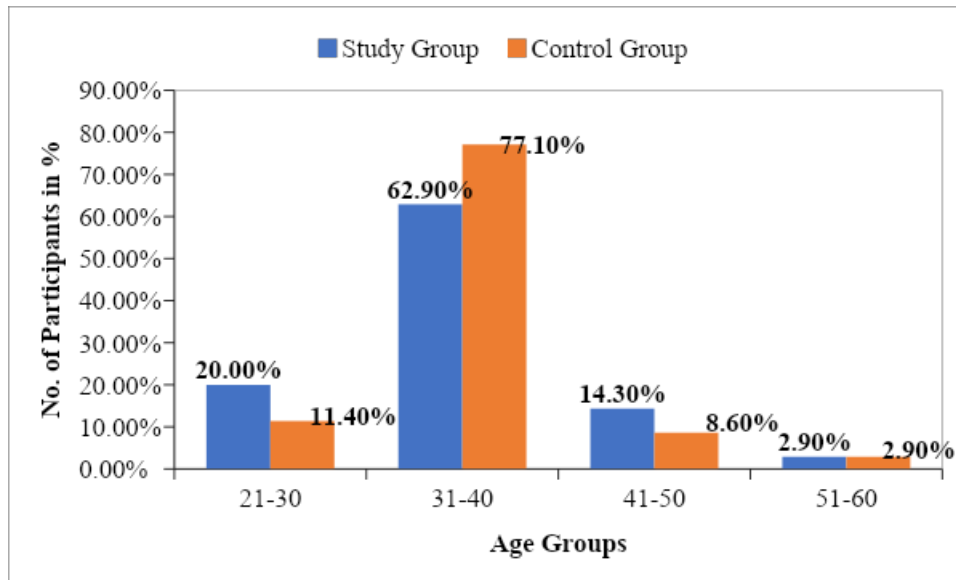
**Section I**

**Table 1. Frequency and percentage distribution of samples based on Age Groups in the experimental and control group**

Age Groups	Study Group		Control Group	
	N	%	N	%
21-30	7	20.00%	4	11.40%
31-40	22	62.90%	27	77.10%

41-50	5	14.30%	3	8.60%
51-60	1	2.90%	1	2.90%
Total	35	100.00%	35	100.00%

The table 1 shows the age group of nurses. Out of 70 nurses, the majority were between the age group of 31- 40 years. That is 22 (62.9%) were in study group and 27 (77.1%) were in control group.



**Figure 1. Percentage distribution of samples based on age Groups**

**Table 2. Frequency and percentage distribution of samples based on the gender in the experimental and control group**

Gender	Study Group		Control Group	
	N	%	N	%
Male	2	5.70%	8	22.90%
Female	33	94.30%	27	77.10%
Total	35	100.00%	35	100.00%

Table 2 shows the gender of participants. Out of 70 nurses 60 were females and 10 were males. major participants were females.

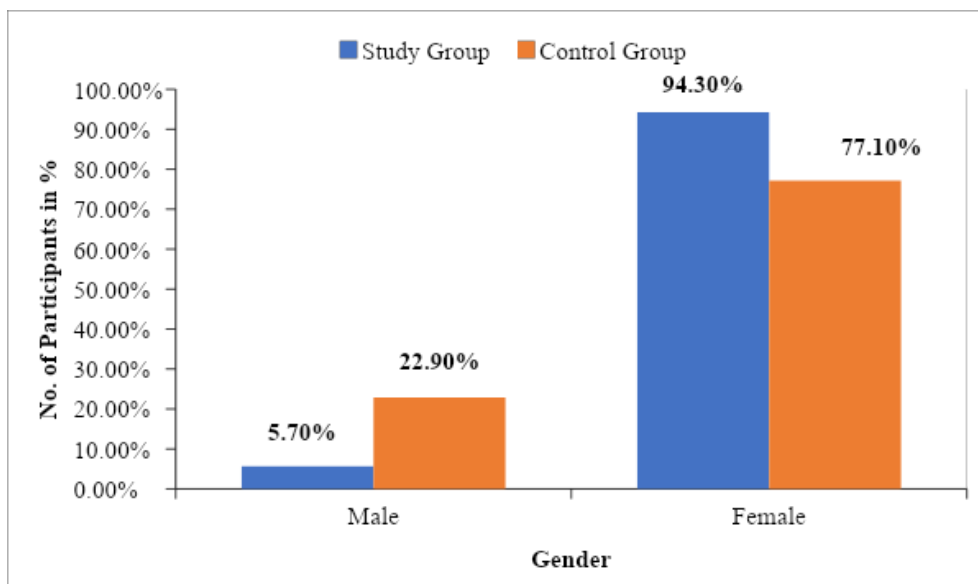


Figure 2 Frequency distribution of samples based on gender

Table 3: Frequency and percentage Distribution of samples based on the religion in the experimental and control groups

Religions	Study Group		Control Group	
	N	%	N	%
Muslim	3	8.60%	10	28.60%
Christian	23	65.70%	18	51.40%
Hindus	9	25.70%	7	20.00%
Total	35	100.00%	35	100.00%

Table 3 shows the religions of study participants. Out of 70 nurses 9 were Hindus, 41 were Christian and 13 were Muslims. Majority of the nurses in experimental group 23(65.70 %) and control group 18 (51.40%) were Christians.

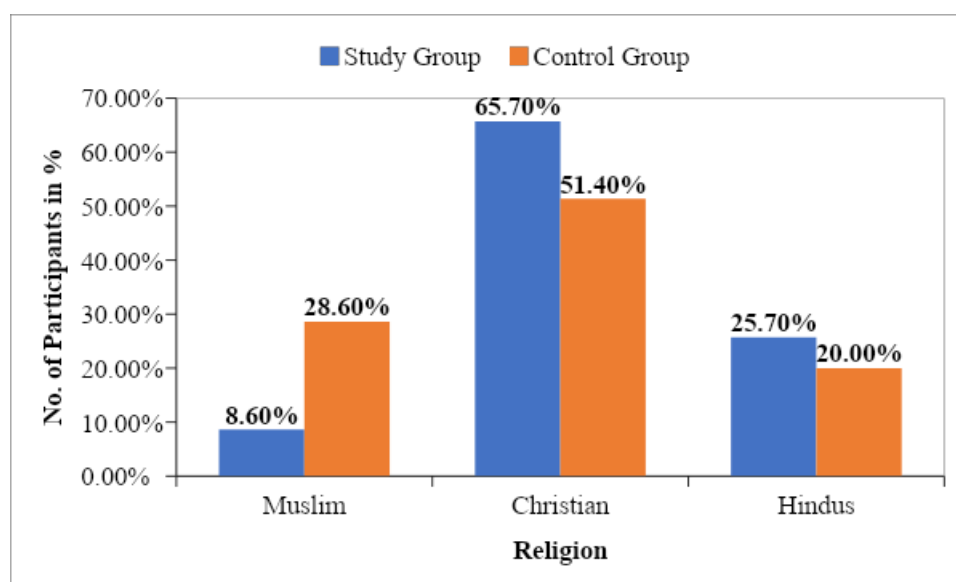


Figure 3. Frequency distribution of samples based on the religion

## Section II

Table 4 : The comparison between the level of Stress among nurses in the study group before and after Yoga.

Stress in the study group of Yoga	Mean	N	SD	r	MD	t	df	p
Before	68.63	35	8.103	-0.185	22.686	9.992	34	0.000*
After	45.94	35	9.318					

\*statistically significant (p<0.05)

To find out if the study group of nurses' mean stress levels were different before and after Yoga, the following is the null hypothesis: When comparing the research group of nurses' pre- and post-Yoga assessments, there will be no discernible difference in the emphasis placed on psychosocial status.

According to Table 4, where the p-value is less than 0.05, there was a statistically significant decrease in the mean test score from 68.63 to 45.94 (MD-22.686, t = 9.992, df = 34 at a threshold of 5% significance). Consequently, there was a statistically significant difference between the pre- and post-Yoga stress levels of the research group's nurses. There was a statistically significant difference between the two groups (control and experimental). We can thank yoga's effects. Too little data exists to rule out the possibility of a null hypothesis. Therefore, the researcher accepts the study hypothesis without further investigation and rules out the possibility of a null result.

Prior to and during yoga, there was a negative correlation of -0.185 between the stress levels and psychosocial state of the study's nurses.

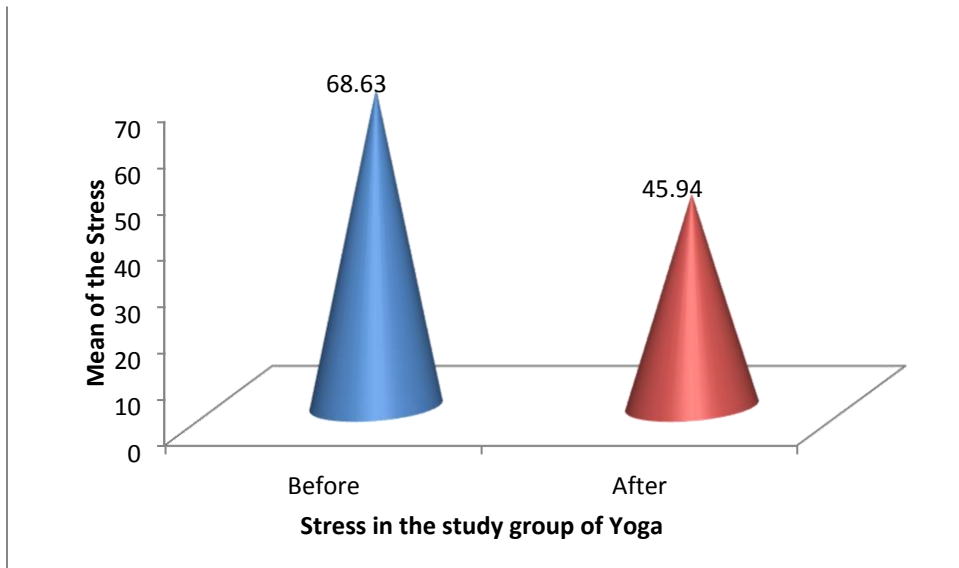


Figure 4. Cone diagram of the comparison between the level of Stress on psychosocial status before and after yoga

Table 5. The comparison between the level of Stress among nurses in the control group.

Stress in the control group of Yoga	Mean	N	SD	r	MD	t	df	p
Before	56.83	35	7.189	-0.252	-6.4	-3.727	34	0.001
After	63.23	35	5.589					

\*statistically significant ( $p < 0.05$ )

The following is the null hypothesis that will be tested in order to determine whether there is a difference between the control group's and the experimental group's mean levels of stress on psychosocial status: - A Stress on psychosocial state will not differ significantly among control group nurses.

The mean test score increased considerably from 56.83 to 63.23 ( $t = -3.727$ ,  $df = 34$  at a level of 5% significance), as shown in Table 5, where the p-value of the test is less than 0.05. Nursing staff in the control group reported significantly lower levels of stress related to psychosocial status both before and after practicing yoga. There is insufficient evidence to reject the null hypothesis. So, the researcher takes the research hypothesis at face value and rejects the null hypothesis".

There was a negative connection ( $r = -0.252$ ) between the control group's stress levels and their psychosocial state both before and after yoga.

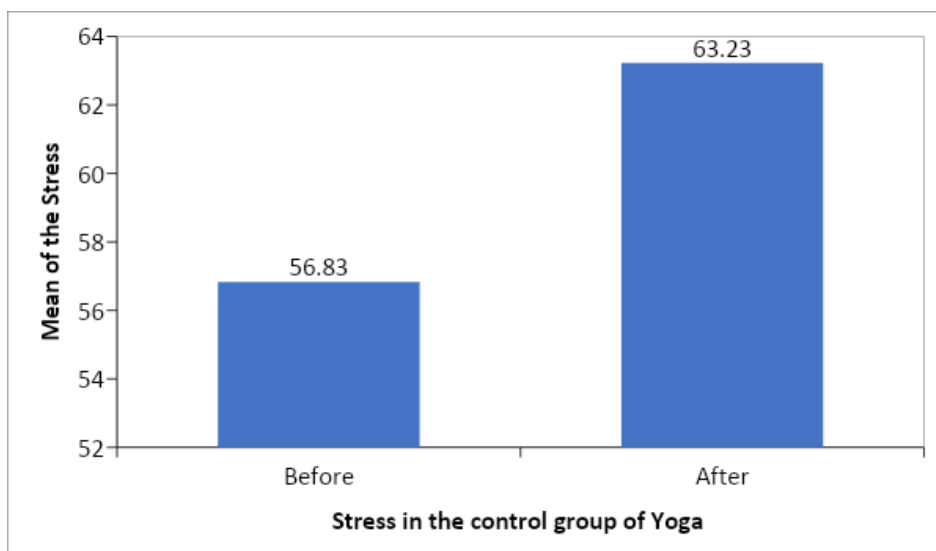
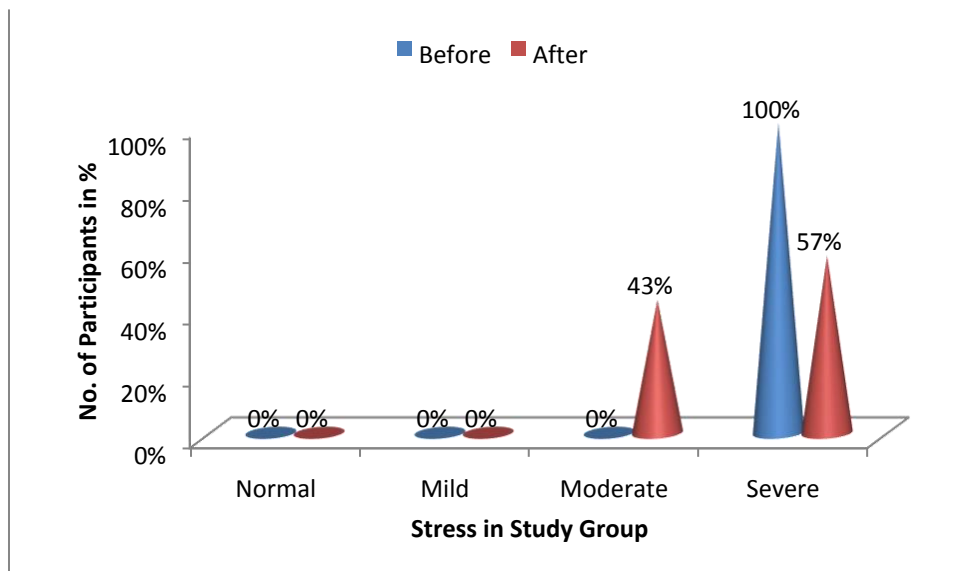


Figure 5. The bar diagram of the comparison between the level of Stress among nurses in the control group.

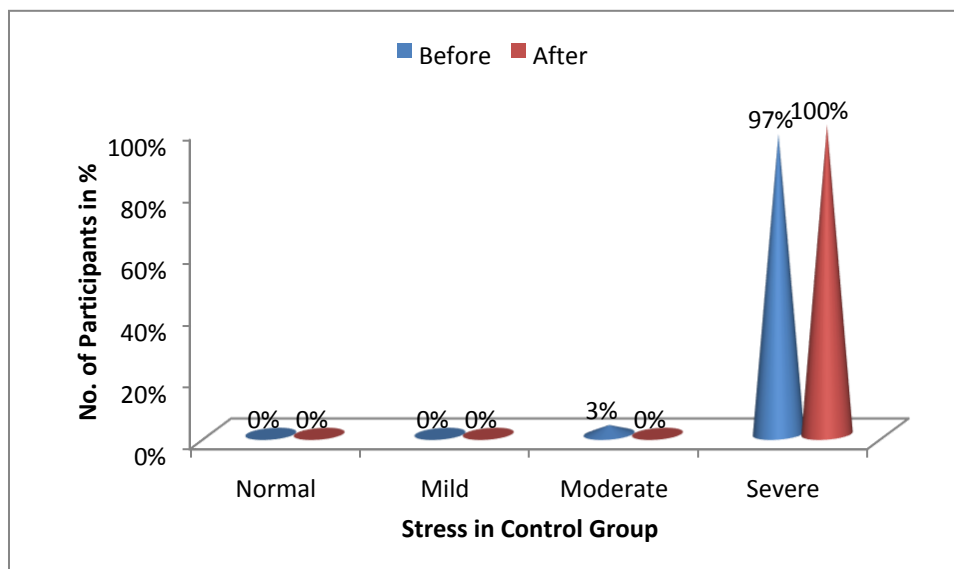
**Table 6. Frequency and percentage distribution of samples based on the stress level in the experimental and control groups.**

Stress	Experimental Group				Control Group			
	Before		After		Before		After	
	F	%	F	%	F	%	F	%
Normal	0	0%	0	0%	0	0%	0	0%
Mild	0	0%	0	0%	0	0%	0	0%
Moderate	0	0%	15	43%	1	3%	0	0%
Severe	35	100%	20	57%	34	97%	35	100%

Table 6 shows the level of stress among the participants. The percentage of severe stress in the study group were decreased from 100% to 57% after the yoga. Whereas in control group, the level of stress has been increased from 97% to 100%.



**Figure 6. shows the effectiveness of stress level before and after the yoga intervention with in the experimental group.**



**Figure 7. shows the effectiveness of stress level before and after the yoga intervention with in the control group.**

**Table 7. The comparison between the level of Stress on psychosocial status among nurses in the experimental and control group after yoga intervention.**

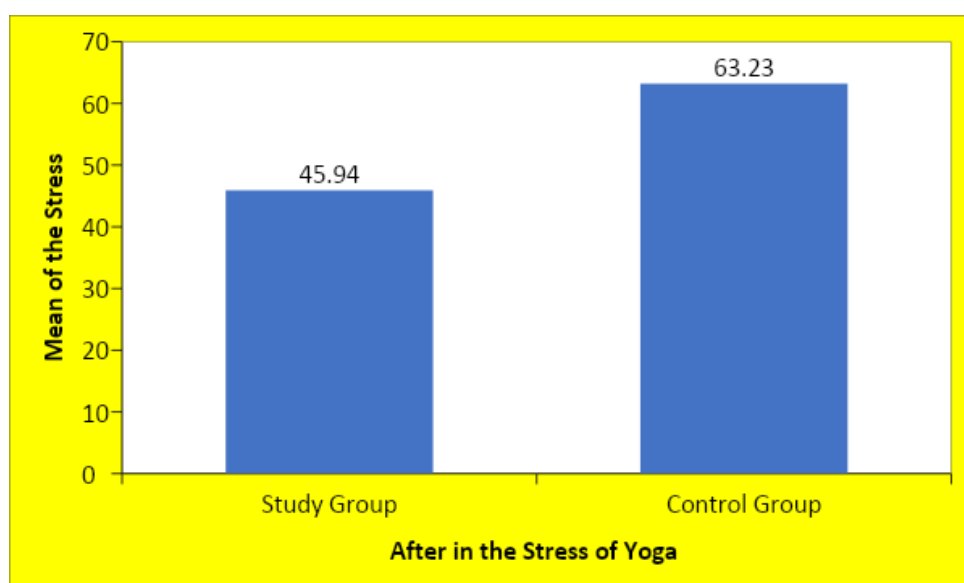


Groups	N	Mean	SD	MD	t	df	p
Study Group	35	45.94	9.318	-17.286	-9.412	68	0.000*
Control Group	35	63.23	5.589				

To determine whether there is a difference in the mean degree of stress on psychosocial status among the control group and experimental group of nurses, the following is the statement of the null hypothesis: Stress on psychosocial state will not differ significantly between the control and experimental groups of nurses.

With a p-value of 0.000, which is less than 0.05, as shown in Table 7, the experimental group's mean test score was substantially lower (45.94) than the control group's (63.23) following yoga ( $t = -9.412$ ,  $df = 68$  at a 5% significance level). Thus, it may be inferred that the control group and experimental group of nurses experience significantly different levels of stress following Yoga. There is insufficient evidence to reject the null hypothesis. So, the researcher takes the research hypothesis at face value and rejects the null hypothesis.

There was a negative connection ( $r=-0.252$ ) between the control group's stress levels and their psychosocial state both before and after yoga.



**Figure 8.** The bar diagram of the comparison between the level of Stress on psychosocial status among nurses in the experimental group and control group after yoga.

### Section III

**Table 8 shows the association between the level of stress after yoga in the selected demographic variables.**

Post Test Stress Score		Normal F(%)	Mild F(%)	Moderate F(%)	Severe F(%)	df	Chi-square
Age Groups	21-30	0(0)	0(0)	0(0)	7(20)	3	9.275*
	31-40	0(0)	0(0)	11(31.4)	11(31.4)		
	41-50	0(0)	0(0)	4(11.4)	1(2.9)		
	51-60	0(0)	0(0)	0(0)	1(2.9)		
Sex	Male	0(0)	0(0)	1(2.9)	1(2.9)	1	0.044
	Female	0(0)	0(0)	14(40)	19(54.3)		
Religion	Muslim	0(0)	0(0)	2(5.7)	1(2.9)	2	0.834
	Christian	0(0)	0(0)	9(25.7)	14(40)		
	Hindus	0(0)	0(0)	4(11.4)	5(14.3)		

Identify the factors that contribute to nurses' elevated stress levels following an intervention and any correlations with certain demographic variables. "The level of Stress on the psycho-social parameters after yoga with the selected demographic variables is not significantly associated with any of the other variables," reads the null hypothesis (H0).

The computed Chi-square value of 9.275 was higher than the table value, as shown in table 8, when using  $df = 3$  in the age group. Since the stress levels of nurses of different ages are significantly related to the psychosocial factors after yoga, we can reject the null hypothesis and accept the research hypothesis.

The computed numbers, however, are lower than the table value when it comes to sex and religion. Since there is no correlation between yoga and post-practice stress levels in psychosocial variables (such as sexual orientation or religious affiliation), we can accept the null hypothesis

## **VI. Discussion:**

**The study findings were discussed based on the objectives and hypothesis**

**The mean post intervention stress score among nurses in the experimental group was less which is 45.94 than the post intervention scores 63.23 in the control group**

Female nurses at a tertiary care hospital reported a 36.68% improvement in sleep quality and a 27.01% decrease in felt stress after participating in the yoga intervention, according to research by Parajuli, Pradhan, and Jat (2021). Four weeks were comprised by the study.

Mandal, Suprakash et al. (2021) study on effects of yoga on stress and professional quality of life discovered that a 12-week program reduce the PSS score by 15.4 (95% CI 12.6-18.2, SD 5.8) in the experimental group and by 20.7 (95% CI 19.7-21.7, SD 2.8) in the control group (p-value < 0.0001).

Marie Schone's (2021) article on Yoga and Nurse Burnout. With a focus on yoga's benefits, we searched the literature for therapies that alleviate burnout. Totally ten articles taken into consideration. This literature evaluation yielded seven IIB studies and three IIIB studies, the studies did not provide enough information regarding the type of yoga that was practiced. However there is an evidence that healthcare workers can experience less burnout after participating in a yoga class.

There is a strong correlation between the age group of nurses and the level of stress experienced after practicing yoga. stress was more prevalent in the 31–40 age group compared to the older age groups. The following research back up our conclusion:

According to Birditt.et.al. (2021), younger people seem to be bearing the brunt of the COVID-19 epidemic. Compared to older adults, younger people report higher levels of stress, life changes, social isolation, and relationship quality issues caused by the pandemic.

According to Stefaniak et al. (2022), young individuals typically experience more stress in relation to their families, spouses, finances, and jobs. Young individuals also had the highest total daily stress levels, whereas those in their latter years reported the lowest levels of perceived stress.13.

## **VII. Conclusion:**

- 1) Out of 70 participants, 94.3% in study groups were females and in control group 77.1% were females.
- 2) Out of 70 samples, 65.7% in the study group were Christians and in control group 51.4% were Christians.
- 3) Out of 70, 62.9% were in the age group of 30 – 40 years and in control group 77.10 % were between 30 -40 years of age.
- 4) The mean post intervention stress level among nurses in the experimental group was less than before yoga intervention. (t = 9.992, df = 34 at a level of 5% significance) and the correlation r = -0.185
- 5) The mean post intervention stress level among nurses in the control group was higher than before yoga intervention. (t = -3.727, df = 34 at a level of 5% significance) and the correlation r = -0.252.
- 6) The mean post intervention stress level among nurses in the experimental group was less than control group after yoga intervention. (t = -9.412, df = 68 at a level of 5% significance) and the correlation r = -0.252.
7. Chi-square value of 9.275 was greater than the table value. There is a significant association in the level of Stress on the psycho-social parameters after yoga and age group of nurses.

## **VIII. Nursing Implication**

There is real-world relevance to the study's conclusions for nurses. Four domains—nursing practice, administration, education, and research—have addressed the present study's implications.

### **Nursing Service:**

Nurses can safely workout yoga as a routine in order to reduce their own stress

### **Nursing Education:**

Educators can conduct a session on yoga in order to protect their nurses from stress

### **Nursing Administration:**

Arrange and organize a continuing education program on yoga

### **Nursing Research:**

In order to help alleviate nurses' stress, additional studies in various situations are needed.

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