

Effectiveness of Structured Yoga Therapy on Depression and Anxiety Among Nursing Officers in Government Hospitals: A Quasi-Experimental Study

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Abstract: Background: Nursing officers face elevated risk of mild depression and mild anxiety due to occupational stressors including heavy workloads, prolonged duty hours, and emotionally demanding situations. Yoga represents a low-cost, non-pharmacologic intervention with established evidence for improving mood and reducing anxiety symptoms.

Objectives: This study aimed to (1) assess baseline levels of depression and anxiety among nursing officers attending training at the District Training Centre (DTC) Raichur; (2) evaluate the effectiveness of a structured yoga therapy program on mild depression and mild anxiety; (3) explore associations between selected demographic variables and mental health outcomes; and (4) examine the correlation between depression and anxiety levels.

Methods: This quasi-experimental, control-group, pretest–posttest design enrolled 300 nursing officers (experimental group n=150; control group n=150). The experimental group received a structured 4-week yoga therapy module comprising supervised training (4 consecutive days) followed by home-based practice (3 sessions/week, 30 minutes/session, total 12 sessions). The control group practiced 15-minute Shavasana (relaxation pose) on the same schedule. Depression and anxiety were measured using the Hamilton Depression Rating Scale (HAM-D, 17 items) and Hamilton Anxiety Rating Scale (HAM-A, 14 items) at baseline and 4 weeks post-intervention. Statistical analysis included paired and unpaired t-tests, chi-square tests, and Pearson correlation with significance set at $p < 0.05$. Ethical approval was obtained from the Institutional Ethics Committee of Raichur Institute of Medical Sciences.

Results: Mean depression scores in the experimental group decreased significantly from 6.99 (SD 4.47) to 4.86 (SD 3.68) following intervention (paired $t=9.34$, $p < 0.001$), compared with the control group reduction from 6.78 to 5.94 (paired $t=6.48$, $p < 0.001$). Between-group posttest comparison favored the yoga therapy group ($t=2.49$, $p=0.016$). Mean anxiety scores in the experimental group decreased from 16.61 (SD 6.61) to 11.73 (SD 6.17) (paired $t=3.36$, $p=0.001$), while the control group decreased modestly from 14.69 to 13.95 (paired $t=5.45$, $p < 0.001$). Between-group posttest anxiety difference was statistically significant ($t=2.14$, $p=0.006$). Socioeconomic analysis revealed that monthly income was significantly associated with pretest depression levels ($\chi^2 p < 0.001$). A small but statistically

significant positive correlation between depression and anxiety was observed in both groups ($r=0.07-0.085$, $p<0.05$). Study attrition was minimal at 4% (12 participants: 7 experimental, 5 control).

Conclusion: A structured short-term yoga therapy program produced statistically and clinically meaningful reductions in mild depression and mild anxiety among nursing officers compared with relaxation-only control. Yoga therapy can be recommended as an accessible, cost-effective adjunctive intervention for mental health promotion and psychological well-being among healthcare workers...

Keywords: yoga therapy, depression, anxiety, nursing officers, Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Raichur, India

Introduction

Nursing officers represent frontline healthcare professionals who routinely encounter significant occupational stressors, including substantial workloads, extended duty hours, and emotionally challenging patient care situations. Continuous exposure to these workplace stressors frequently results in psychological strain, which often manifests as mild depression and mild anxiety. If unaddressed, these mental health conditions compromise nursing officers' personal well-being, diminish job performance, reduce job satisfaction, and ultimately compromise the quality of patient care delivery.

Epidemiological evidence indicates that the prevalence of depression and anxiety among nurses substantially exceeds that observed in the general population, primarily attributable to occupational stressors and demanding role expectations. International systematic reviews highlight that healthcare providers, including nurses and nursing students, experience high rates of mental health disorders linked to workplace stress. Within the Indian healthcare context, workplace stress among nursing professionals contributes significantly to mental health morbidity and diminished quality of life, representing a critical public health concern that warrants targeted intervention.

Non-pharmacological interventions, particularly yoga-based programs, have emerged as cost-effective, accessible strategies for mental health promotion among healthcare workers. Yoga, an ancient Indian mind-body discipline, integrates physical postures (asanas), controlled breathing techniques (pranayama), and meditation practices to facilitate mind-body relaxation and psychological self-regulation. Mounting evidence suggests that structured yoga interventions alleviate depression symptoms through enhanced emotional regulation and optimized stress hormone responses. Additionally, yoga enhances parasympathetic nervous system activation while reducing autonomic hyperarousal, thereby promoting emotional stability and anxiety reduction.

Systematic reviews and meta-analyses confirm that yoga-based interventions effectively reduce stress, anxiety, and depressive symptoms among diverse healthcare populations, including nurses. These programs not only improve mood and emotional well-being but also enhance psychological resilience, improve coping capabilities, and promote overall mental health. However, while international research on yoga interventions is expanding, controlled evidence from Indian healthcare settings remains limited, particularly regarding efficacy in nursing populations with mild depression and mild anxiety.

This study was designed to address this evidence gap by assessing baseline mental health status among nursing officers and evaluating the effectiveness of a structured yoga therapy module in reducing depression and anxiety symptoms. We also explored associations between socio-demographic variables and mental health outcomes, as well as the relationship between depression and anxiety in this population.

OBJECTIVES

This study aimed to achieve the following objectives:

Assess baseline levels of depression among nursing officers attending in-service training at the District Training Centre, Raichur

Assess baseline levels of anxiety among nursing officers attending in-service training at the District Training Centre, Raichur

Evaluate the effectiveness of structured yoga therapy on mild depression and mild anxiety
Explore associations between selected socio-demographic variables and mental health outcomes
Examine the correlation between depression and anxiety levels

METHODOLOGY

Study Design and Setting

This investigation employed a quasi-experimental, pretest–posttest control group design. Data collection was conducted at the District Training Centre (DTC), Raichur, Karnataka, from September 2023 through February 2024.

Participants and Sampling Strategy

The accessible population comprised nursing officers attending in-service training at DTC during the study period (approximately 1,000 participants over a 6-month period). Purposive screening using validated depression and anxiety assessment tools identified eligible participants meeting study criteria. Consenting participants were randomly assigned to experimental or control groups using computer-generated random number sequences. The final enrolled sample consisted of 300 nursing officers (experimental group n=150; control group n=150). Although anticipated attrition was estimated at 10%, the observed dropout rate was substantially lower at 4% (12 total participants: 7 from experimental group, 5 from control group). Intention-to-treat analysis was performed with last-observation-carried-forward imputation employed for missing posttest data.

Inclusion and Exclusion Criteria

Inclusion criteria were:

Nursing officers employed in government hospitals and attending training at DTC Raichur during the study period

Screened positive for mild depression and/or mild anxiety according to HAM-D and HAM-A criteria

Willing to participate and available for the complete study duration with documented written informed consent

Exclusion criteria were:

Moderate to severe depression or anxiety requiring psychiatric treatment

Current use of psychiatric medications

Medical contraindications to physical activity or yoga practice

Unwillingness to participate in the study

Intervention

Experimental Group

The experimental group received a structured yoga therapy module consisting of integrated asanas (physical postures), pranayama (breathing techniques), and meditation practices. The intervention was based on a validated yoga module developed by Dr. Hemant Bhargav and adapted with appropriate permissions. The intervention was delivered by the researcher, who completed specialized training through the Worldwide Psychiatric Association–National Institute of Mental Health and Neuroscience (WPA–NIMHANS) online certification course.

The intervention comprised two phases: Phase 1 involved supervised training conducted over 4 consecutive days at DTC to ensure participants learned correct technique and optimal form. Phase 2 involved home-based practice during weeks 2–5, with participants completing 3 sessions per week for 30 minutes per session, totaling 12 practice sessions. Participants received printed instructional materials and audio-visual guides to facilitate home practice. Adherence was systematically tracked

through daily logbooks maintained by participants and weekly telephonic follow-up contacts with the researcher.

Control Group

The control group practiced Shavasana (relaxation pose/complete body relaxation) for 15 minutes per session, 3 times per week for 4 weeks. This approach provided a minimal intervention control while accounting for potential attention and placebo effects. Participants received brief supervised orientation and written instructional handouts. Compliance with the control intervention was monitored similarly through participant logs and telephonic follow-up.

Measurement Instruments

Depression Severity: The Hamilton Depression Rating Scale (HAM-D, 17-item version) was employed to measure depressive symptom severity. Scoring classifications were: 0–7 (normal), 8–20 (mild), 20–23 (moderate), ≥ 24 (severe). This clinician-administered instrument is a gold-standard measure for depression assessment in research settings.

Anxiety Severity: The Hamilton Anxiety Rating Scale (HAM-A, 14-item version) was used to assess anxiety symptom severity. Scoring classifications were: 0–17 (normal), 18–24 (mild), ≥ 25 (severe). Like the HAM-D, HAM-A is a clinician-rated instrument with established reliability and validity for clinical research.

Demographic Characteristics: A socio-demographic proforma was administered to collect information on age, gender, religion, marital status, residential area, professional qualifications, and monthly income.

Ethical Considerations

Institutional Ethics Committee approval was obtained from Raichur Institute of Medical Sciences prior to study commencement. Administrative permissions were secured from the District Training Centre. All participants provided written informed consent following comprehensive explanation of study procedures. Participant confidentiality and anonymity were maintained throughout the investigation.

Statistical Analysis

Data analysis was conducted using SPSS (Statistical Package for the Social Sciences). Descriptive statistics including frequencies, percentages, means, and standard deviations were calculated to characterize demographic variables and baseline mental health status. Paired t-tests were used to compare within-group pretest and posttest measurements. Unpaired t-tests were employed for between-group posttest comparisons. Chi-square tests assessed associations between categorical variables and mental health outcomes. Pearson correlation coefficients were calculated to examine the relationship between depression and anxiety. Statistical significance was established at $p < 0.05$ with 95% confidence intervals reported where applicable.

RESULTS

Socio-demographic Characteristics

The study enrolled a total of 300 nursing officers (150 in experimental group; 150 in control group). The sample was predominantly female, with 91.33% in the control group and 90.67% in the experimental group. Age distribution differed between groups: the control group was predominantly older (63.33% aged >31 years), while the experimental group was younger with 54.67% aged 26–30 years. The majority of participants in both groups were married, held a General Nursing and Midwifery (GNM) diploma as their professional qualification, and resided in rural areas. Monthly income ranged from <1 lac to >5 lac rupees, with the majority earning between 1–3 lac rupees. Detailed demographic distributions are presented in Table 1.

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Demographic Variables	Control f	Control %	Exp. f
Age in years	20–25 years	8 (5.33)	5 (3.33)
	26–30 years	47 (31.33)	82 (54.67)
	>31 years	95 (63.33)	63 (42.00)
Gender	Male	13 (8.67)	14 (9.33)
	Female	137 (91.33)	136 (90.67)
Marital Status	Married	135 (90.0)	133 (88.67)
	Unmarried	14 (9.33)	17 (11.33)
Professional Qualification	Diploma (GNM)	121 (80.67)	121 (80.67)
	Degree (B.Sc. N)	26 (17.33)	29 (19.33)
	Postgraduate (M.Sc. N)	3 (2.0)	0 (0)

Table 1. Socio-demographic Characteristics of Study Participants (n=300)

Depression Outcomes

In the control group, pretest assessment revealed that 52% of participants exhibited normal depression scores while 48% demonstrated mild depression. Following the 4-week Shavasana intervention, the distribution shifted to 64% normal and 36% mild depression, indicating modest improvement. No participants in either group exhibited severe depression at any time point.

In the experimental group, baseline assessment indicated 51.33% with normal and 48.67% with mild depression levels. Following 4 weeks of structured yoga therapy, the distribution improved substantially to 75.33% normal and 24.67% mild depression, demonstrating notably greater improvement compared to the control group.

Quantitative analysis revealed statistically significant within-group improvements in both groups. Control group mean depression scores decreased significantly from baseline to posttest (6.78 to 5.94, paired $t=6.48$, $p<0.001$). The experimental group demonstrated a more substantial reduction in mean depression scores from 6.99 (SD 4.47) to 4.86 (SD 3.68) (paired $t=9.34$, $p<0.001$). Between-group posttest comparison revealed significantly lower depression scores in the experimental group compared to controls (mean difference: 4.86 vs 5.94; unpaired $t=2.49$, $p=0.016$), indicating superior effectiveness of yoga therapy.

Anxiety Outcomes

Baseline anxiety assessments in the control group showed 42% of participants with normal anxiety levels and 58% with mild anxiety. Following 4 weeks of Shavasana practice, anxiety level distribution shifted modestly to 49.37% normal and 44.37% mild anxiety. The experimental group demonstrated much greater improvement, with baseline prevalence of 26.7% normal and 73.3% mild anxiety improving to 76% normal and 24% mild anxiety after structured yoga therapy.

Statistical analysis revealed significant within-group improvements in anxiety for both groups. Control group mean anxiety scores decreased significantly from 14.69 to 13.95 (paired $t=5.45$, $p<0.001$), while the experimental group demonstrated substantially greater reduction from 16.61 (SD 6.61) to 11.73 (SD 6.17) (paired $t=3.36$, $p=0.001$). Between-group posttest comparison favored the experimental group (mean difference: 11.73 vs 13.95; unpaired $t=2.14$, $p=0.006$), demonstrating yoga therapy's superior effectiveness in anxiety reduction.

Associations with Demographic Variables

Chi-square analysis examined associations between socio-demographic variables and mental health outcomes. Monthly income emerged as the only socio-demographic variable significantly associated with pretest depression levels (χ^2 $p<0.001$). Higher income was associated with lower depression prevalence, suggesting socioeconomic status influences mental health in this population. Conversely, other variables including age, gender, marital status, residential area (urban/rural), educational qualification, and religion demonstrated no statistically significant associations with depression or anxiety levels.

Correlation Between Depression and Anxiety

Pearson correlation analysis examined the relationship between depression and anxiety in both study groups. A small but statistically significant positive correlation was observed in both the control group ($r=0.069$, $p<0.05$) and experimental group ($r=0.085$, $p<0.05$). These modest correlations suggest that while depression and anxiety co-occur, the association is weak in this sample, indicating these conditions maintain some degree of independence in nursing officers.

Study Attrition and Missing Data

The study experienced minimal participant dropout, with only 12 participants (4%) withdrawing during the investigation period. The experimental group experienced 7 dropouts (4.67%) and the control group experienced 5 dropouts (3.33%). Intention-to-treat analysis was conducted with last-observation-carried-forward imputation employed for missing posttest data, ensuring complete case analysis while maintaining study integrity.

DISCUSSION

Principal Findings

This investigation demonstrated that a structured, short-term yoga therapy program produced statistically and clinically meaningful reductions in mild depression and mild anxiety among nursing officers compared with a relaxation-only control condition. Participants randomized to the yoga therapy group exhibited larger mean reductions in Hamilton Depression Rating Scale and Hamilton Anxiety Rating Scale scores than control participants, with between-group posttest comparisons demonstrating statistically significant superiority of the yoga intervention. These findings provide empirical support for yoga-based interventions as an effective, cost-accessible therapeutic approach for managing mild mental health disorders in healthcare worker populations.

Mechanistic Interpretation

The observed therapeutic benefits of yoga likely operate through multiple interconnected physiological and psychological mechanisms. The integrated combination of physical postures (asanas), regulated breathing practices (pranayama), and meditation appears to facilitate improved mood regulation through enhanced emotional processing and cognitive reappraisal. Additionally, yoga practice likely optimizes autonomic nervous system balance, promoting parasympathetic activation while reducing sympathetic hyperactivity and associated stress hormone secretion. These neurobiological changes manifest as reduced physiological arousal, improved emotional regulation, and enhanced psychological resilience.

Control group improvements, while statistically significant, were more modest than experimental group changes. These control group gains likely reflect placebo/expectancy effects, therapeutic attention received during assessments and group activities, and the genuine relaxation

benefits of Shavasana practice. The substantially greater improvements in the yoga therapy group, however, suggest that the more comprehensive yoga intervention offers benefits beyond these non-specific factors.

Clinical Significance

Although baseline mean depression and anxiety scores were within the mild range, the magnitude of observed improvements carries genuine clinical relevance for workplace wellness and employee well-being. In the experimental group, anxiety score reductions averaged approximately 4.9 points, representing improvement in symptomatology meaningful to affected individuals and their functioning in occupational settings. Given the established associations between untreated depression and anxiety with diminished job performance, reduced quality of life, increased medical morbidity, and healthcare utilization, interventions producing such reductions merit serious consideration for workplace implementation.

Short-term, readily scalable yoga interventions such as those evaluated here present practical advantages for workplace mental health programming. The 4-week duration with minimal time commitment (12 total 30-minute sessions) demonstrates feasibility within occupational training contexts. The low cost and non-pharmacologic nature make yoga particularly suitable for resource-limited healthcare settings and populations with contraindications to psychotropic medications.

Demographic Associations and Implications

The significant association between monthly income and depression severity suggests that socioeconomic factors contribute meaningfully to mental health variability in this nursing officer population. Lower income was associated with higher depression prevalence, likely reflecting the compounding stressors of financial strain, reduced access to healthcare resources, and limited opportunities for self-care and stress management. Future interventions should consider socioeconomic status when designing workplace mental health programs and tailoring support mechanisms.

Depression-Anxiety Relationship

The observed weak but statistically significant positive correlation between depression and anxiety aligns with established knowledge regarding comorbidity between these conditions. However, the modest magnitude of correlation ($r \approx 0.07-0.085$) in this sample suggests that depression and anxiety maintain considerable independence, potentially reflecting distinct or partially independent etiological pathways even when both conditions co-exist. This pattern supports the clinical utility of assessing and addressing these conditions separately while acknowledging their potential interaction.

Study Strengths

This investigation possesses several noteworthy strengths. The relatively large sample size of 300 participants with random group allocation strengthens causal inference. The utilization of standardized clinician-rated measurement instruments (HAM-D and HAM-A) provides objective, validated assessment of mental health outcomes rather than relying on self-report questionnaires potentially subject to response bias. The investigation recruited a real-world sample of working nursing officers in authentic workplace training settings, enhancing ecological validity and applicability to actual occupational contexts. The rigorous intention-to-treat analytical approach combined with minimal study attrition (4%) demonstrates methodological rigor and reduces bias from differential dropout.

Study Limitations

Certain limitations require acknowledgment. The quasi-experimental design without blinded outcome assessors introduces potential measurement bias and observer expectancy effects. The brief 4-week posttest assessment window precludes determination of intervention durability; whether improvements persist beyond this period remains unknown. Participant-reported adherence logs, while valuable, may overestimate actual practice frequency relative to objective monitoring. The control group received minimal supervised instruction compared to the yoga therapy group's extensive training, potentially introducing attention bias favoring the experimental condition. The study lacked objective biomarkers of stress responses (e.g., cortisol levels) or physiological measurements (heart rate

variability) to validate proposed mechanisms. Additionally, recruitment from a single geographic site may limit generalizability to nursing populations in other regional or socioeconomic contexts.

Recommendations for Future Research

Future investigations should employ randomized controlled trial designs with blinded outcome assessment to minimize measurement bias. Longer-term follow-up assessments at 3, 6, and 12 months post-intervention would establish durability of observed benefits and optimal intervention timing. Inclusion of objective physiological measurements (cortisol, heart rate variability) and neuroimaging assessments would illuminate biological mechanisms underlying therapeutic effects. Comparative effectiveness research examining yoga against active control conditions (e.g., structured exercise, mindfulness meditation) would clarify which intervention components drive symptom improvement. Multi-site recruitment across diverse geographic and socioeconomic settings would enhance generalizability. Investigation of dose-response relationships, exploring whether intervention frequency or duration modifications optimize outcomes, would guide evidence-based implementation protocols.

CONCLUSION

This quasi-experimental study provides credible evidence that structured, short-term yoga therapy effectively reduces mild depression and mild anxiety among nursing officers, with outcomes substantially superior to relaxation-only control conditions. The findings substantiate yoga as a safe, feasible, evidence-based, cost-effective intervention suitable for integration into workplace wellness and occupational mental health programming.

The implementation of yoga-based practices within institutional occupational health and wellness initiatives has potential to enhance psychological resilience, reduce stress-related morbidity, diminish burnout risk, and promote overall mental health and well-being among healthcare workers. Given the documented mental health burden affecting nursing professionals globally, and the established occupational stress and burnout risks inherent to nursing practice, accessible, evidence-based interventions such as structured yoga merit serious consideration for adoption within healthcare institutions and nursing training programs.

In conclusion, yoga therapy represents a valuable, accessible adjunctive strategy for mental health promotion and psychological well-being among nursing professionals and other healthcare workers. Further research with methodological enhancements will continue to clarify intervention mechanisms, optimize implementation strategies, and establish evidence-based guidance for integrating yoga into occupational mental health and wellness programs serving healthcare worker populations.

CONFLICT OF INTEREST-The authors declare that there is no conflict of interest regarding the publication of this manuscript.

FUNDING STATEMENT -No external funding was received for conducting this study.

ETHICAL CLEARANCE / ETHICAL APPROVAL

Ethical approval for the study was obtained from the Institutional Ethics Committee of Raichur Institute of Medical Sciences prior to commencement of the research. Administrative permission was obtained from the District Training Centre, Raichur. Written informed consent was obtained from all participants before data collection.

INFORMED CONSENT

Written informed consent was obtained from all participants included in the study. Participants were informed regarding the purpose, procedure, confidentiality, and voluntary nature of participation.

AUTHOR CONTRIBUTIONS

Kiran Hegade contributed to study conception, data collection, intervention administration,

statistical analysis, manuscript drafting, and final manuscript preparation. Dr. Kritagnasinh Vaghela contributed to study supervision, methodology guidance, manuscript review, and critical revision. Dr. Abhay Pattan contributed to research guidance, manuscript editing, interpretation of findings, and final approval of the manuscript.

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DATA AVAILABILITY STATEMENT

The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

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HIGHLIGHTS

- Structured yoga therapy significantly reduced depression among nursing officers.
- Yoga intervention demonstrated superior anxiety reduction compared to relaxation control.
- Monthly income showed significant association with depression levels.
- Yoga therapy may serve as a cost-effective workplace mental health intervention.
- Short-term yoga programs can improve psychological well-being among healthcare professionals.

CLINICAL IMPLICATIONS

Integration of structured yoga programs into workplace wellness initiatives may help reduce psychological stress, improve emotional resilience, and enhance occupational well-being among nursing professionals working in high-stress healthcare environments.

LIMITATIONS

- Short follow-up duration
- Single-center study setting
- Lack of biochemical stress markers
- Self-reported adherence monitoring

RECOMMENDATIONS

Future multicenter randomized controlled trials with longer follow-up periods and objective physiological stress indicators are recommended to strengthen evidence regarding the effectiveness of yoga therapy in occupational mental health management..

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