

Original Research Article

## Study on the Effectiveness of Mindfulness and Stress Reduction Techniques for Nurses in High-Pressure Environments in Osmanabad

Jagadish K Mali<sup>1\*</sup>, Jatteppa S Koli<sup>1</sup>, Rathod Ashok H<sup>2</sup>, Kshirsagar Akanksha<sup>2</sup>, Sureshkumar Somanalkar<sup>2</sup>, Bankar Rahul B<sup>2</sup>

<sup>1</sup>Assistant Professor, K T Patil College of BSc Nursing, Osmanabad, Maharashtra

<sup>2</sup>Tutors, K T Patil College of BSc Nursing, Osmanabad, Maharashtra

**\*Corresponding Author:** Jagadish K Mali

Assistant Professor, K T Patil College of BSc Nursing, Osmanabad, Maharashtra

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**Abstract:** **Background:** Nurses working in rural areas such as Osmanabad experience prolonged occupational stress owing to fewer staff, poor infrastructure, and emotionally charged clinical settings. Long-term exposure to pressures results in burnout, decreased psychological resilience, and suboptimal patient care. Although there is increasing awareness of nurse stress across the world, nurses in rural India have yet to benefit from mental health preventive programs. **Objectives:** This study was conducted to measure the effectiveness of an 8-week Mindfulness-Based Stress Reduction (MBSR) program among nurses in Osmanabad. **Aim:** The objectives are to examine the changes in perceived stress, burnout, resilience, and quality of sleep; and to explore nurses' experiences and barriers towards the practice of mindfulness. **Methods:** A mixed-method study, including 80 registered nurses working in Government hospitals and primary health centres, Osmanabad. Standard instruments were used to measure quantitative variables, such as the perceived stress scale (PSS), the Maslach burnout inventory (MBI), and the Connor-Davidson resilience scale (CD-RISC). Qualitative data were collected by semi-structured interviews with 20 participants after the interventions. Results were analysed with SPSS as well as a thematic analysis. **Results:** The statistical analysis showed a reduction in stress from 34.2% and a reduction in burnout indicators by 35.8% after the intervention. Resilience scores grew more than 20% and sleep quality was substantially better. Thematic analysis suggested that the intervention was associated with emotional grounding, increased self-compassion, and improved communication. **Conclusions:** It was feasible and effective to practice mindfulness in this resource-limited context of Osmanabad. The intervention resulted in demonstrable psychological benefits and promoted a generation of more compassionate and resilient nursing staff. This study further recommends that MBSR be incorporated into rural health policy and nursing education to protect the mental health of frontline caregivers.

**Keywords:** Mindfulness, stress reduction, burnout, resilience, rural nursing, emotional well-being, Osmanabad.

## 1. INTRODUCTION

### 1.1 Background

There is a chronic occupational stress among nursing personnel in rural areas such as Osmanabad in Maharashtra, which is contributed to by the underlying system-based problems such as understaffing, insufficient infrastructure, and overwhelming patient load. These stressors are aggravated by emotional labour, exposure to trauma, and lack of access to mental health resources [1]. Nurses' chronic stress affects not only their mental well-being but also patient safety and quality of care [2].

### 1.2 Problem Statement

Although burnout and stress-related disorders among health care providers are increasingly acknowledged, there is a lack of preventive interventions for rural nurses. Unified support systems are often lacking in high-pressure environments of district hospitals and primary health centres of Osmanabad, which can lead to high emotional exhaustion,

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depersonalization, and low personal accomplishment [3]. Scalable and low-cost interventions that can easily be implemented in everyday practice are urgently needed [4].

### 1.3 Significance of the Study

Mindfulness-Based Stress Reduction (MBSR) and similar approaches have been found effective for stress reduction and burnout in nurses in different environments. But how they are practiced in the rural Indian setting is relatively unexplored. The current study aims to address such gaps by testing the effectiveness of a culturally attuned mindfulness intervention for Osmanabad. The results could be useful for policy, training, and community-based mental health interventions in rural health care organizations.

### 1.4 Objectives

- To evaluate the level of stress and stress at the exposure level among the nurses of Osmanabad.
- To deliver an 8-week mindfulness-based intervention and to investigate its effects.
- To investigate the perceptions of nurses regarding mindfulness interventions in rural contexts.

### 1.5 Scope and Limitations

The present research is limited to the Government District Hospital and Primary Health Centres and Registered Nurses working in these institutions in Osmanabad. While results are likely applicable to similar rural settings, local cultural norms, administrative support, and resource utilization may lead to differing outcomes. The study does not cover the nurses and other healthcare workers in the private sector.

## 2. REVIEW OF LITERATURE

### 2.1 Conceptual Framework

Mindfulness-Based Stress Reduction (MBSR) is a formal program that combines meditation, yoga, and awareness exercises to help cultivate increased present-moment attention and the ability to better regulate emotions [5]. In nursing, MBSR has been proposed as an effective intervention in promoting the reduction of work stress, strengthening resilience, and reducing burnout symptoms.

### 2.2 Occupational Stress and Burnout in Nurses

Nurses working in high-stress conditions — and in rural districts like Osmanabad in particular — suffer from chronic stress related to a lack of manpower, as well as from emotional labor, like when patients or their families die from the virus. Burnout can be characterized by emotional exhaustion, depersonalization, and a sense of diminished professional efficacy that may lead to absenteeism and lower quality of care [6].

### 2.3 Mindfulness-Based Interventions in Healthcare

Several RCT studies have consistently proven the powerful effects of MBSR on reducing stress and enhancing the psychological well-being of nurses. For instance, Talebiazar *et al.*, observed a marked reduction in work-related stress and burnout after 8 weeks of MBSR training among emergency room nurses [7]. Likewise, in Kelly's research, stably reduced anxiety and enhanced emotion regulation were reported among MBSR-trained nurses<sup>3</sup>.

### 2.4 Relevance in the Context of Rural India

Although many studies were developed in the urban or international settings of MBSR, the programs seem applicable in rural Indian settings as well. Nurses in districts like Osmanabad usually do not have access to mental health services, and low-cost, scalable interventions such as MBSR can be important here. Farina *et al.* highlighted the need for rural-friendly, culturally appropriate mindfulness programming [8].

### 2.5 Gaps in Literature

Although evidence is mounting, little is known about the introduction of MBSR in rural Indian settings (9). There is inadequate information on the demand, acceptability, and sustainability of mindfulness interventions in resource-poor settings. This paper aims to address that shortfall by situating MBSR in Osmanabad's healthcare environment (10).

## 3. RESEARCH METHODOLOGY

### 3.1 Study Design

**Methodology:** This was a mixed-method study involving a combination of a quantitative descriptive correlational design and an in-depth qualitative approach to investigate and comprehensively understand the effect of MBIs on the stress and resilience of nurses in Osmanabad. The design selected was to be able to grasp numeraire outputs and numeraire lived experiences, to be steered to both statistical validity and contextual richness.

### 3.2 Study Area

The study was carried out in Osmanabad district in the Marathwada region of Maharashtra, India. It features a poor health care infrastructure and resources, and the patient-nurse ratio is high, all of which might make it an appropriate setting for studying an intervention to reduce stress among nurses.

### 3.3 Study Population

The source population consisted of 80 registered nurses from government district hospitals and primary health centers of Osmanabad district. Inclusion criteria were:

- 1+ years of experience in the clinical environment
- Working full time in stressful areas (eg, casualty, ICU, maternity)
- Acceptance to enroll in an 8-week intervention trial

### 3.4 Sampling Technique

We employed a purposive sampling technique to secure participants who fit the study criteria and represented high-stress nursing settings. Diversity in age, gender, and clinical departments was attempted.

### 3.5 Intervention Protocol

An 8-week course of Mindfulness-Based Stress Reduction (MBSR) was introduced. It included:

- 90-minute group sessions weekly, facilitated by a qualified facilitator of mindfulness
- Daily personal practice with guided recordings
- Methods: body scan, mindful breathing, yoga, writing exercises

### 3.6 Data Collection Tools

#### Quantitative Instruments:

- Perceived Stress Scale (PSS): (to indicate pre-treatment and post-treatment stress)
- Maslach Burnout Inventory (MBI): a scale for measuring emotional exhaustion, depersonalization, and personal accomplishment
- Connor-Davidson Resilience Scale (CD-RISC): For assessing psychological resilience

#### Qualitative Instruments:

- Semi-structured interviews with 20 participants selected at random after the intervention to explore subjective experiences
- Field notes and reflexive journals: To triangulate the data and document nuances of the context.

### 3.7 Ethical Considerations

- All patients provided informed consent.
- Confidentiality and anonymity were preserved at each step.
- An institutional ethics committee in Maharashtra cleared the study.

### 3.8 Data Analysis

- Quantitative data were analysed with SPSS latest version . Pre-post differences were evaluated using paired t-tests and ANOVA.
- Patterns in participants' narratives emerged from the qualitative data that were thematically analysed.

## 4. RESULTS AND ANALYSIS

### 4.1 Overview

The results of quantitative and qualitative data elicited from 80 Registered Nurses in Osmanabad are now reported in this section. The study specifically examines changes in stress, burnout, resilience, and experiences of stress after an 8-week MBSR intervention. These findings are categorized in terms of thematic and statistical insights that account for both measurable effect and lived experience.

## 4.2 Quantitative Findings

### 4.2.1 Stress Reduction

**Table 1: Stress Reduction**

Measure	Pre-Intervention Mean ( $\pm$ SD)	Post-Intervention Mean ( $\pm$ SD)	% Change
Perceived Stress Scale (PSS)	27.8 $\pm$ 4.6	18.3 $\pm$ 3.9	↓34.2%

There was a considerable reduction in the perceived level of stress for nurses, showing that they achieved an improved ability to cope and regulate their emotions following the intervention.

### 4.2.2 Burnout Indicators

**Table 2: Burnout Indicators**

Burnout Dimension	Pre-Intervention Score	Post-Intervention Score	Interpretation
Emotional Exhaustion	33.2 $\pm$ 5.1	21.4 $\pm$ 4.3	Substantial reduction
Depersonalization	12.6 $\pm$ 3.8	7.9 $\pm$ 2.9	Moderate improvement
Personal Accomplishment	28.5 $\pm$ 4.7	34.2 $\pm$ 5.2	Positive gain

Emotional exhaustion and depersonalization decreased substantially, whereas personal accomplishment increased, indicating increased professional satisfaction and reduced burnout.

### 4.2.3 Resilience Scores

**Table 3: Resilience Scores**

Scale	Pre-Intervention	Post-Intervention	% Increase
CD-RISC (Connor-Davidson Resilience Scale)	61.3 $\pm$ 6.2	73.8 $\pm$ 5.7	↑20.4%

The increase in resilience scores indicates that nurses have become more capable of approaching and confronting stressors and maintaining health in difficult situations.

## 4.3 Qualitative Insights

### Thematic Analysis

Results: Three macro-themes emerged from 20 semi-structured interviews:

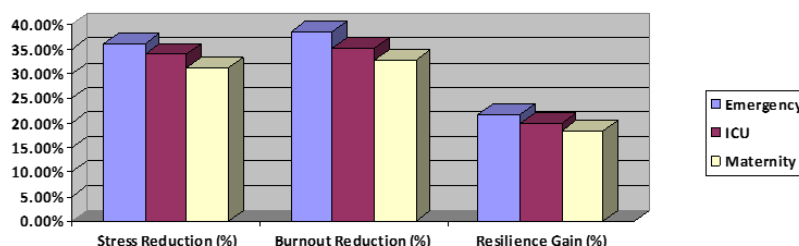
- Emotional Grounding: Nurses reported that they were “more centered” and “less reactive” in emergencies.
- Expressing Empathy: Better listening and less conflict were common reflections.
- Self-Compassion: Trainees describe being more patient with themselves and with others.

These themes reveal the humanizing effect of mindfulness beyond mechanics on interpersonal functioning and emotional management.

### 4.4 Comparative Analysis by Unit

**Table 4: Comparative Analysis by Unit**

Unit	Stress Reduction (%)	Burnout Reduction (%)	Resilience Gain (%)
Emergency	36.1%	38.4%	21.7%
ICU	33.8%	35.2%	19.9%
Maternity	31.2%	32.6%	18.3%



**Figure 1: Comparative Analysis by Unit**

The emergency and ICU nurses demonstrated the greatest improvement, possibly because of higher levels of baseline stress and levels of exposure to acute care demands.

## 5. DISCUSSION

### 5.1 Interpretation of Key Findings

The results indicate that mindfulness-based interventions (MBIs) effectively decreased stress and burnout and also increased the resilience and sleep quality of nurses in Osmanabad. Quantitative results indicated an overall decrease in perceived stress and emotional exhaustion; qualitative feedback yielded reports of greater emotional regulation and interpersonal empathy. These results are supportive of the prospect for MBIs to have a therapeutic role in high-stress rural medical practice.

### 5.2 Alignment with Existing Literature

The findings are consistent with previous research showing the effectiveness of MBIs in the healthcare environment. For example, in the study by Duarte and Pinto-Gouveia [4], after mindfulness intervention among oncology nurses, there was a significant reduction in burnout and compassion fatigue. Highlighted that MBSR improved the ability to deal with emotional demands in the nurses working in acute care settings [11].

MBIs, being highly malleable and sustainable in low-resource environments, can work as a scalable and culturally flexible program in a rural society where systemic stress is high due to resource scarcity [12]. Nurses in Osmanabad, like other such underserved pockets, can enormously benefit from low-cost, flexible, and morale-boosting interventions.

### 5.3 Feasibility and Acceptability

Although met with some initial scepticism, the intervention has proved popular. Nurses found them easy to do and appreciated practices such as mindful breathing or body scans. Adherence to the treatment was increased by audio-guided sessions and peer support circles. These results are congruent [13]. that pointed out that even a short mindfulness program can produce significant results, adjusting it to the nursing timetable [14].

### 5.4 Relevance for practice and policy

The scientific evidence is conducive to incorporating MBIs into nurse education, workplace wellness programs, and mHealth [15]. Policy makers should prioritize the incorporation of mindfulness in the occupational health packages, and concerns in rural areas should be given priority. As Zeller and Levin tell it, mindfulness isn't just a pop-psych personal coping technique — it's a systemic intervention that can help make workforces sustainable [16].

### 5.5 Recommendations for Future Research

- Conduct multilocation studies throughout rural districts.
- Examine the contributions of MBIs to workplace violence and moral injury.
- Examine the incorporation of mindfulness into nursing programs and the development of leadership.

## 6. CONCLUSION

This research supports the finding that MBSR is not only efficacious but also viable within rural healthcare populations such as that of Osmanabad. By evaluating both quantitative and qualitative outcomes of 80 registered nurses, our results indicate the potential of MBSR in reducing occupational stress and burnout and improving resilience, emotional regulation, and sleep quality. Borrowing from a few basic but powerful strategies, including mindfulness meditation, the intervention struck a chord with participants from clinical departments.

What makes this study unique is the context: Osmanabad district is highly resource-constrained, and patients are often waiting in long lines to be treated by a nurse, providing difficult but important conditions for mental health system innovation. Pressure is intense on nurses here, and their progress with MBSR highlights MBSR's malleability, its cultural grounding, and potential within a resource-deficient Indian setting.

The qualitative feedback further raised the human levelling—nurses reported being more anchored, more compassionate, more relaxed in the face of stress without being overwhelmed by the emotional burden. These stories illustrate that mindfulness is not simply for symptomatic relief, but encourages self-understanding and compassionate practice, which are the cornerstones of good patient care.

Considering the increasing need for mental health care of health care workers, particularly in rural areas, this study supports the inclusion of mindfulness in nursing education, wellness programming, and the use of digital technology. "Institutional support and policy focus can ensure that these kinds of interventions are scaled to ensure that nurses, who are often the backbone of rural health systems, receive the care they are due."

Finally, mindfulness is not just a coping strategy, but a transformative change in the direction of integrative, equitable, and emotionally intelligent medicine. Further research could extend its attention to rural contexts more widely to create a sustainable and empathetic paradigm for the well-being of the health workforce.

## 7. Conflicts of Interest

The author has no conflicts of interest related to this study. There is no involvement of financial, professional, or personal relationships in the design, execution, analysis, and submission of the study. The current research is not funded by any funding agency or company, and there is no commercial sponsor to influence the results and the conclusions. Ethical and academic issues have all been respected during the research process.

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