

# EFFECT OF MINDFULNESS-BASED STRESS REDUCTION INTERVENTION ON OCCUPATIONAL STRESS AMONG NURSES: A SYSTEMATIC REVIEW

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## Abstract

### Keywords

Occupational stress, nurses, and mindfulness-based stress reduction intervention

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## INTRODUCTION

It is documented that nursing has been recognized as a stressful profession. Nurses face imperatively complex tasks, including substantial workloads, extended stays, family issues, shortages of nurses, long working hours, and critical conditions. Stress has been identified as a relatively imperative occupational health hazard affecting nurses' physical and psychological health. Stress has a significant impact on nurses' health. Current research shows that stress can alter human homeostasis and physiological and hormonal balance. Furthermore, stress may cause fatigue, cardiac disorders, obesity, and anxiety. Recent

**Background:** The nursing profession has been identified as stressful. The need for tools to promote well-being at work is growing. Interventions focused on mindfulness can reduce stress levels, improving nurses' psychological health. **Objective:** This systematic review aims to determine the outcomes of mindfulness-based stress reduction (MBSR) intervention among nurses.

*Methods:* Four databases, PubMed, Medline, CINAHL, and PsycINFO, were searched as part of a systematic review. Furthermore, it followed the Prisma P protocol, including English-language articles from January 2010 to July 2020.

**Results:** The present systematic review used 12 randomized controlled trials (RCTs). Level stress was the outcome measure. Twelve studies showed the beneficial effects of a mindfulness-based intervention on stress reduction, improving nurses' psychological health.

**Conclusion:** Interventions focused on mindfulness may improve nurses' wellbeing. To evaluate the effectiveness of mindfulness training, RCTs with strict designs, constant end measures, larger sample sizes, and equal gender are needed.

research established that stress could lead to absenteeism, reduced job satisfaction, workplace turnover, and burnout, which could deter work performance and activity<sup>1</sup>.

Moreover, stress is portrayed as having severe consequences, such as poor service quality, increased medical errors, reduced patient satisfaction, and ineffective communication. Consequently, nurses need practical stress reduction approaches to reduce stress levels considerably.

MBSR interventions are used to reduce stress levels. MBSR interventions can stabilize moods and improve

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physical health. Additionally, MBSR can be utilized to improve the psychological functioning of healthcare professionals<sup>3</sup>. A current review shows that

mindfulness considerably decreases stress levels among nurses. Current research has revealed that MBSR intervention reduces stress levels among nurses relatively.<sup>5</sup>

Thus, the present systematic review is intended to assess the effectiveness of BMSR intervention in published studies that have reduced nurses' stress levels.

## Research questions

The PICOS model (population, intervention, comparison, outcome, and study) was utilized to direct the review. Nurses made up the population, mindfulness-based stress reduction interventions were used (there is no comparison to be made), and a level of stress reduction resulted.

What mindfulness-based stress reduction interventions have been applied to decrease nurses' stress levels?

What metrics have been employed to assess stress levels and mindfulness-based stress reduction interventions?

How can mindfulness-based stress reduction interventions effectively reduce stress levels in nurses?

## METHODS

#### Study design

The current systematic review included the randomized controlled trial (RCT).

#### Study participants

RCT design whose participants' age ranges from 24 years and above was included. Regarding participants' characteristics, 800 subjects were included in the twelve analyzed studies. The included studies' sample sizes ranged from 41 to 224 people, depending on the survey. Inpatient wards, hospital wards, clinical nurses, hospital nurses, registered nurses, female nurses from heart centre hospitals, and ward nurses were all study participants. Nurses in critical care, intensive care, oncology, and hospital wards were also included. Two studies had only female participants, whereas the other five used mixed samples with 33 male participants. Four studies did not disclose the genders of the subjects.

### Intervention

Mindfulness-based stress reduction intervention was utilized in this systematic review.

#### Comparator

The subjects who were enrolled in the control group received either standard treatment or no mindfulnessbased stress reduction intervention.

### Outcome

Changes in findings in the baseline and after the intervention were the primary outcomes.

### Search methods

The literature was searched by four databases: PubMed, Medline, CINAHL, and PsycINFO. Furthermore, it followed the Prisma P protocol, including English-language articles from January 2010 to July 2020. PRISMA P guidelines were used to accomplish the present systematic review in the English language. Boolean operators were utilized to combine search phrases (MESH terms nurse AND mindfulness, mindfulness OR nurse, and stress AND mindfulness) to boost search sensitivity. Two researchers (B and FS) employed the literature review and screening task. A task related to checking references and citations was carried out by one researcher (SC). There is literature on mindfulness. However, a systematic review has yet to be employed among nurses. Hence, the present systematic review was carried out to assess and evaluate the impact of MBSR intervention on stressed nurses. For this reason, the quality of the studies was assessed and evaluated to effectively illustrate the status of present knowledge and recommend future directions to reduce the stress level by MBSR intervention.

## **Study Selection**

The research articles were assessed comprehensively and met the inclusion and exclusion criteria for eligibility. The research study fulfilled the following criteria: randomized randomized controlled trials (RCTs) related to mindfulness-based stress reduction interventions, associated nurses, registered nurses working in hospitals, and written in English. The research on nursing students, cross-sectional studies, case-control studies, cohort studies, case reports, case



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series, editorials, reviews, qualitative studies, and pilot studies was excluded from the present systematic review.

## Data collection procedure

A data extraction form was generated and piloted before data extraction. Abstracts were subjected to the inclusion criteria, and two reviewers (NGH and SO) discussed any questions. Two reviewers (B and SC) reviewed each abstract flagged as maybe or highly significant to determine whether it was admissible. A consensus was reached to resolve disagreements among reviewers over the inclusion of a study. Before deciding on the calibre of the investigations, two reviewers (FS and SC) examined the retrieved data and made any necessary modifications.

## Data items

The data, which was extracted from the included studies, are as follows;

Information related to the author's name, year of publication, and country was obtained.

Subjects' information about age, sample size, and gender in the control group and treatment group. Information related to mindfulness-based stress reduction intervention sessions and duration. Information about response variables on the baseline and after the intervention.

## Quality evaluation

The methodological excellence of studies was evaluated using the JBI (Joanna Briggs Institute) critical appraisal methods. The JBI is a non-profit, worldwide research and progress body that has created numerous essential appraisal instruments to assess healthcare initiatives' correctness, likelihood, and efficiency. Thus, the JBI critical appraisal methods for RCTs were employed to evaluate the excellence of reporting in the articles.

Likewise, the critical assessment instruments related to RCTs comprised 13 questions. The questions have "yes" and "no" responses. A study is labelled "unclear" if it does not precisely present data relevant to a healthy subject. A question is labelled "not applicable (NA)" if it does not apply to the study. Two independent reviewers (B and SO) evaluated the quality of each study. To address disagreements, a conversation was held on an internet forum until an agreement was reached.

## Systematic Review

The systematic technique was used to summarize the systematic review results in a narrative.

## Search outcomes

The PRISMA P protocol was utilized to select the papers. Twelve articles were discovered in the identified papers' references and published systematic reviews and meta-analyses. The selection was made after the RCTs' critical evaluation, using the JBI essential checklists of evaluation after reading the complete texts of seventeen papers. Twelve papers were subsequently accepted after considering the above-mentioned inclusion and exclusion criteria.

## Study characteristics

A total of twelve papers were included. One paper from the studies of Iran, Malaysia, Canada, Italy, Taiwan, Portugal and the USA; the remaining five were included from the studies of the UK. Studies were released from 2014 to 2020.

## Bias potential in studies

The JBI criteria for the effectiveness of RCTs assigned the data from three RCTs a Level 1. c rating. Concerning evaluation, the evidence from three pretest/post-test studies was evaluated at Level 2.

In two trials, nurses were randomly allocated using a web-based randomization program. However, one study used stratified block randomization. It was noted that there was no chance for nurses or instructors giving MBSR interventions to be blind since all-encompassing trials are essential subjects for performing mindfulness-based training as an intervention<sup>6</sup>. Another study was selected, and its analysis was carried out blindly. No one study offered a detailed description of the blinding procedure. In two investigations, nurses who were available and assigned to the study underwent intention-to-treat analyses. A loss to follow-up was reported in one trial, but an intention-to-treat analysis based on the initially assigned groups was not conducted<sup>7</sup>.

As summarized by Gu et al., one study's use of various justifications for having a control group led to its classification as having an unknown risk of bias. To determine whether there were any differences

between them, one study did not provide enough analysis information, so it was labelled as having an unclear risk of detection bias<sup>8</sup>.

#### Features of interventions based on mindfulness

Excluding one study, all of the mindfulness-based programs were delivered in person. In one study, neither the intervention's methodology nor its implementers were disclosed. In contrast to other studies, Ghawadra et al. (2020). 's report designated a two-hour class followed by four weeks of self-practice utilizing a website as a reference. During the nine studies listed, the people who carried out the mindfulness-based programs, only two studies provided information regarding those who delivered the interventions. An author was the mindfulness teacher in two studies. The study's authors, Duarte and Pinto-Gouveia (2016), also participated in several retreats, training sessions, and other mindfulnessbased training and meditation activities<sup>10</sup>. The author of the intervention should have been acknowledged in the study by Ghawadra et al. (2020)<sup>9</sup>. Also, no study provided any information on the sessions' time.

## RESULTS

Various measurement instruments were used because of the diverse emphasis on the study objectives in these studies. Stress, mentioned in seven articles, was the most often assessed consequence. As disclosed by Tseng HW et al., anxiety, stress, depression, quality of life, burnout, self-compassion, resilience, happiness,



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and mindfulness level were considered outcome measures of the research. Results were measured using a total of 30 different measuring devices and instruments<sup>4</sup>. Maslach Burnout Inventory (MBI), utilized in five of the research studies, was the most frequently employed tool, with the Depression, Anxiety, and Stress Scale (DASS-21) coming in second. Both are widely used tools translated into various languages and are often used by many scholars. The included studies employed a maximum of seven instruments, each using two or more instruments. Although they were described in seven of the selected papers, the remaining four studies needed to specify the reliability and validity of the used scales<sup>11</sup>.

### Mindfulness-based Interventions effectiveness

Related to mindfulness-based stress reduction interventions, twelve studies were potentially helpful since all the outcomes assessed in the trials were favorable. In twelve of the trials, mindfulness-based programs were significantly influenced by primary outcomes. Seven studies that measured stress found that mindfulness-based interventions reduce nurses' stress levels. Improvements were also noted in the side effects. Programs focused on mindfulness were reported to lessen nurses' burnout in five studies. Five concluded that programs connected to mindfulness were successful in raising levels of awareness. Four studies revealed that mindfulness-based training was effective at raising nurses' levels of self-compassion<sup>1</sup>



Figure-1 PRISMA flow chart



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Table 1: Summary of included studies								
Author (Year) &	Sample Size	Study Design	Follow-up	Measures	Intervention			
Place	40 11	<b>A</b>						
Querstret et al.	49 studies $(n - 4722)$	A systematic review	NO	MBCT generated	MBSR improved			
(2020) (UK)	$\frac{(n=4733)}{(n=123)}$	and meta-analysis.	T 1: . 1	CDD DDD LILAI	mental liness			
Abbott et al. $(2014)$ (LIV)	from the	A systematic review	Immediately	SDP, DDP, HDAIC,	o-week MDSK: 1.5-			
(2014)(OK)	ariginal	and meta-analysis of	intervention	DOMS MES ODS	2.3 If/week, and			
	randomized	controlled trials	Five years		min/day. It included			
	control trial	RCT	Tive years		a day retreat			
	(n=578)	Rot			a day recreat.			
Burton et al.	Seven studies	А	Pre- and	QATSDD, PSS,	10 weeks, 8 weeks,			
(2016) (UK)		Systematic Review	posttest	MHPSS, DASS,	four weeks, three			
		and Meta-Analysis	intervention	VAS, MAAS, TMS,	weeks, MBSR			
			follow-up	FFMQ				
Tseng et al.	13 studies	A systematic review	Post-treatment	HAMD-17, BDI-II,	8-week MBCT			
(2023) (Taiwan)	(n=1159)	and meta-analysis		HDRS, SCID	sessions			
	12.0 1		12 1					
Kriakous et al.	13 Studies	A Systematic Review	12 months	FFMQ, MBI, PSS,	8-week MBSR,			
(2020)(OK)	(n=1053)	(RC1, CC1 and pre		DASS, Pro QUL,	0-week MBSR			
		and posttest study		QATQS, MMRF	MBSR programs			
Simpson et al	14 RCT	A systematic review	Follow-up	OoL subscales	8 week MBSR 12			
(2023) (Canada)	(n=937)	and meta-analysis	points	QUE subscales	week MAP. Modified			
() ()	( / 0 / /		Pointo		MBCT			
Conversano et al.	6 RCTs	A Systematic Review	Midpoint visit	PSS-10, POMS,	Eight weeks of MBCT			
(2021) (Italy)		and Meta-Analysis	at four weeks	DASS-21				
		(RCT).	Post-					
			intervention					
		w w	visits at eight					
		1	weeks.					
Gu et al.	20 studies	A systematic	(TSSEM) was	QoL, SCS, RNT,	Eight weeks of MBSR,			
(2015) (UK)		review and meta-	used to mediate		MBCT			
		analysis	the impact of					
		15 RC1s	MBIS on					
		experimental	Outcomes					
Ghawadra et al	Total	RCT	8 Weeks	DASS-21 ISS	4-week MBSR			
(2020) (Malaysia)	participants 224	Rot	o weeks	MASS	2-hr MBT			
Duarte et al.	94 oncology	Nonrandomized,	Three months	PROCOL,	6-week MBSR,			
(2016) (Portugal)	nurses	Wait-List		CFS, STS, DASS-21	8-10 weeks MBI			
		Comparison Design						
Lin et al.	Total= 306	Analytical study	NO	MBI-HSS-MP,	NILL			
(2022) (Iran)	(Physician: 106)			CTT, LPA				
	(Nurses: 200)							



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Soysa et al.	N= 506	Cross-sectional	NO	FFMQ, PSS,	NILL			
(2020) (USA)	undergraduate	design		SWEMWBS				
	students							

## DISCUSSION

The current review study was conducted on the possible impact of MBSR interventions on nurses' stress reduction. Twelve papers met the criteria for inclusion. Generally, the findings suggest that therapies that focus on mindfulness have an excellent effect on stress reduction and nurses' psychological health. Except for one study, all others found that MBSR interventions had positive benefits. Hitherto, the length of the MBSR interventions in the studies is diverse and contingent on the MBSR intervention's type and study environment. The mixed data for doseresponse and long-term effects do not support firm causal conclusions. This research proved that mindfulness-related therapies effectively decreased stress levels and increased nurses' psychological wellbeing, consistent with findings from earlier systematic studies. This review, even so, is unique from others. Likewise, Ghawadra et al. (2019) conducted a systematic review that primarily focused on psychological distress in nurses<sup>9</sup>. It is disclosed that sampled nurses incorporated mindfulness training as an intervention, though burnout was the only outcome discussed. It summarizes other systematic reviews examining mindfulness's efficacy among other healthcare workers.

Conversely, the results of these systematic reviews differ depending on the types and levels of stress experienced by healthcare professionals. To the best of our knowledge, the effectiveness of mindfulnessrelated treatments to reduce stress and increase psychological well-being among nurses has never been systematically reviewed, with a focus on research released between 2011 and 2021. This systematic study should be highlighted, particularly examining nurses, rather than focusing on other healthcare professions.

It is designated that the robustness of the prior research used in this review revealed that while there were some methodological flaws, the majority of it

had a moderate overall quality. It is crucial to note that the sample sizes of the six studies were modest and that five mainly involved female individuals. Only female participants were chosen for two trials, which may have impacted the sample's representativeness and the results' generalizability. Four studies did not report the gender of the subjects. Male and female nurses are likely to react to MBSR interventions differently. Male undergraduates reported higher wellbeing than female undergraduates<sup>12</sup>.

Although several studies employed reliable outcome measures, this systematic review emphasizes that when they examined diverse aspects of psychological wellbeing, there was little uniformity among the studies and a lot of variation (anxiety, stress, burnout, and depression, to name a few). The outcomes and the scales used to evaluate them showed a significant variation in the result measurements. The included studies utilized 30 distinct instruments, the majority of which were self-reported. Despite the known biases in self-reports of measures in the included research, it is crucial to note that there are numerous categories for which there are no acceptable substitutes<sup>8</sup>. However, according to the current review, the scales' reliability and validity were not reported in the four investigations. Important indicators of a measuring instrument's quality include validity and reliability. Hence, it is challenging to say if the tools utilized in this research helped measure the desired outcomes of the interventions. The best intervention studies to determine the psychological well-being of nurses are those that use validated and widely used metrics.

Only one study found no change in nurses' well-being among the ten that saw improvements. The mindfulness intervention strategies all have the same objective: to teach individuals to be more conscious of their emotions and viewpoints and improve the relationship between the two, while having slightly different procedures. Despite using a mindfulnessbased stress management program as its intervention, one study could not uncover any conclusive outcomes. This gap can be caused by the cognitive behavioral model's influence on the content of mindfulness interventions. This model aids people in understanding the connection between stressful events and emotional reactions, which may be a distinct approach to cognition and, as a result, may have produced a non-significant outcome. Although



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most of the included research revealed some promising results, one study discovered no appreciable changes in job satisfaction, while another discovered only a slight influence. It is portrayed that only two studies evaluated job satisfaction as a result. Because of the complexity of job happiness and the numerous elements that contribute to it, it may not have been possible for the MBSR interventions used in this research to significantly increase job satisfaction (12 weeks and eight weeks, respectively). Future research should concentrate on the long-term impacts of mindfulness-related therapies on nurses' job satisfaction and look into organizational aspects such as managers' leadership style, work environment, professional commitment, and organizational commitment.

### Strengths and limitations

The main strength of the present systematic methodological approach. То assess the methodological caliber of reporting in the research, we used the Joanna Briggs Institute, 2020 Joanna Briggs Institute, 2020 critical assessment tools for quasi-experimental studies and RCTs. Besides, potential bias was minimized by incorporating several reviewers into data extraction, analytic processes, and quality assessment. This review has some restrictions as well. Because of electronic sources, unpublished and grey literature were not included in the search, which may have omitted certain pertinent studies. Another limitation is the lack of more RCTs and the heterogeneity of their results, which prohibited us from doing meta-analyses on various outcomes or looking into intervention-influencing factors.

## CONCLUSION

The present systematic review proposes that MBSR interventions can decrease the stress level among nurses and improve nurses' quality of life. Prior studies on mindfulness have established that clinical and nonclinical populations benefit cognitively and psychologically from practicing mindfulness. It is demonstrated that no adverse effects were noted in any of the studies; on the other hand, individuals may develop more symptoms due to the awareness training. Future studies should be conducted on the amount, structure, and dose-response effects of MBSR interventions. The cost-effectiveness of MBSR interventions, the sustainability of mindfulness practice over time, and the possibility of cascading effects on other well-being-related activities require long-term research on MBSR interventions. More research in this area is also necessary, and rigorous methods such as randomized controlled trials, consistent outcome measures, and larger sample sizes must be used.

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