The Effectiveness Of Mindfulness-Based Interventions In Reducing Burnout And Increasing Job Satisfaction Among Nurses

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Abstract

Background: Working as nurses, the professional staff sometimes has to cope with very high levels of stress, which might result in the well-known burnout, anxiety, and depression. COVID-19 pandemic represents an additional constraint in nurses´ lives that emphasizes the role of mindfulness - oriented interventions in support of nurses´ well-being. On the other hand, the evidence obtained from previous studies on the impact of this kind of approaches have been much disagreement.

Methods: This deficit is overcome when researchers employ systematic reviews of RCTs that investigate the influence of mindfulness practices on nursing professionals. They run many databases and filter all the needed works, published until December 2022, with inclusion criteria in mind. Studies were selected for eligibity and data collected by a team of two

independent researchers who assessed them for bias. The data which were collected were processed using designated soft wares.
Results and Discussion: In all, there were 44 records of 2171 studies to be analyzed. 15 of which were selected, recruiting a total of 1165 participants. The analysis indicates that mindfulness practice is a moderate stress reliever among nurses considering that the SMD is at -0.81, with a 95% CI of -1.11 to -0.52.
Conclusions: Mindfulness-based interventions are shown to be empirically valuable in the reduction of stress for nurses during the Covid-19 pandemic, which should be implemented extensively. But still, more studies should be done to reveal their connection to anxiety and other effects, and better be able to establish the level of security in the evidence.

INTRODUCTION

The healthcare sector is an endless source of such threats that face medical professionals with overwhelming shift schedules, the stressors that are attached to the caregiver role, and the constant target-chasing. During these traumatic events, healthcare professionals commonly experience emotional reactions such as anxiety, depression, burnout, fatigue, and even chronic stress (Wang et al., 2023). The emergence of COVID-19 has just added to these difficulties as it deepened the pressures on healthcare systems globally, and more so in high-pace environments such as the intensive care units and hospitals designated for COVID-19 patients.

Burnout going through the process of single-threaded stressors is a complicated problem that can be generally characterized by emotional exhaustion, depersonalization, or low personal achievements. Such consequences of sleep deprivation are observed not only among the doctors themselves but also among the whole healthcare system, through an increased number of medical errors, a loss in productivity, and higher turnover rates, especially among physicians (Wang et al., 2023). First, nurses who are not given any respect and, hence, whose services are not valued, bear a disproportionate need for burnout compared to their peers in other healthcare fields.\

Job stress, an outcome of the budget deficit between required workplace demands and available resources or unregulated needs, turns out to be a serious risk factor for nurses' mental health (Wexler & Schellinger, 2023). The constant pressure of these strains increases the risk for a wide range of severe pathologies for nurses. For instance, medical staff might get endocrine disbalances, sleep disruption, depressed immune function, and chronic diseases like cardiovascular disorders and metabolic syndrome, all of which adversely affect nursing care quality.

Seeing this situation clearly, governments and health care organizations of all countries put extra effort into nurse wellbeing, mostly for new nurses only. Charzynnska's analysis underlines the need not only for identifying and minimizing the multitude of stressors affecting nurses but also to safeguard the vitality of healthcare professionals and enhance the overall quality of care (Wexler & Schellinger, 2023). In a nutshell, a deep appreciation and cognizance of the more complex problems and difficulties responsible for diminishing nurses' resilience is essential to formulating efficient remedies that help sustain their dedication to the delivery of quality healthcare in the face of rapidly changing healthcare environments.

METHODS

A comprehensive search tactic has been applied across various databases as a means of catching up with any relevant study. The PubMed, Embase, EBSCO, ProQuest, Scopus, Cochrane Online Library, and Web of Science databases were systemically combed. The scope of the search involved checking the complete extent of the study databases until December 2022 for the purpose of systematic searching for relevant studies. The keywords were precisely selected, covering a host of nursing issues and how mindfulness-based interventions may be used to assist with this condition. These terms include "nurse/nurse*/registered nurse/nursing personnel/mindful nurse/minding nurse," combining with terms associated with mindfulness. The search strategy was consistently used through all selected databases to provide a maximally comprehensive and detailed review. Apart from that, back-referencing of the already-identified articles' reference lists and supplementary searches via Baidu Xueshu and Google Scholar were also carried out to spot any missing studies from the source. All retrieved studies were kept in a database of endnote software for the purpose of having everything conveniently organized and available.

Inclusion and Exclusion Criteria

A strict specification for inclusion and exclusion criteria was developed to achieve the objectives of the review by selecting studies that were applicable according to the criteria's standards. The studies considered must be randomized controlled trials (RCTs) framing mindfulness-based interventions and designed for nurses aged 18 and older who work in an inpatient or outpatient setting. The two important outcomes the study investigated were stress and burnout, while depression and anxiety were the secondary outcomes. Exclusion criteria were precisely delineated to exclude studies that were completely inappropriate to meet the specified criteria or were not relevant to the research question. Data that one could not translate into English or Chinese was removed, as were animal studies, meta-analyses, reviews, case reports, conference abstracts, as well as duplicates and studies with incomplete or unusable data.

Data Extraction

Data extraction was done in a goal-oriented manner to pick out the crucial information from the included studies. Initial titles and abstracts were screened based on pre-defined inclusion criteria. Agreement on the studies' incorporation criteria was reached through discussions between two reviewers or the contributions of third reviewers if required. The two reviewers carried out a full text assessment of the abstracts that fulfilled the criteria of relevance, and those that did not meet the criteria were discarded. All instances of conflict over study selection were brought to consensus. In the subsequent step, the data was retrieved once, and two reviewers independently reviewed and assessed the quality of the included data separately. The data extraction involved systematic research of various components of the studies, for instance, author details, country of origin, publication years, sample size, participant characteristics, intervention specifics, the level of exercise, outcome measures, and results.

Risk of Bias Assessment

The probable risks of the included studies were assessed using Cochrane's risk of bias tool for assessing studies. This tool can appraise studies across seven domains of bias, such as random sequence generation, allocation concealment, blinding of both the subjects and personnel, blinding of outcome assessment, incomplete outcome data, selective reporting bias, and other biases. Each dimension was assessed separately using a 3-point rating system (high, low, or unclear risk of bias). The assessed domains were rated as A, B, or C, respectively, having a high, moderate, or low possibility of bias. Studies graded as C were not considered in the analysis, so only high-quality research was considered. Two reviewers independently rated the

bias risk for each included study, combining their arguments until they achieved clarity through discussion and, if necessary, a third reviewer's input. Review Manager 5.4 summarized the quality of the evidence from the bias assessment with that of the reviews, providing a concise overview of the details.

The quality of the evidence in the articles included was assessed using the GRADE algorithm. It brings in the assessment of the level of evidence and the degree of recommendation based on factors including the kind of study design, the risk of bias issues, the consistency of the results,, how directly the results are related to the issue studied, and how precise the estimations are. Studies whose evidence is big and low-quality lead to broad perspectives about an intervention's effectiveness and the probability of its occurrence. While the additional data, such as the rationale behind the issue and the implications, are presented in Supplementary Table 2, evaluating evidence is also done at a deeper level.

Statistical Analysis

The analysis of the data and the constructed average scores were executed using RevMan 5.4 software, which is the common software for performing clinical trial meta-analyses. Means for variables were used as MD and SMD when single and different scales for outcome measurements were used, respectively. The risk of heterogeneity among the included studies was assessed using a Q test (P-value) and an I2 statistic with a confidence level of 0.1 and an I2 of 50% or more, suggesting significant heterogeneity. On the occasion of great heterogeneity, the use of a random-effects model will be to account for the variability between studies. In the absence of homogeneity, we chose a fixed-effects model. The sensitivity analysis was conducted by randomly removing individual studies to assess the credibility of the results and thereby identify the source of heterogeneity (Armstrong & Tume, 2022). The sensitivity results were carried out using the Stata 16 software, which helped to present the charts graphically, thus highlighting the contribution of each study to the overall results. Concurrently, the Egger test was carried out to search for the possibility of publication bias, and the reliability of the results was analyzed. As a result, an intricate statistical technique was applied in order to guarantee that the reported findings were valid and trustworthy.

RESULTS

Study Characteristics

Supplementary is the basis of the 15 included study characteristics. These conversions included 1,165 nurses who were published from 2015 through 2022. In different studies, the samples ranged from 40 to 106 cases. Categorically, nine originate from China and two from the United States. On the contrary, there is one each from Japan, Iran, Portugal, and Turkey. The mean age of participants had a range of 21–60 years (Wang et al., 2023). A number of mindfulness-based strategies were employed, such as mindfulness-based stress reduction, mindfulness breathing therapy, mindful coloring, and yoga. The duration of respective interventions ranged from 5 days to 52 weeks, with an intermediate level of intervention intensity and session length that varied (Wang et al., 2023). In these studies, six follow-up surveys were done within the range of 1 month up to 6 months post-intervention.

Meta-analysis

According to Wang et al. (2023), the meta-analyses established that gradual stress-level decline started directly after the intervention and lasted until the 3-month follow-up. After the intervention, there was a big drop in stress levels (SMD = -0.81, $P < 0.01$, 95% CI: The SMD drops to -1.11, -0.52, and -0.69, respectively, at the first, second, and third months of follow-

up). Additionally, long-term follow-up assessments indicated a large effect size for stress reduction (SMD = -0.86, P < 0.01, 95% CI: For instance, -2.46, -0.28 in one research study).

Table 1
Table 1: Meta-analysis Results for Stress Reduction(Wang et al., 2023)

Outcome	**Post-Intervention**	**3-Month Follow-up**	**Long-term Follow-up**
Effect Size	-0.81	-0.69	-0.86
P-value	< 0.01	< 0.01	< 0.01
95% CI	-1.11, -0.52	-1.08, -0.31	-1.12, -0.60

Subgroup Analysis

Subgroup analysis was performed according to country, outcome variable, and intervention period. The purpose was to ensure homogeneity (Armstrong & Tume, 2022). The results from other countries showed less heterogeneity than those from China. In addition, the type of outcome measure used in these stress reduction interventions or the duration of the intervention program did not significantly impact the effectiveness of stress-reducing interventions.

Table 2: 2: Subgroup Analysis Results for Stress Reduction(Wang et al., 2023)

Subgroup	**Effect Size**	**P-value**	**95% CI**
Country			
China	-0.92	< 0.01	-1.34, -0.52
Other Countries	-0.62	< 0.01	-0.96, -0.28
Outcome Measure			
PSS	-4.14	< 0.01	-5.26, -3.02
Other	-6.82	< 0.01	-11.40, -2.23
Intervention Duration			
Short-term	-0.42	< 0.01	-0.72, -0.11
Long-term	-0.99	< 0.01	-1.32, -0.63

The results presented in Table 2 represent subgroup analyses aimed at determining stress reduction in varying conditions, such as country, outcome measure, and duration. The effect sizes, p-values, and 95% confidence intervals for different subgroups have been included. Therefore, the stability level of the results can be considered to be high because any individual study did not have a major impact on the overall findings (Wang et al., 2023). Disregarded for that fact, the limited number of studies did not allow for an assessment of publication bias.The meta-analytic study suggests that mindfulness-based interventions are an effective way for nurses to deal with stress. Significant decreases in stress were seen right after the interventions and were seen again in later evaluations (Green & Kinchen, 2021). Subgroup studies supply more evidence for the effectiveness of the interventions in the same studies in various aspects, highlighting the possible impacts on nurse well-being and reducing occupational pressure.

DISCUSSION

Increasingly, mindfulness-based interventions (MBIs) are perceived as a resource for mental health protection and the strengthening of well-being. Multiple pieces of research show that they are efficient tools for symptomatic improvement regarding such common mental illnesses as depression, anxiety, and stress, with the added capability of boosting psychological well-

being (43–46). Notwithstanding this fact, most emphasis has been put on MBIs and how nurses should practice them. Ramachandran et al. (2023). Furthermore, it adopts a comprehensive approach by incorporating interventions like mindfulness, meditation, and relaxation techniques, which could significantly influence the evaluation of their individual impacts on nurses, beyond the scope of mindfulness alone.

15 randomized controlled trials (RCTs) were identified in clinical settings and were tested from inception to December 2022, representing diverse interventions and outcomes. Each study was combined pairwise into four outcomes, reporting moderate to large immediate post-intervention and short-term mBI favorable effects on perceived stress and burnout. Nevertheless, available research failed to prove that the MBIs would lead to the improvement of anxiety and depressive disorder symptoms (Wang et al., 2023). However, the certainty of the evidence was minimal, hence the need for additional research to draw a straight conclusion on the influence of diet on heart health. Furthermore, the review emphasized conducting more research to discover the effects of MBIs on nurses' well-being over a period of time. The evidence for this was based on a small number of studies with a long-term evaluation.

Nurses may experience numerous stressors during their work in the health care sector, from having to alleviate the suffering of their patients up to caring for those in the terminal stage of illness. Such stressors can ultimately damage the health of nurses. The COVID-19 situation with its psychological impact on nurses has only worsened it, as the nurses already dealing with typical workplace pressures have been placed in an extra vulnerable position (Sulosaari et al., 2022). Studies conducted lately indicate that MHIs are one of the most beneficial techniques to deal with stress among nurses, probably on account of the skills they provide to nurses who are not only able to recognize their current feelings but also to control their emotions.

According to Wang et al. (2023), the neurocognitive processes that make MBIs work to relieve stress in nurses may include changes in brain activity and a boost in the strength of brain connections that are necessary for controlling emotions. On the other hand, mindfulness has had a positive effect on enhancing self-compassion and self-awareness, which can contribute to stress reduction (Sulosaari et al., 2022). An evaluation conducted three months after the intervention confirmed the positive effect on nurses' stress reduction, with immediate post-intervention scores and those taken three months later demonstrating a sustained decrease, similar to previously obtained results. Even though only a few studies investigated the extended effects of laughter therapy for a period of 3 months, further research is required to determine the durability of these positive results.

CONCLUSION

This paper is an overview of the effectiveness of MBI (mindfulness-based interventions) applications in the prevention and promotion of burnout and job satisfaction among nurses. This review is based on 15 RCTs (randomized controlled trials) synthesizing evidence conducted in clinical settings, and it portrays the potential benefits of MBIs for nurses, particularly their health problems resulting from stress.This review found that the indicated current evidence shows a moderate to large reduction in nurses' levels of perceived stress and burnout, both right after and shortly after the intervention. These results show MBI as the most efficacious tool available for nurses to not only focus on their mental health and wellness but also as a remedy for the vulnerability effects associated with COVID-19.

Although the evidence seems very promising, it is necessary to note some limitations of the current literature, such as the low certainty of the evidence or the limited number of study

follow-ups conducted after long periods. Future research should aim at shedding light on these lapses so as to provide strong evidence on the mode of MBI's effect on nurses' health.

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