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ORIGINAL RESEARCH: PILOT STUDY

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Mindfulness-based stress reduction training yields improvements in well-being and rates of perceived nursing errors among hospital nurses

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Abstract

Introduction: This pilot study aims to further document mindfulness-based stress reduction (MBSR)'s effect on well-being while exploring its impact on errors among hospital nurses.

Background: The concept of mindfulness has been found to be highly relevant to holistic nursing practices but remains understudied and underused. Preliminary evidence suggests that MBSR can reduce stress among nurses. As stress and mental processes such as inattention are potential sources of error, MBSR may also help to improve patient safety. Reducing errors is of significant relevance in healthcare settings.

Design: A randomized controlled trial with a matched pair design was conducted.

Methods: Seventy Registered Nurses and licensed practical nurses were randomized to MBSR (N = 37) or a waitlist control condition (N = 33).

Results: Intention-to-treat ANCOVAs revealed that MBSR produced significant improvements in distress. High levels of treatment satisfaction were reported by a majority of participants. Of the nurses who reported that errors had been a problem for them (28.6%), a perceived improvement was noticed by over a third (37.5%) at 3 months post-treatment.

Conclusion: These initial findings suggest that the benefits of MBSR may extend to nursing errors.

KEYWORDS
MBSR, mindfulness, nurses, nursing error, stress, well-being

1 | INTRODUCTION

This pilot study aims to further document the mindfulness-based stress reduction (MBSR) program's effect on well-being while exploring its impact on nursing errors among hospital nurses.

2 | BACKGROUND

A concept analysis of mindfulness has recently highlighted its relevance for nurse well-being and holistic nursing practices and criticized the fact that it has remained underdeveloped in the discipline (White, 2014). In this analysis, mindfulness was described as "a transformative process where one develops an increasing ability to 'experience being present', with 'acceptance', 'attention' and 'awareness". (p. 282, White, 2014). In addition to the relevance of mindfulness to nursing holistic practices, it may also improve patient safety, which is of a universal concern (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016). Nursing errors are a significant source of concern in healthcare settings despite the use of various quality improvement strategies over the years. Low levels of factors related to well-being have been associated with errors (Hall et al., 2016). Consequently,

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programs aiming to increase health professionals' well-being, such as stress management programs, may be helpful not only in promoting self-care but also in increasing patient safety. Among available programs, the MBSR program (Kabat-Zinn, 1990) is of particular interest. Mindfulness training is thought to improve the self-regulation of attention, which may increase concentration (Hölzel et al., 2011). Improved well-being, attention and concentration may in turn reduce the occurrence of errors. Initial evidence suggests that MBSR could improve nurse well-being (Irving, Dobkin, & Park, 2009). To our knowledge, the impact of MBSR on patient safety has not yet been investigated.

Why this study is needed

- A recent concept analysis of mindfulness has highlighted its relevance for nurse well-being and holistic nursing practices while pointing out that mindfulness remains understudied and underused in this discipline.
- The mechanisms of mindfulness remain to be further clarified. It has been suggested that mindfulness can improve the self-regulation of attention, which may increase concentration.
- Lower levels of well-being and attention can increase nursing errors. As a result, mindfulness training may not only promote nurse well-being, but also improve patient safety. Preliminary findings suggest that mindfulness training can improve nurse well-being, but no data are yet available on its impact on patient safety.

3 | DESIGN

A randomized controlled trial with a matched pair design was conducted. Eighty nurses providing direct patient care were recruited in a general hospital setting. Seventy-five completed the baseline measures and were randomized in pairs to either a MBSR condition (N = 38) or a waitlist group (N = 37) using matched scores on a measure of burnout to control for individual differences in self-reported emotional exhaustion at work. A few participants either withdrew (N = 1), were excluded from the study for health reasons (N = 2) or had statistically outlying data (N = 2) leaving 45 registered nurses and 25 licensed practical nurses. Fifty-two nurses (74%) completed the post-treatment assessment.

4 | METHODS

The study protocol was approved by the relevant review boards and informed consent obtained from all participants. Participant sociodemographic variables are presented in Table 1. Measures were comprised of the Tension-Anxiety subscale of the Profile of Mood States: (*POMS-TA*; McNair & Heuchert, 2003) assessing somatic and cognitive symptoms of distress; the Nursing Errors Rating Scale assessing the extent to which nurses perceived improvement in the frequency of the commission of errors in the 3 months post-MBSR relative to pretreatment error frequency (0 = was never a problem; 5 = greatly improved); a 3-item scale assessing participants' judgements of the extent to which MBSR was beneficial to them at work, home and in general (1 = not useful, 10 = very useful). Pre-and post-treatment self-report measures were completed in groups in the hospital. The Nursing Errors Rating Scale was sent by mail 3 months following MBSR to nurses in the second and third recruitment wave as part of this pilot study. All participants in the control condition were offered MBSR once completed by the treatment group. The MBSR program (Kabat-Zinn, 1990) was comprised of eight weekly group sessions of 2.5 hrs each. The course material included several exercises to help increase attention and mindfulness including sitting and walking meditation, body scanning and yoga. Daily practice sessions of 45 min each were recommended and a full day retreat was included. Participants received a copy of Kabat-Zinn's (1990) book describing the MBSR program to thank them for their participation.

5 | RESULTS

Chi-square goodness-of-fit tests and t-tests revealed that the treatment and waitlist groups did not differ significantly at pretreatment on relevant sociodemographic characteristics (all $ps > 0.05$). ANCOVAs were performed using intention-to-treat analyses with the last observation carried forward method and pretest scores as covariates.

TABLE 1 Sociodemographic and work-related characteristics of the treatment, control groups and overall sample

Variable	MBSR group (N = 37)	Waitlist group (N = 33)	All (N = 70)
Age (*M/SD*)	47.03 (9.7)	45.30 (9.5)	46.21 (9.6)
Years working as RN or LPN (*M/SD*)	19.55 (10.6)	19.12 (10.8)	19.35 (10.6)
Marital status (*n*/%)			
Married/In a couple	27 (73.0)	25 (75.8)	52 (74.3)
Separated/Divorced	4 (10.8)	6 (18.2)	10 (14.3)
Single	3 (8.1)	1 (3.0)	4 (5.7)
Widowed	3 (8.1)	1 (3.0)	4 (5.7)
Education (*n*/%)			
RN	21 (56.8)	22 (66.7)	43 (61.4)
LPN	16 (43.2)	11 (33.3)	27 (38.6)
Work status (*n*/%)			
Full time	26 (70.3)	20 (60.6)	46 (65.7)
Part time	11 (29.7)	13 (39.4)	24 (34.3)

Note. RN = Registered Nurse; LPN = licensed practical nurse.

Compared with the waitlist group (pretest: *mean* = 10.72, *SD* 6.12; post-test: *mean* = 11.45, *SD* 7.00), MBSR produced significant and moderate reductions in the POMS-TA (pretest: *mean* = 11.32, *SD* 6.66; post-test: *mean* = 8.92, *SD* 6.89), F (1, 67) = 5.669, p = .020, partial eta squared = 0.08. More than twice the number of nurses in the treatment group (N = 10) showed a reduction in distress of at least 50% compared with the control group (N = 4). Nearly all participants from the treatment group who filled out the post-test reported completing at least six sessions of MBSR (N = 25/28; 89%).

Of the 28.6% of nurses who acknowledged that errors had been a problem for them (8 of 28), 37.5% (N = 3) rated themselves as having had committed fewer errors in the 3 months following treatment. In addition, participants generally provided very positive (8/10 or higher) post-test ratings when assessing the usefulness of MBSR at work (N = 21, 75%), at home (N = 23, 82.2%) and in general (N = 24, 85.7%). All but one of the nurses were of the opinion that it would be worthwhile to continue to offer MBSR at the hospital (N = 27, 96.4%). When asked to briefly describe how they benefited from the program, a majority of nurses reported positive changes including reduced stress, better coping with stress or increased relaxation (N = 20/28; 71%) and nearly half of them noted increased mindfulness, awareness or focus (N = 13/28; 46%).

6 | CONCLUSIONS

Consistent with previous research (Irving et al., 2009), this study revealed that the MBSR program produced moderate improvements in distress. Treatment satisfaction was high and most nurses rated the program as beneficial both at work and at home. MBSR's brief duration and group format makes it a cost effective intervention that can be provided in the work setting. The percentage of nurses in the present study acknowledging making errors (28.6%) is higher than the one reported in a national survey (19%), but this survey targeted medication errors only (Wilkins & Shields, 2008). Among nurses who perceived and acknowledged errors had been a problem, subjective ratings of improvement were reported by a third of them when assessed 3 months post-treatment. This improvement is clinically meaningful given the potential adverse consequences associated with errors in a hospital setting. Limitations to this study include the reliance on self-report questionnaires and a measure of perceived improvement in error making as opposed to using an objective measure. The possibility that social desirability may have contributed to an overestimation of the positive impact of MBSR or an underestimation of error making should be considered despite the de-identification of participants' responses. Despite these limitations, MBSR seems to have yielded positive mental health benefits among the majority of nurses with extended benefits to perceived errors. These initial findings are encouraging and suggest that MBSR may have a role to play in building a culture of well-being and safety among hospital nurses.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE [http://www.icmje.org/recommendations/]):

- substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data;
- drafting the article or revising it critically for important intellectual content.

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