

Impact of a Mobile Meditation Application Among Hospital-Based Acute Care Nurses

Sherrel Smith, DNP, MEDSURG-BC, NE-BC

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Article

Abstract

Compassion fatigue is a condition in which there is an inability to sympathize or feel compassion. Nurses have struggled with feelings of helplessness when caring for COVID-19 patients as well as dealing with the stress related to the unknowns of the disease and risk of spread. This article offers background information about the concept of compassion fatigue, synthesis of related literature, and describes the methods of a study that considered compassion fatigue, compassion satisfaction, and mindfulness. An intervention using the Headspace meditation application was created to improve compassion satisfaction, compassion fatigue, and mindfulness among hospital-based nurses. The study results and discussion describe how use of this application significantly impacted compassion satisfaction, compassion fatigue, and mindfulness in a small sample. This study was the first known to evaluate the impact of mobile meditation application use by acute care nurses on these concepts. The conclusion notes implications for research and practice, such as studies with a larger and more diverse sample and comparisons of different meditation applications.

Key Words: compassion fatigue, compassion satisfaction, secondary traumatic stress, burnout, mindfulness, Headspace mobile meditation, meditation, ProQOL5, MAAS, COVID-19

To stay or not to stay: that is the question. Should nurses change job roles or change careers altogether? Those who suffer from compassion fatigue and burnout are plagued with these questions regularly. Compassion fatigue is a term that describes nurses who lose the ability to nurture patients while coping with frequent heartache (Perregini, 2019). This term was first used by Carla Joinson in 1992 (Ames et al., 2017). Compassion fatigue can be described as a form of burnout. Nurses who suffer from burnout have an increased risk of compassion fatigue. Other terms that have been used interchangeably to describe compassion fatigue include secondary stress, secondary victimization, and secondary traumatic stress. Compassion fatigue is prevalent in nursing as well as other helping professions. It is the result of continuously caring for and meeting emotional and medical needs of patients and their families (Manella & Strayer, 2018).

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Background and Significance

Compassion fatigue and burnout can contribute to job dissatisfaction and turnover (Perregimi, 2019). Reducing compassion fatigue is crucial to healthcare settings around the world. Turnover can be costly for organizations when factoring in expenses to recruit and orient new staff. The average cost of turnover for one bedside nurse is estimated at \$37,000-\$58,000 (Ashley & Karakashian, 2018). For every 1% increase in turnover, cost to the healthcare organization is projected at \$300,000 (Woten & Karakashian, 2018). There are also intangible costs related to loss of intellectual capital from experienced nurses leaving their work sites. With the current nursing shortage, an increase in turnover can be detrimental.

Compassion fatigue and burnout interfere with a nurse's ability to provide high-quality

Compassion fatigue has also resulted in increased absenteeism, errors, and other disruptive behaviors and can have negative effects on patient care. Compassion fatigue and burnout interfere with a nurse's ability to provide high-quality care, thus risking quality and safety (Ames,

care, thus risking quality and safety

[Salmond, Holly, & Kamienski, 2017](#)). Examples may include medication errors and failure to rescue patients with unrecognized declining health status. Medication errors account for over 7,000 preventable deaths in the United States (US) annually ([Karakashian & Schub, 2018](#)).

The current state of the COVID-19 pandemic has caused an increase in compassion fatigue globally and across healthcare settings. Nurses are working harder while caring for COVID-positive patients. At the same time staffing has become tighter with increased patient volumes and decreased availability of staff. In one survey 70% of employees indicated that the COVID-19 pandemic has been the most stressful time in their entire professional career ([Gavidia, 2020](#)). This aligns with an increase in prescription medication for depression, anxiety, and sleep aids ([Panchal, Kamal, Orgera, Cox, & Garfield, 2021](#)).

The purpose of this research was to propose an intervention to improve compassion satisfaction, compassion fatigue, and mindfulness with the use of the Headspace meditation application. The outcome goal was to improve compassion satisfaction, compassion fatigue, and mindfulness. Addressing compassion fatigue serves as an initiative to ultimately improve safety as well as quality outcomes.

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Literature Synthesis

Meditation and Mindfulness

Mindfulness interventions have been shown to reduce stress, burnout, and anxiety

Meditation and mindfulness are often used interchangeably though there are differences. Meditation is a practice that can calm the mind and enhance awareness ([Behan, 2020](#)). Practicing meditation allows calm reactions to environmental stimuli. Studies that have evaluated people who meditate over time show changes in the brain related to stress and anxiety ([Afonso, Kraft, Aratanha, Kozasa, 2020](#)). Mindfulness is awareness of the present moment ([Behan, 2020](#)). There is growing evidence of the positive impacts of mindfulness training on psychosocial well-being, and physical and mental health ([Champion, Economides, & Chandler, 2018](#); [Economides, Martman, Bell, & Sanderson, 2018](#)). Mindfulness interventions have been shown to reduce stress, burnout, and anxiety ([Silver, Calesu, Casson-Parkin, & Ormond, 2018](#)).

Headspace Mobile Meditation Application

Research examining the effectiveness of the Headspace meditation application has shown a reduction in stress among healthcare workers ([Wylde, Mahrer, Meyer, & Gold, 2017](#)). Implementing regular use of a meditation application was feasible given the convenience of use through a mobile device. During the pandemic and still, nurses have been feeling more helpless and in need of a mechanism to destress. The current climate of healthcare has challenged even those with effective coping mechanisms.

The Headspace meditation application is among the highest-rated mobile meditation applications when using the Mobile Application Rating Scale (MARS) ([Mani, Kavanaugh, Hides, & Stoyanov, 2015](#)). The rating categories include engagement, functionality, aesthetics, information, satisfaction, and overall. Of the 23 applications, MARS scores ranged from 3.4-4.0. Headspace scored a 4.0. Headspace offers hundreds of self-guided meditation exercises with topics including stress, anxiety, sleep, and relationships ([Headspace, 2022](#)). Meditation increases awareness, compassion, focus ([Bennike, Wieghehorst, & Kirk, 2017](#); [Wylde et al., 2017](#)) and the Headspace application improves mental, emotional, and social health ([Headspace, 2022](#)).

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Research supports the effectiveness of improving compassion satisfaction, compassion fatigue, and mindfulness in adults. Mindfulness improves psychosocial well-being, physical, and mental health ([Champion et al., 2018](#); [Economides et al., 2018](#)). In one randomized control trial conducted by Champion et al. ([2018](#)), the 38 participants assigned to use the Headspace application reported a positive impact on their satisfaction with life. Participants were recruited through mass email and used the application for 10 or 30 days. In another randomized control trial of 87 participants who were assigned to use the Headspace application for eight weeks, there was a reduction in stress and a significantly positive impact on irritability and affect ([Economides et al., 2018](#)).

Mindfulness improves psychosocial well-being, physical, and mental health

These studies suggest that the use of the Headspace application is sufficient to induce a positive impact on self-reported stress, resilience, and satisfaction with life ([Champion et al., 2018](#)). In a study of medical residents, use of the Headspace application was shown to improve feelings of mindfulness and mood ([Wen, Sweney, Welton, Trockel, & Katznelson, 2017](#)). Lastly, in a separate study of college students who were randomly assigned to use one of three apps, for ten minutes per day for ten days, Headspace users had positive outcomes. Continued use of the Headspace application showed improvements in

mindfulness, resilience, and depressive symptoms (Flett, Connor, Riordan, Patterson, & Hayne, 2019). In summary, the Headspace meditation application has positive impacts when used regularly for ten days through eight weeks among varying populations.

Methods

The Professional Quality of Life 5 (ProQOL 5) and Mindfulness Attentive Awareness Scale (MAAS) surveys were used to collect pre-and post-intervention data through Survey Monkey online. Using Survey Monkey allowed the protection of participant anonymity. Each participant created a self-selected identification code that followed this nomenclature: second letter of the mother's first name, two-digit birth month, the first letter of the father's first name, first two letters of city of birth. This allowed for matching results. ProQOL 5 and MAAS survey results were secured and stored in a password-protected computer in an encrypted file that will be kept for seven years, and then permanently deleted.

A paper copy of the informed consent was obtained from participants during week one of the implementation period. Participants were reminded that participation is voluntary and would not impact employment. There was no anticipated risk to participants. IRB approval was obtained and participants were recruited via flyers, rounding, and email recruitment among part-time and full-time nurses working on a cardiac stepdown unit. All participants who completed the weekly meditation were entered in a drawing for a \$25 gift card.

Measurement

The ProQOL5 measures compassion satisfaction and compassion fatigue. The subset of 10 questions from the survey measures compassion satisfaction, while the 20-question subset of the survey measures compassion fatigue. The 15-question Mindfulness Attentive Awareness Scale (MAAS) was used to measure mindfulness. The Cronbach alpha for compassion satisfaction on the ProQOL 5 is .88 and the MAAS is .89. The aggregate and subscale scores of the ProQOL 5 and the MAAS were calculated using their associated scoring rubrics. Each score distribution (i.e., pre-intervention and post-intervention) was checked for the statistical assumption of normality using skewness and kurtosis statistics. When the assumption was met, repeated-measures *t*-tests were used to test for significant change in the scores across time. Means and standard deviations were reported and interpreted for the *t*-test analyses. All analyses were performed using SPSS Version 26 (Armonk, NY: IBM Corp.) and statistical significance was met at a *p*-value of 0.05.

Intervention

A 10-minute meditation exercise was used four times per week for eight weeks.

The Headspace meditation application was selected as the intervention meditation application due to its high MAR rating among other meditation applications. The promotional no-cost use to healthcare professionals was another factor in selecting this application. Headspace provides guided meditation exercises. A 10-minute meditation exercise was used four times per week for eight weeks. These exercises were accessed independently by nurses on varying days based on schedules and preference. Each participant submitted a weekly validation calendar that confirmed use of the meditation exercises weekly. A minimum of 75% participation compliance was accepted. The validation calendars were used to confirm entry into the weekly drawing.

Results

The study took place in the cardiac intermediate care unit. Ten participants initially expressed interest in the study, and eight participants completed the study. Five of the eight participants work the night shift and three work the day shift. Participants included seven females and one male. Of those who completed the study, half completed the meditation for the full eight weeks, while the other half completed a minimum of 75% of the meditation sessions.

ProQOL 5 Analysis

The aggregate means for compassion satisfaction confirmed an increase in compassion satisfaction means pre-intervention as compared to post-intervention (see Figure 1). The ProQOL 5 survey measures compassion satisfaction using a subset of the 30-question survey.

Compassion fatigue is measured using the subset scores that make up the burnout and secondary traumatic stress scores. Therefore, the means for burnout and secondary traumatic stress are represented, though

Compassion fatigue is a measure of burnout and secondary traumatic stress.

not a primary outcome measure for this study. For compassion satisfaction, the cut score was 23. Scores above 23 represented a good level of satisfaction. For burnout, the cut score was also 23, however, scores below 23 represented positive feelings. For secondary traumatic stress, any score above 43 represented an area of concern.

Figure 1.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	CSpre	40.1250	8	6.10474	2.15835
	CSpost	42.7500	8	5.06388	1.79035
Pair 2	BOPre	24.5000	8	6.23355	2.20389
	BOpost	19.2500	8	4.16619	1.47297
Pair 3	STSpres	24.5000	8	7.61577	2.69258
	STSpost	18.8750	8	5.43632	1.92203

Note: Mean scores and standard deviation pre-and post-intervention for each element of the ProQOL5 (CS, BO, STS)

Compassion fatigue is a measure of burnout and secondary traumatic stress. Compassion fatigue scores significantly decreased over time as noted in Figure 2.

Figure 2.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	CFpre	49.0000	8	13.58571	4.80327
	CFpost	38.1250	8	9.47836	3.35111

The paired t-test in Figure 3 revealed a significant increase in Compassion Satisfaction across time, $p = 0.025$. Though burnout and secondary traumatic stress were not primary outcome measures the results revealed a significant decrease in Burnout across time, $p = 0.021$. Further review notes that there was NOT a significant change in Secondary Traumatic Stress across time, $p = 0.051$.

Figure 3.

Paired Samples Test							
Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference			
				Lower	Upper		

Pair 1	CSpred - CSpred	-2.62500	2.61520	.92461	-4.81136	-4.3864	-2.839	7	.025
Pair 2	BOpred - BOpred	5.25000	5.00714	1.77029	1.06393	9.43607	2.966	7	.021
Pair 3	STSpred - STSpred	5.62500	6.78101	2.39745	-.04407	11.29407	2.346	7	.051

Note: Mean scores using paired t-test for each element of ProQOL 5. Includes statistical significance.

The paired t-test in figure 4 shows a significant improvement in compassion fatigue over time, $p = 0.33$.

Figure 4.

Paired Samples Test									
Paired Differences						t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
CFpred - CFpred	10.87500	11.59356	4.09894	1.18254	20.56746	2.653	7	.033	

Note: CF paired t-test

Mindfulness Analysis

The aggregate mean scores for mindfulness confirmed an increase in mean scores. The average mindfulness score for adults was 4.22. When measuring mindfulness, higher scores represented a higher level of dispositional mindfulness. Based on these results, participant baseline scores were lower than the adult average, however improved post-intervention.

Figure 5.

Paired Samples Statistics				
	Mean	N	Std. Deviation	Std. Error Mean
Mindpred	3.7833	8	.93044	.32896
Mindpost	4.3667	8	.86042	.30420

Note: Mean score and standard deviation of mindfulness results

The paired t-test revealed a significant increase in mindfulness across time, $p = 0.027$.

Figure 6.

Paired Samples Test									
[Figure 6 content is obscured]									

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Mindpre - Mindpost	-.58333	.58959	.20845	-1.07624	-.09042	-2.798	7	.027

Note: Paired t-test of mean scores and statistical significance of mindfulness scores pre-and post-intervention.

In summary, the results from each subscale in the table represented statistical significance, except for secondary traumatic stress. Secondary traumatic stress results were slightly above the level of being statistically significant and could have represented a type II error. However, the findings suggest that the results are clinically significant.

Table. Means and Standard Deviations for Repeated-Measures t-tests

Subscale	Pre-intervention	Post-intervention	p-value
Compassion Satisfaction	40.1 (6.1)	42.8 (5.1)	0.025*
Burnout	24.5 (6.2)	19.3 (4.2)	0.021*
Secondary Traumatic Stress	24.5 (7.6)	18.9 (5.4)	0.051
Compassion Fatigue	49.0 (13.6)	38.1 (9.5)	0.033*
Mindfulness	3.8 (0.9)	4.4 (0.9)	0.027*

Note: * Statistically significant, $p < 0.05$

These findings align with previous studies that found an improvement in mindfulness following use of the Headspace meditation application. The measure of compassion satisfaction and compassion fatigue, however, is not widespread in the literature. Therefore, this study serves to promote new knowledge related to the use of the Headspace meditation application and the impact on compassion satisfaction and compassion fatigue. The Headspace meditation application has been used in many studies to measure various outcomes, but few studies have included outcome measures as measured by the ProQOL5 survey. Also, few studies have measured outcomes among acute care nurses.

Discussion

Results from this study support that meditation via the Headspace application resulted in positive outcomes. Improvements in compassion satisfaction, compassion fatigue, and mindfulness were hypothesized at the start of the study; the results validated these hypotheses in a population of acute care nurses who were not previously studied. Improvements in these outcome areas have the potential to positively impact absenteeism, turnover, and patient outcomes. While measuring compassion fatigue, burnout and secondary traumatic stress scores were measured as well. Burnout, which closely correlates to compassion fatigue, was demonstrated to decrease with use of the Headspace application as well.

In this study, mindfulness scores significantly increased...

Many studies have had similar positive results with the use of the application ranging from 10 days to 30 days. The improvement in compassion satisfaction support other studies that showed improvements in well-being following the use of Headspace ([Bostock, Croswell, Prather, & Steptoe, 2018](#); [Yang, Schamber, Meyer, & Gold, 2018](#); [Zollars, Poirier, & Pailden, 2019](#)). In this study, mindfulness scores

significantly increased which aligns with findings from two studies that also used the MAAS scale to measure mindfulness (Robinson, 2018; Bennike et al., 2017). Among all the studies that used the Headspace meditation application, only one study included nurses, which were novice pediatric nurses in a Children's Hospital (Wylde et al., 2017).

A strength of the study was the engagement and participation of the participants. Participants shared positive feedback, specifically use of the application with other family members. Another participant actively shared meditation exercises that she found most helpful. Use of a meditation application that is free and has a high application rating among similar applications was another strength of the study. Meditation using a mobile device provided convenience and promoted accessibility.

There were several limitations to this study. The limited sample size prohibits generalization of conclusions, thus the need for further research with a larger sample is encouraged. Also, the sample was limited to nurses working on a cardiac stepdown inpatient unit. Repeating this study with a sample of nurses from various clinical settings would provide additional information. In addition, this research was limited to the use of one meditation application, of many. Further research comparing various applications would be beneficial.

Meditation using a mobile device provided convenience and promoted accessibility.

Conclusion: Recommendations for Research and Practice

The purpose of this study was to propose an intervention to reduce compassion fatigue. The use of the Headspace meditation application four times per week for eight weeks among hospital-based, acute care nurses has demonstrated significant improvements in compassion satisfaction and mindfulness. Improvements in compassion satisfaction and compassion fatigue may impact job satisfaction, absenteeism, and burnout. Likewise, improvements in mindfulness contribute to decreased errors.

Compassion fatigue has negative consequences for nurse turnover, absenteeism, and errors. In this study, compassion satisfaction and mindfulness were significantly increased following use of the Headspace meditation application. While further research is needed to evaluate larger samples of nurses across various specialties, this study provides foundational knowledge about the impact of these measures among acute care nurses. Other populations that may benefit could include homecare, hospice, and critical care nurses.

Nurse leaders are encouraged to implement strategies such as the use of meditation...

Nurse leaders are encouraged to implement strategies such as the use of meditation to improve patient outcomes through the reduction in errors. There is also a global need to reduce nursing and turnover given the nursing shortage and associated costs. Regular use of meditation through Headspace can provide an inexpensive solution to a costly problem. Addressing compassion fatigue offers an opportunity to improve outcomes for nurses, and thus for patients.

Author

Sherrel Smith, DNP, MEDSURG-BC, NE-BC

Email: Sherrel79@gmail.com

Sherrel Smith is the Director of Nursing Services at a community hospital in Charleston, SC. Sherrel studied at South Carolina State University, The Medical University of South Carolina, and earned a doctorate in nursing practice from Chamberlain University. She has been a nurse for over 20 years. She has worked in academia and in acute care, to include roles in education and nursing leadership. She also holds dual certifications as a medical-surgical nurse as well as a nurse executive. As a nurse leader throughout a pandemic, Sherrel has had firsthand exposure to the stress that nursing staff are experiencing. Compassion fatigue has existed among healthcare workers for many years. Sherrel has witnessed that with the added stress of the pandemic, nurses are struggling to find coping strategies. This prompted her to investigate strategies to provide a solution.

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