Introduction

Emergency nurses are subject to high levels of stress given high patient volumes and acuity levels, high levels of unpredictability, increased patient–clinician violent encounters, and exposure to emotionally traumatic events at the bedside (Elder, Johnston, Wallis, Greenslade, & Crilly, 2019; Gacki-Smith et al., 2009; Tabriz, Trogdon, & Fried, 2019). Overall nursing job-related burnout has been linked to increased nursing turnover and shortages, as well as decreased quality of patient care (Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). Emergency departments (EDs) specifically experience high nurse turnover rates, according to the National Healthcare Nurse Retention and Nurse Staffing report (Nursing Solutions, Inc., 2018) which noted a 102.4% turnover rate in EDs across the United States from 2013 to 2018. A particular burden related to increased turnover rates in emergency nursing is the high cost associated with replacing health-care personnel. The average cost of replacing...
a full-time equivalent nurse ranges from an estimated $22,000 to $64,000 (Jones, 2008). Identifying strategies that address work-related burnout and stress among ED nurses is essential to improve retention rates, health-care spending related to turnover, and overall clinician well-being.

As a holistic form of self-care, mindfulness interventions can address clinician burnout and can assist in the cultivation of resilience, or the ability to be “...‘one's best self’ in the ongoing daily challenges of being a nurse, physician or other clinician” (Bauer-Wu & Fontaine, 2015, p. 18). Core to the concept of holistic health care is the idea that clinicians must invest in forms of personal healing, or self-care, as a means to care for patients (Keegan, 1987). Participating in self-care practices is crucial for emergency clinicians, as suppression of personal responses to stressful or traumatic events has proven to be detrimental to clinician health and patient care (Adriaenssens, De Gucht, & Maes, 2015). Acknowledging the anxiety, stress, and other emotions experienced by ED clinicians in the aftermath of stressful and traumatic patient presentations can be facilitated through holistic practices such as mindfulness (Serrone, Marcus, & Longmore, 2018).

Many mindfulness-based stress reduction (MBSR) formats have been designed for patients and health-care professionals across various disciplines and settings, however, few mindfulness interventions have been studied in the ED setting (Kluepfel et al., 2013; Krasner et al., 2009; Shanafelt et al., 2012). Prioritizing clinician well-being is essential to fulfill “The Triple Aim” framework of improving the health of populations through improving patient satisfaction and reducing health-care costs (Bauer-Wu & Fontaine, 2015; Berwick, Nolan, & Whittington, 2008). Addressing ED clinician well-being through exposure to mindfulness practices is needed for high-quality, safe, and effective patient care in emergency settings. The present mixed methods study examined the feasibility and impact of a mindfulness-based intervention on registered nurse (RN) and patient care technician (PCT) burnout at an urban, Level 1 trauma center ED.

Terminology

Burnout. Nurses are at the greatest risk of developing burnout in comparison to individuals in other occupations (Gelsema et al., 2006; Maslach, 2003). The term burnout was first defined by psychologist Herbert Freudenberger (1977) as the extinction of one’s motivation to a relationship or cause, where the initial desired results from one’s engagement are no longer felt. The definition of burnout was further defined as a psychological state of mind resulting from increased and prolonged emotional or psychological stress on the job (Maslach & Jackson, 1981). Maslach and Jackson (1981) developed a conceptual model of burnout used today consisting of three domains: emotional exhaustion, depersonalization, and (low) personal accomplishment. Emotional exhaustion is defined as the depletion of one’s emotional reserves; depersonalization is negativism or cynicism with one’s thought processes or actions; (low) personal accomplishment includes feelings of incompetence in an individual’s personal or professional life (Maslach & Jackson, 1981). These domains of burnout have been assessed among health-care professionals in relation to mindfulness interventions through the Maslach Burnout Inventory (MBI) assessment tool (Schaufeli, Leiter, Maslach, & Jackson, 1996).

Mindfulness Interventions. Mindfulness has been proposed as a mind–body training that may decrease clinician burnout, increase well-being, and improve patient care (Kabat-Zinn, 1994). Mindfulness is defined as the quality of having intentional, present-moment awareness in everyday activities (Kabat-Zinn, 1994). Mindfulness can be manifested through a variety of meditation practices and formats, with MBSR being a common form of mindfulness delivery. MBSR, first developed by Jon Kabat-Zinn in 1979, has been shown to decrease anxiety, fear, and reported burnout (Kabat-Zinn, 1994). Despite the fact that many studies identify the need to implement mindfulness interventions for clinicians, few engage clinicians in mindfulness training in the work setting where resiliency practices are most needed.

A variety of studies have used adapted or brief forms of MBSR training to deliver mindfulness to clinicians. One study modified the MBSR format to deliver mindfulness to pediatric intensive care unit nurses within the clinical setting (Gauthier, Meyer, Grefe, & Gold, 2015). Outcomes of this study revealed a high percentage of participant adherence to the program and decreased stress scores from baseline to after the program (Gauthier et al., 2015). Braganza, Young, Sweeny, and Brazil (2018) implemented short,
4-minute pauses at the beginning of ED shifts, as well as 30-minute drop in sessions. The program resulted in participants’ increased knowledge of mindfulness and increased frequency of practicing mindfulness (Braganza et al., 2018). Several studies have successfully implemented mindfulness programs with interprofessional groups, demonstrating that the involvement of a variety of health-care professionals in mindfulness practice is both necessary and useful (Goodman & Schorling, 2012; Mackenzie, Poulin, & Seidman-Carlson, 2006; Shapiro, Astin, Bishop, & Cordova, 2005). Participant retention rates reported in pilot mindfulness intervention studies range from 73% to 84% (Penque, 2019; Salyers et al., 2011). Overall, results from these prior studies support the feasibility and effectiveness of a brief mindfulness intervention for reducing burnout symptoms among clinicians.

Compassion Training. The study of compassion has been incorporated into MBSR trainings as a necessary component of self-care practice and interpersonal engagement. Compassion meditation training has been shown to decrease mind wandering and increase mindfulness skills, positive affect, and reduce negative affective states (Germer & Neff, 2013; Jazaieri et al., 2016). Compassion trainings extend beyond mindfulness practice to focus on recognizing the suffering of oneself and others, and cultivating states of compassion as opposed to solely gathering one’s attention (Jazaieri et al., 2016). One study found that a 9-week compassion training resulted in decreased mind wandering from before to after the program, and increased caring behaviors toward oneself (Jazaieri et al., 2016). Compassion topics are crucial to introduce in the health care setting in order to cultivate self-care practices for clinicians working in high-stress work settings.

The Present Study

The current pilot study focused on an ED-specific modified mindfulness-based intervention implemented at unit staff meetings. The first aim of this pilot study was to assess the feasibility of the Emergency Resiliency Initiative (ERI), which consisted of three mindfulness-based sessions for ED RNs and PCTs. Feasibility was assessed with regards to session attendance and completion of self-report questionnaires. The second aim was to investigate changes in burnout scores over two time periods (before and after the intervention). The third aim was to understand clinician perspectives about drivers to burnout in the ED work setting and program feasibility through qualitative interviews. It was hypothesized that delivery of the intervention would be feasible, thus resulting in participation and retention similar to prior mindfulness-based studies, and that the trainings would reduce at least one domain of burnout scores.

Method

Study Design

A mixed methods approach with a pre/postintervention design was used to measure the feasibility and impact of a mindfulness-based program on ED nurse and PCT burnout. The study included three data collection points: prior to the intervention, at the conclusion of the intervention, and 1 to 3 months after the end of the intervention (for qualitative participants only).

Research Questions. Despite the abundance of evidence evaluating mindfulness interventions for nurses in various clinical settings, few studies have investigated such interventions in the ED work context where clinician perspectives are considered. Therefore, the purpose of this study was to assess the feasibility of a mindfulness intervention program for ED RNs and PCTs, examine burnout score changes, and understand drivers of burnout in the ED workplace. The research questions were the following:

Research Question 1: What is the evidence related to the feasibility of the mindfulness intervention?

Research Question 2: What is the influence of the mindfulness intervention on the burnout scores of RNs and PCTs?

Research Question 3: What are the clinician perceptions of the main drivers of ED burnout?

Participants

Thirty-five nurses and PCTs working in the ED at an urban Level 1 trauma center were recruited for the study during the months of August, September, and October 2018. The study was approved through the University of Virginia Institutional Review Board.
Recruitment for the August 2018 study began 2 weeks prior to the study through announcements during staff meetings, flyers, e-mails, and individual recruitment. Any RN or PCT who worked clinically full-time in the UVA ED was eligible to participate in the program. There were no eligibility exclusion criteria with regards to length of time working in the ED. Incentives for participation included attendance counted toward unit staff meetings and complimentary dinner before each session.

**Procedure**

Consent forms were distributed, and paper self-report questionnaires were provided to the participants at preintervention and immediately postintervention. The formal mindfulness training sessions took place once a month in August, September, and October of 2018 in a hospital meeting space during unit staff meetings (after the end of “day shift”) for 90 minutes. The meeting space was located outside of the ED in a conference room within the hospital lobby. Participants were given the option of attending the sessions in-person or through an online videoconferencing application. Each session was recorded and uploaded to a secured online portal where participants could watch previous sessions. Participants could watch the session live (livestream) through the videoconferencing app and participate in activities with the in-person group, or could watch the recording once it was posted on the portal. Those who watched the session through the portal after the live session were not able to engage with participants since the session had already passed. The use of this application allowed for increased accessibility for participants with child care needs or for those who were not working on the days of the sessions. Participants were asked to inform the principal investigator over e-mail when they watched any program session through the online portal.

Staff meetings began with formal announcements from the unit manager, which were then followed by the mindfulness intervention program delivered by School of Medicine and School of Nursing facilitators who had experience leading MBSR and mindfulness-based programs. Outside of the program meetings, participants were asked to complete at least two mindfulness meditations per week using their choice of meditation delivery method. Participants had the option of completing a guided meditation and were given a list of recommended free 5-minute meditations from a phone- and tablet-compatible meditation app. Participants could also complete nonguided meditations on their own based on the meditations they learned in the sessions from the facilitators. Drop-in meditations were also implemented on the unit by facilitators (on a nonscheduled basis) and took place in the first hour of the day shift in nonoccupied trauma bays in the department. Participants’ meditation frequency was collected through the meditation app history log. If participants chose not to use the meditation app, they were asked to report their meditation frequencies through an online form each week.

**Intervention Design**

The ERI was developed from a shortened, modified version of Jon Kabat-Zinn et al.’s (2017) traditional MBSR model. The MBSR model was adapted to the time constraints faced by ED nurses and PCTs in that it offered sessions during required staff meetings and meditations during ED shifts and through a meditation app. The program was designed for clinicians in need of realistic, implementable practices for stress management and well-being/resiliency cultivation in the hospital setting (Bauer-Wu & Fontaine, 2015).

**Didactic Material.** Each session began with a 5-minute grounding practice to gather participants’ attention into the present program. The practice was a brief meditation asking participants to bring their attention to their breath. The majority of the session time consisted of a 40-minute didactive presentation of that month’s theme. Topics included: introduction to mindfulness, applications of mindfulness in the ED, and compassion. Subtopics integrated into the sessions included awareness of thoughts and feelings, biases and assumptions, dealing with unpleasant and pleasant events, identifying self-care practices, understanding empathy and compassion, and being with suffering. These themes framed the rationale behind the experiential exercises.

**Formal Mindfulness Meditation.** Mindfulness trainings during the sessions were implemented through a variety of meditations. ERI facilitators guided participants through the following meditations: (1) the body
scan: guiding the participants to pay attention to bodily sensations and any emotional/cognitive reactions to the sensations while remaining seated or in a lying down position; (2) sitting meditation: guided silent meditation cultivating awareness to thoughts, feelings, and sensations; (3) loving kindness meditation: concentrating one’s attention through intentional cultivation of authentic, positive emotions (Fredrickson et al., 2017).

**Compassion Practices.** One session of the training incorporated a compassion training. Participants engaged in discussions about the difference between empathy and compassion, and how to cultivate self-compassion during challenging times in the workplace (Halifax, 2014). A self-compassion meditation allowed participants to practice engaging with the following compassion statements: “I acknowledge my suffering,” “May I be kind to myself,” and “What do I need?” adapted from established self-compassion trainings (Germer & Neff, 2013).

**Quantitative Methods**

**Outcome Measures.** Feasibility in the study was measured by the investigator, who monitored the number of participants enrolled and retained in the program, the number of participants who took the pre/post surveys, and the frequency of meditation completion. Attendance was taken at each session (both in-person and from the livestream), and participants were asked to e-mail the investigator after watching a session online.

Symptoms of burnout were measured by the MBI Human Services Survey for Medical Personnel, which assessed burnout through statements that are associated with the three domains of burnout (emotional exhaustion, depersonalization, personal accomplishment; Maslach, Jackson, & Leiter, 1996). The MBI is a widely used tool with favorable reliability and validity (Iwanicki & Schwab, 1981; Pisanti, Lombardo, Lucidi, Violani, & Lazzari, 2013). The MBI is a 22-item survey that takes approximately 15 minutes to complete. Participants respond with how frequently they experience a burnout symptom using a Likert-type scale of 0 to 6: 0 = never, 1 = a few times a year, 2 = once a month or less, 3 = a few times a month, 4 = once a week, 5 = a few times a week, and 6 = every day. The MBI produces average scores for each participant within the emotional exhaustion, depersonalization, and personal accomplishment domains, with higher scores representing higher “levels” of a given burnout domain. Within the personal accomplishment domain, a high score corresponds to a greater sense of personal accomplishment (a low burnout indicator). Published literature using MBI results predominately report total scores compared with “cutoffs” ranging from “low” to “high” within the three domains. The results from this study are reported in accordance to recent MBI manual recommendations using average score reporting without cutoff comparison scores (Leiter & Maslach, 2016).

**Data Analysis Plan.** Feasibility metrics were captured using frequencies and percentages. Mean burnout scores were analyzed within the emotional exhaustion, depersonalization, and personal accomplishment domains. Differences in baseline/posttest scores between the RNs and PCTs were analyzed using independent-samples t tests. Paired t tests were used to compare pre- and posttest changes among the individual and combined clinician groups. Descriptive statistics were used to describe the demographics of the sample.

**Qualitative Methods**

Individual, in-person interviews were conducted with RNs and PCTs in the study to best describe the main drivers of ED burnout, and what aspects of the program clinicians felt were most applicable to their work setting. Descriptive, qualitative methods and thematic analysis were guided in alignment with Sandelowski (2010). Participants were recruited through a convenience sampling strategy that included any RN or PCT who participated in all sessions of the ERI and completed all pre- and postprogram surveys. Exclusion criteria included individuals who did not complete both the pre- and posttest surveys, attend at least two sessions, or complete at least two meditations per week. Invitations to participate were sent through e-mail. Five individual interviews were conducted over the course of 3 months, were audio recorded, and included in this analysis. The interviews were completed 2 weeks apart from each other. Observations of unit activity and participants’ engagement in the in-person program were conducted during the study period for context but were not included as data in this present analysis.
Qualitative Data Collection and Analysis. Data collection occurred from November 2018 to January 2019. Table 1 shows the relevant timeline associated with data collection. The individual interviews were conducted using a semistructured interview guide. Questions focused on clinicians’ perceptions of burnout relevant to the ED workplace, and perceptions of program feasibility and applicability of the discussed themes and practices. The discussions were audio recorded and transcribed verbatim. Transcripts were then uploaded into a qualitative software management application, Dedoose (Sociocultural Research Consultants, 2018). Observation notes were maintained throughout the data collection time period and were read for context but were not a part of the final data analysis. Data from the five individual interviews were included in the final qualitative analysis.

The data were analyzed by (1) immersion in the data (i.e., reading the transcripts several times), (2) a line-by-line analysis and data reduction leading to the development of inductive codes as they related to the three domains of burnout, (3) developing a codebook with newly created codes and meanings derived from the coding process, and (4) grouping codes together to form categories and eventual themes. In alignment with Lincoln and Guba’s (1985) proposed approach, rigor and trustworthiness were addressed in several ways: reflexive notes were maintained throughout the entire research process, decisions about the study design and theme development were open for review by members of the research team, prior assumptions and beliefs about the topic were discussed and bracketed, and an audit log was maintained for all analytical decisions.

Results

Quantitative Results

Feasibility. A total of 35 participants enrolled in the study. This includes all those who attended at least one class. The demographics of the sample are listed in Table 2. Of the 35 participants, 26 were RNs and 9 were PCTs. Of the 35 participants, 28 were female and 7 were men. Twenty-six participants (74.3%) of the 35 attended at least two of the three sessions and completed both the pre- and posttest surveys. The participant dropout group ($n = 9$), consisted of participants who completed the pretest surveys, but not the posttest surveys. In all, 66.7% of the dropout group attended only one session in addition to completing the pretest survey, while the remainder failed to attend any sessions due to unforeseen time/scheduling constraints. No participants in the dropout group recorded weekly meditations.

Regarding the format of session attendance, 69.3% of participants mixed in-person attendance with livestream participation and/or viewing of the video after it was posted online. In all, 19.2% of participants attended all three sessions in person, while 11.5% viewed all three sessions online after they were recorded. There were no participants who watched all sessions through the live stream (see Table 3).

In two sessions, participants on the livestream engaged in group activities simultaneously with other livestream participants, and with the larger in-person group. There was one session with only participants on the livestream who participated in session activities with the in-person group only. Participants completed an average of two meditations per week (see Table 4). Most participants (46.1%) reported using the guided meditation app to complete their meditations, while self-guided sitting and walking meditations were other reported options.

Burnout Scores. At baseline, RNs on average scored significantly higher on emotional exhaustion in comparison to PCTs, $M = 2.81$ versus $M = 1.91$, $p = .03$. RNs also scored on average significantly higher on depersonalization in comparison to PCTs, $M = 2.73$ versus $M = 1.33$, $p < .01$ at baseline (Table 5). RNs scored lower on personal accomplishment in comparison to PCTs, $M = 4.61$ versus $M = 5.01$, however, this difference was not significant. In the postintervention period, RNs scored lower on emotional exhaustion, $M = 2.28$ versus $M = 2.29$, and
personal accomplishment, $M = 4.99$ versus $M = 5.04$, in comparison to PCTs, although these differences were not significant. RNs scored higher on depersonalization in comparison to PCTs in the posttest period, $M = 2.23$ versus $M = 1.20$, however, this difference was also not significant (Table 5).

From the pre- to posttest period, RNs demonstrated a significant decrease in emotional exhaustion scores, mean difference $= 0.49$, $SD = 0.81$, $p = .01$, and a significant increase in personal accomplishment scores, mean difference $= 0.33$, $SD = 0.48$, $p = .01$ (Table 6). There was also a nonsignificant decrease in depersonalization scores, mean difference $= 0.41$, $SD = 0.93$. For the PCT group, there were nonsignificant increases in emotional exhaustion, mean difference $= 0.10$, $SD = 0.32$, and personal accomplishment scores, mean difference $= 0.02$, $SD = 0.15$ from the pre- to postperiod. There were additional nonsignificant decreases in depersonalization scores, mean difference $= 0.00$, $SD = 0.38$ for PCTs from the pre- to posttest period. Finally, there was a significant decrease in emotional exhaustion scores, mean difference $= 0.36$, $SD = 0.76$, $p = .03$, and increase in personal accomplishment scores, mean difference $= 0.26$, $SD = 0.44$, $p = .01$, from the pretest to posttest period among RNs and PCTs combined. A nonsignificant decrease in depersonalization scores, mean difference $= 0.32$, $SD = 0.85$ was noted from the combined clinician data (Table 6).

**Qualitative Results**

**Feasibility.** The interviewed participants provided useful insight into the feasibility of the program, specific to the timing of the sessions, as well as the integration of technology to deliver session information. The use of videoconferencing to stream the sessions provided participants with attendance flexibility. One participant noted that although the online platform allowed for increased accessibility to the sessions, engagement with the group was less intimate than in

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**Table 2.** Baseline Characteristics of Nurses and Patient Care Technicians

<table>
<thead>
<tr>
<th></th>
<th>Presurvey (N = 35)</th>
<th>Postsurvey (N = 26)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Nurses</td>
<td>26</td>
<td>9.97</td>
</tr>
<tr>
<td>PCTs</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>31.63</td>
<td>9.97</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22.86</td>
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</tr>
<tr>
<td>Female</td>
<td>77.14</td>
<td></td>
</tr>
<tr>
<td>Years of service on intervention unit</td>
<td>2.30</td>
<td>4.01</td>
</tr>
</tbody>
</table>

Note: $SD =$ standard deviation; PCT = patient care technician.

**Table 3.** Type, Number, and Percentage of Session Attendance by Participants (N = 26)

<table>
<thead>
<tr>
<th>Format</th>
<th>No. of Participants</th>
<th>No. of Sessions</th>
<th>Percentage of Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-person</td>
<td>5</td>
<td>Three</td>
<td>19.2</td>
</tr>
<tr>
<td>Online portal</td>
<td>3</td>
<td>Three</td>
<td>11.5</td>
</tr>
<tr>
<td>Livestream</td>
<td>0</td>
<td>Three</td>
<td>0.0</td>
</tr>
<tr>
<td>Mix*</td>
<td>18</td>
<td>Two or more</td>
<td>69.3</td>
</tr>
</tbody>
</table>

*Refers to participant session attendance through a combination of in-person, livestream, or online portal video viewing.

**Table 4.** Weekly Meditation Frequency and Delivery Preferences Among Participants

<table>
<thead>
<tr>
<th>Frequency (per Week)</th>
<th>Delivery Preferences</th>
<th>Type</th>
<th>%</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Meditation app</td>
<td>46.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-guided sitting</td>
<td>38.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Walking</td>
<td>15.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
an in-person experience. As the nurse articulated, “I think I did lose the connection that you get from being at the meeting, but it was a great way to hear [the session speaker].” (Participant 3)

The clinicians further noted that using a meditation app was helpful in applying the practices learned during the program sessions at home or in the clinical setting. Regarding the use of the meditation app, one participant noted,

I did some of the meditations on the app and some of them on my own at home. I see the value in it. I was just trying to find something to still the mind because there is too much going on in there. (Participant 1)

Participants held mixed reviews regarding the timing of the sessions. One participant expressed that the schedule of the sessions after the day shift was challenging for clinicians who were just ending their shift. As one participant described, “After work probably wasn’t the best of times because most people work 12-hour shifts and are dead tired afterwards.” (Participant 3) A second participant relayed that the sessions allowed for a “de-stress” opportunity that may have been inevitable given the placement of the session at the end of a workday:

The sessions after the shift were very relaxing, but I might have been able to sit through anything because after a shift you are just so exhausted. It was so great to be able to relax. (Participant 5)

One participant expressed interest in extending the amount of time of the sessions and culminating the program with a longer session outside of the work setting. As one participant described, “I wish

| Table 5. Differences in Maslach Burnout Inventory Scores at Baseline and Postintervention |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| | RNs | PCTs | RNs | PCTs | p Value | RNs | PCTs | p Value |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| EE | 2.81 (1.08) | 1.91 (0.91) | .03 | 2.28 (1.03) | 2.29 (0.95) | .99 |
| DP | 2.73 (1.22) | 1.33 (0.92) | <.01 | 2.23 (1.22) | 1.20 (0.78) | .07 |
| PA | 4.61 (0.77) | 5.01 (0.73) | .17 | 4.99 (0.72) | 5.04 (0.59) | .87 |

Note: SD = Standard deviation; EE = Emotional exhaustion; DP = depersonalization; PA = personal accomplishment; RN = registered nurse; PCT = patient care technician.

<p>| Table 6. Pre- to Postintervention Maslach Burnout Inventory Score Changes |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|</p>
<table>
<thead>
<tr>
<th></th>
<th>Preintervention (all)</th>
<th>Preintervention (dropouts)</th>
<th>Postintervention</th>
<th>Post–Preintervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>M</td>
<td>SD</td>
<td>n</td>
<td>M</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>RNs</td>
<td>26</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>2.81</td>
<td>1.08</td>
<td>2.93</td>
<td>0.53</td>
</tr>
<tr>
<td>DP</td>
<td>2.73</td>
<td>1.22</td>
<td>3.03</td>
<td>0.75</td>
</tr>
<tr>
<td>PA</td>
<td>4.61</td>
<td>0.77</td>
<td>4.46</td>
<td>0.89</td>
</tr>
<tr>
<td>PCTs</td>
<td>9</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>1.91</td>
<td>0.91</td>
<td>1.37</td>
<td>1.16</td>
</tr>
<tr>
<td>DP</td>
<td>1.33</td>
<td>0.92</td>
<td>1.60</td>
<td>1.44</td>
</tr>
<tr>
<td>PA</td>
<td>5.01</td>
<td>0.63</td>
<td>5.00</td>
<td>0.90</td>
</tr>
<tr>
<td>Combined</td>
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<td>9</td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>2.58</td>
<td>1.10</td>
<td>2.92</td>
<td>0.53</td>
</tr>
<tr>
<td>DP</td>
<td>2.37</td>
<td>1.29</td>
<td>3.03</td>
<td>0.75</td>
</tr>
<tr>
<td>PA</td>
<td>4.71</td>
<td>0.75</td>
<td>4.46</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note: SD = standard deviation; RN = registered nurse; PCT = patient care technician; EE = emotional exhaustion; DP = depersonalization; PA = personal accomplishment; dropouts = individuals who completed only presurvey data and not postsurvey data.
we had more time with each of the sessions. I would like to attend a retreat outside, like at [outside location].” (Participant 1). These ED clinician perspectives provide important insight into program scheduling considerations, ease of access to program sessions, and participant engagement from the videoconferencing platform.

**Burnout Themes.** Several themes emerged from the data that described contributors of ED burnout, as well as the tools effective for clinician resiliency in the chaotic ED workplace. These themes included

1. Prioritization Distress
2. Change Fatigue
3. Self-Protection Through Superficiality
4. Intentional Response
5. Community Amid Chaos

Selected qualitative exemplars from the themes prioritization distress, intentional response, and community amid chaos are found in Table 7.

**Prioritization Distress.** Emergency clinicians are constantly prioritizing as they aim to meet the demands of increasing patient workloads, patient acuity levels, and waiting room times. Many clinicians encounter the distress in needing to prioritize workflow efficiency over extended, quality patient interactions. These experiences are distressing, as expressed by the following excerpt:

There is no “catch a breath” in-between patients. As soon as a patient turns green, they haven’t even gotten their papers, they need prescriptions, and already someone from triage is needing something. You can’t finish this patient before they are going to push something on me. (Participant 1)

Participants described the burden of needing to push aside the psychosocial needs of a patient in order to accommodate more pressing “systems” metrics such as rooming patients quickly or transporting patients to diagnostic procedures. Many reported frustrations in performing nursing care in alignment with quantifiable metrics that did not correlate with the true emotional severity of a patient situation. One nurse articulated,

... one of my patients was miscarrying. Her husband couldn’t be there at the exact moment. Her fetal body parts were very recognizable. That was my “least-sick” patient. That was very hard for me. I wish there was a portion of the [Emergency Severity Index] scale that addressed the emotional trauma of that. (Participant 3)

The workplace emphasis of efficiency and increased attention to emergent patient presentations over nonemergent issues caused a reported shift in prioritization among ED clinicians. This shift, though seemingly necessary to provide emergent care, clearly had an impact on the well-being of the interviewed clinicians.

**Change Fatigue.** Emergency clinicians are frequently implementing new protocols, policies, and other departmental changes in order to address workflow and care delivery for patients in need of emergent care. Despite improved quality outcomes from new workflow policies, clinicians from the study reported fatigue in delivering these new protocols and policies. Many clinicians reported the over-abundance of new changes in conjunction with the deficiency in staffing levels:

I felt like I was kind of in a dark place in the ED at that time. It was mostly work-related. It was a combination of a lot of staffing changes, a lot of initiatives that were rolled out without nursing input. Too many patients, not enough staff. (Participant 1)

Participants noted that the delivery of new workflow changes in the department was implemented by RNs and PCTs. Much of the reported clinician fatigue derived from the burden of piloting new changes without necessary resources readily available. As one clinician described,

... it’s all about the numbers and you have to put the patients somewhere, have to put them in the beds—if you just had the extra staffing! Something bad is going to happen because the patient loads get higher and higher and we don’t take into account the acuity, but rather just the beds that are available. (Participant 4)

Change, either through the implementation of new policies, or transitions among care activities during a shift, proved challenging among ED clinicians who stepped up to implement new policies or provide care for the increasing volumes of patients.
**Table 7.** Selected Qualitative Themes on Emergency Department Clinician Burnout Perceptions

<table>
<thead>
<tr>
<th>Themes</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prioritization Distress</td>
<td>Well, there’s the systemic issue of we are always rushed, and always trying to go faster because there are more patients in the department, and I think that’s just what it is to work in an ER [emergency room]. Many times per day I have cut, short time with a patient because I have higher priority things to do. I wouldn’t make that decision any other way, I just hate that I have to make it. That’s what the job is, always prioritizing and re-prioritizing and moving things to the top of the list². What I’ve realized recently is how much Maslow’s hierarchy of needs is relevant. I want to get a blanket for one person who is mad at me, but another person needs a hyperkalemia protocol now so you’re like, death is higher than pain³.</td>
</tr>
<tr>
<td>Intentional Response</td>
<td>It is a matter of taking a little bit of time to perceive the things that are happening to me in a different light. If I can choose to be positive for just long enough that suddenly I am not carrying the stress, it is helpful². We would walk around, and have the opportunity to tell people “strong back, soft front.” I felt like, you know, I am running around like a chicken with their head cut off, and it doesn’t take a lot to stop in front of a patient’s room to literally stop for 5 seconds and take a breath³.</td>
</tr>
<tr>
<td>Community Amid Chaos</td>
<td>. . . and a huge draw for this was literally to have time with other nurses on the unit to have the affirmation that other people feel overwhelmed by this often. I know everyone gets stressed out. . . . I felt out of place at certain points because I was like am I going to make it in this environment, am I struggling? I think that one of the biggest ones is it has given me added empathy in recognizing when [clinicians] I’m working with are reaching compassion fatigue and juggling their desire to do more for specific patients but can’t because the extreme degree of time management prioritization required of them. It gives me the ability to kind of notice that and be more understanding of [clinicians] who are under that stress at the time².</td>
</tr>
</tbody>
</table>

Note: Number corresponds to participant number.

**Self-Protection Through Superficiality.** In addition to the work environment of EDs being chaotic, clinicians are at the front lines of witnessing physical, mental, and emotional human suffering among their patients. Participants discussed the difficulty in balancing caring “too much” with workflow efficiency demands. There was a noted fear of advancing more rapidly toward a burnout state. Many expressed the difficulty in witnessing the suffering of their patients at the end of their work day. One clinician described this distress in the following excerpt:

> You are either disingenuous and pretend to empathize, and then you don’t have to unload, or you are completely honest, you empathize, open up and that pain crawls in and what do you do? (Participant 5)

Some clinicians recognized the many “unknowns” and inherent lack of autonomy they had in the progress of their patient’s care. Managing states of uncertainty while remaining empathetic and compassionate was a difficulty expressed by one clinician:

> We see so much of the frustration with the health care system because its people who want to know answers to their problems as soon as possible. And, we can rule out scary things but we can’t always tell you the answer. That component I often find difficult. (Participant 3)

Other clinicians recognized the importance in detaching from difficult experiences encountered in the ED workplace. One clinician reflected on how they manage the increased demands and human suffering witnessed on the job, as described in this excerpt:

> I focus on work while I’m at work, when I’m not there, I don’t think about it. People are less likely to burn out if they think this way. They don’t go home saying, “Oh, did I make the right decision here or here?” (Participant 4)

ED clinician narratives about managing distress or burnout revealed self-reported feelings of superficiality and the separating of emotions related to workplace experiences. Clinician awareness of feelings of superficiality connected to the theme of prioritization distress in that some clinicians wished they had extra time to deal with emotional experiences at work.
**Intentional Response.** Clinicians noted key tools from the ERI relevant to managing difficult, stressful experiences in the ED workplace. Practical applications of mindfulness strategies that participants learned from the program related to gaining intention and awareness around responses, versus reacting negatively to difficult situations, as expressed in this excerpt:

> The practice of like, when I start to feel my back and everything getting up . . . where I just kind of like wipe this look off my face, and put a better look on, and take a deep breath. . . . just trying to [say], “strong back,” which is me getting my resilience back or my strength from me, and the “soft front” was not letting what happened to me project onto patients or staff. (Participant 1)

One clinician noted paying attention to the breath as a tool for redirection, as described in this excerpt:

> I try to be conscious of just breathing, not thinking of where I am coming from or doing later. The idea of a break is to take you away from something, not towards something. (Participant 2)

Practical applications of the mindfulness meditations and pauses led during the program sessions were actualized by ED clinicians, as reported in the interviews. These clinicians noted a benefit of the practices in managing stressful experiences at work.

**Community Amid Chaos.** Clinicians positively affirmed the experience of engaging in conversations about workplace demands and barriers to resiliency with their colleagues. A sense of community was described by clinicians who were given a platform in the program to share workplace experiences. One clinician noted the sense of affirmation about workplace stressors in the following statement:

> . . . it was hearing the thoughts that are racing through my head on a day-to-day basis and it’s nice to hear other people have those stressors. Everyone else is having those struggles. (Participant 4)

The program additionally allowed clinicians to discuss what brought them into the clinical setting. One clinician described the sense of community in the program as an opportunity for nurses to share what drives their practice, as described in the following statement:

> When we talked about what was important to us, why we did what we were doing, listening to the nurses describe their experiences was a really powerful and educational experience for me because you can work with these people and kind of see it and you can have people say it in a paragraph in some nursing class, but to hear specifics of that experience really helped me empathize with them and helped give this extra feeling to what they do. (Participant 2)

Feedback from the participants about the discussions taking place in the ERI program highlighted not only the practical applications of the mindfulness but also the cultivated sense of community. Clinicians appreciated being able to feel validated in their experiences at work through story sharing among their colleagues.

**Discussion**

The primary purpose of the present study was to assess the feasibility of an adapted pilot mindfulness intervention program among ED RNs and PCTs. Thirty-five RNs and PCTs signed up for the study, which demonstrates that clinicians on this unit were interested in mindfulness meditation practices for self-care and integrating mindfulness practices into the work setting. There was a 74% level of retention among the participants to all components of the training and surveys, which supports the aforementioned retention hypothesis. Considering this adequate level of retention in relation to similar studies, it seems that this mindfulness-based intervention design was an acceptable intervention in an ED setting. The majority of participants participated in the sessions through a mix of formats, which suggests that offering online attendance in conjunction with in-person attendance may enhance participant motivation and adherence to the program. Important implications for videoconferencing include engaging online participants with the in-person group. Through qualitative interviews, participants noted that the time of the program and length of each session should be carefully considered in tailoring mindfulness interventions to clinicians working various shift times.
The second purpose of the present study was to investigate changes in burnout among RNs and PCTs from before to after the program. At baseline, it was noted that RNs had significantly higher scores across the MBI domains of emotional exhaustion and depersonalization in comparison to PCTs. RNs were found to have significant pre/post decreases in emotional exhaustion and increases in personal accomplishment scores, while PCTs had nonsignificant MBI changes across all domains. These results suggest that nurses may be important clinician groups to target for burnout interventions given their baseline burnout scores and noted score changes from before to after the intervention. It is also important to consider the potential role differences that may be influencing the type of burnout experienced by RNs and PCTs, resulting in increased burnout scores. Noted nonsignificant decreases in PCT MBI domain scores may be due to low sample size in this clinician group. One final important finding was the change in emotional exhaustion and depersonalization scores from before to after the program among RNs and PCTs combined.

Overall, the changes in MBI scores support the hypothesis that burnout scores would be reduced in at least one domain for RNs and PCTs. The results suggest that a brief intervention across 3 months may be helpful for clinicians who work in a high-stress, unpredictable environment. However, additional studies with larger sample sizes and more sophisticated designs, such as randomized controlled trials, are needed to best assess the efficacy of a mindfulness intervention program.

The third purpose of this study was to understand the clinicians’ attitudes about what contributed most to burnout in their workplace. Through qualitative interviews, clinicians noted distress in prioritizing work efficiency goals over extended quality time with their patients. Clinicians additionally articulated that one of the greatest contributors of their distress in the workplace related to the implementation of many changes without personnel and material resources. The burden of constant workflow and policy changes led to a reported sense of fatigue among the clinicians, who were the main channels of delivery of these policies. In an effort to protect against potential burnout, clinicians noted the sense of superficiality manifested in their patient–clinician encounters in attempting to balance work-flow efficiency and witnessed patient suffering. Clinicians expressed that their perceived lack of control over their patient’s progress or future course in the hospital resulted in distress in being unable to relay care information. Key clinician takeaways from the program included the concept of learning to be intentional with responses to distressing situations, and feeling connected to their colleagues. Clinicians noted that spending time with coworkers outside of the clinical setting was important and taking the time to share stories of difficult experiences at work cultivated a sense of common-ground or validation.

**Limitations**

Limitations exist in this study that must be addressed. First, the decision of the clinicians to enroll themselves in the study and commit to a mindfulness practice reveals potential for self-selection bias. The results from this study, in turn, cannot be generalized to non–self-selected samples. Because clinicians were all recruited from the same ED in a single academic, medical center, results may lack generalizability in other care settings. Although the study utilized multiple formats (live stream video and online video postings) for participants to engage with the session information, there exist inherent variabilities in the session experience for participants. Participants who watched the livestream may not have been able to engage to the greatest degree with the group than those who attended in-person, as expressed in the qualitative findings. Additionally, those participants who watched the sessions after they were posted online did not have the opportunity to engage with the group or ask questions to session leaders. Given these considerations, the intervention may have disproportionately positively impacted those participants who attended all sessions in-person as opposed to those who watched the sessions without group engagement.

There were only two clinician groups incorporated into this study. Further studies should incorporate a more diverse interprofessional group that reflects the ED setting inclusive of all clinical roles and nonclinical staff. This study lacked a control group and contained self-report questionnaires and self-reporting meditation frequency measures. Thus, it cannot be stated that mindfulness is better than other approaches for reducing burnout. Additionally, burnout scores were measured before and after the
program, thus, leaving gaps regarding mindfulness effects during the program. Meditation frequency was conducted through self-reporting, which could have resulted in potential participant reporting bias.

This program was an adapted version of a mindfulness training that took place in a condensed time period. The effects of this program could have been conflated due to participants’ limited exposure to the topics and practices. Finally, the scores presented from the MBI are reported as averages within each domain, and not reported as a z-score given the small sample size of this study. Although this reporting is in concordance with the MBI survey guidelines, findings from Leiter and Maslach (2016) suggest that the reporting of z-scores within each MBI domain may facilitate the development of a more concise “burnout profile” among populations under study.

Implications for Research and Practice

Study Design Considerations. Future mindfulness-based randomized controlled trials taking place over longer periods of time are necessary to best assess the efficacy of these interventions for emergency nurses. Findings from studies utilizing a longer mindfulness intervention (8 weeks or more), as well as a control group noted increases in positive affect and resilience, as well as reductions in stress and burnout in interventions taking place in health-care settings (Ireland et al., 2017; Lin, He, Yan, Gu, & Xie, 2019). Additional study design considerations include delivering the mindfulness intervention in settings outside of the workplace, as expressed by participants in the qualitative interviews. Further efforts to improve the study design may include adjusting the session schedules to maximize participation for clinicians on their nonclinical work days.

Further studies are needed that specifically look at the cost-effectiveness of mindfulness among health-care professionals. One cost-effectiveness and return-on-investment analysis comparing a mindfulness intervention to usual practice among governmental research employees found no significant differences in job satisfaction, general vitality, work ability, and total costs (van Dongen et al., 2016). Although the results found a non-clinically significant impact on work engagement, the study can inspire future work evaluating the economic impact of holistic self-care interventions within the organizational context. Further tailoring cost-effectiveness research on mindfulness practices to the clinical setting may shed light on the economic benefit that such holistic programs may have on nursing staffing and overall health-care budgets.

Holistic Considerations. The results from this study provide insights about the applicability of holistic practices involving mindfulness in ED settings. First, several of the positive takeaways reported by the clinicians in the qualitative exemplars can be adopted by health care organizations. For example, clinician disclosure of difficult work-related experiences can be an important pillar of self-care programs on units and within health-care systems at large (Plews-Ogan et al., 2016). Disclosure should be a part of unit-level changes, quality improvement initiatives, and clinician/staff wellness programs (Plews-Ogan et al., 2016). The holistic value of caring for the whole-clinician through attention gathering is embodied through self-care programs that facilitate peer-to-peer discussions and reflection on emotionally, psychologically, and physically impactful events (Gause & Coholic, 2010).

Second, the educational aspect of the ERI around the holistic concepts of mindfulness and compassion allowed clinicians to put phrases such as, “strong back, soft front,” into action as tools for self-care in the day-to-day workplace (Halifax, 2014). Integrating mindfulness practices into clinician orientation/onboarding and nurse residency programs may facilitate early clinician self-care development in the workplace. Despite the growing integration of holistic concepts into academic nursing programs, extending mindfulness education further into clinical contexts can streamline the application of holistic concepts into practice. Education about clinician self-care in these contexts must be presented using evidence-based research, just as patient care protocols are introduced with supporting research.

Third, mindfulness as a holistic concept serves as a long-term beneficial practice integrated into EDs that requires organizational and peer support. Nurse administrators and other leaders must recognize exemplar clinicians promoting and cultivating holistic self-care practices as a means to promote culture change in the realm of clinician resiliency (Plews-Ogan et al., 2016). Developing peer networks or ambassador programs with clinicians who practice self-care can assist in the cultivation of holistic approaches among individuals while disseminating
self-care concepts within organizations (Bauer-Wu & Fontaine, 2015; Keegan, 1987). The culture of clinical care often influences nurses to prioritize patient care tasks over their own self-care. The fast-paced nature of EDs contributes to a sense of powerlessness in nurses with regards to their ability to take a break or process a particularly difficult patient situation that just occurred (Serrone et al., 2018). Identifying opportunities for resiliency cultivation in “real-time” situations can contribute to a necessary shift in clinician culture toward self-care. This idea is currently exemplified by the adaptation of Jonathan Bartels The Pause (2014) in hospital settings across the United States. The Pause serves as an exemplar holistic practice that can engage interprofessional groups in honoring patients’ and clinicians’ efforts through a simple 45-second intentional silence after a patient’s death (Bartels, 2014). Infusing holistic practices similar to those demonstrated in the ERI and The Pause on hospital units is important to alleviate stigmas around clinician self-care. Administrators of hospitals can use these exemplar practices, infused with holistic health concepts, as a means to work toward healthy work environments and systems, where employees feel valued, important, and invested in working toward organizational missions (Bauer-Wu & Fontaine, 2015; Plews-Ogan et al., 2016).

Conclusion

The results from this study suggest that RNs and PCTs can benefit from training in mindfulness-based stress reduction. Overall, the mindfulness-based intervention program induced significant improvements in burnout scores. Through individual interviews, participants noted that the mindfulness practices are actively utilized in their clinical practice. Given the increased levels of stress that clinicians experience, mindfulness trainings can offer a practical method to reduce burnout levels and improve the resiliency and well-being of the health care workforce.

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