

Presence, resilience, and compassion training in clinical education (PRACTICE): Evaluation of a mindfulness-based intervention for residents

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Abstract

Background: Residents' well-being tends to decline in the course of training, yet research on preventive and restorative interventions for residents is limited. Mindfulness-based interventions have been successfully employed to support well-being in practicing physicians, but their impacts on residents are not well established.

Objective: This paper describes the structure, content, and evaluation of a pilot mindfulness-based intervention program designated PRACTICE (presence, resilience and compassion training in clinical education) that was designed specifically to support resident well-being.

Methods: A combined sample of 14 postgraduate year one residents from two residency training programs participated in a four-session (8 h) mindfulness-based

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intervention in the Fall/Winter of 2018. Participants were surveyed before, after, and at 3 months postintervention, on measures of wellness (Professional Fulfillment Index) and mental health (Patient Health Questionnaire-4), along with measures of program engagement.

Results: Participants demonstrated a significant reduction in burnout at the conclusion of the program. Depression and anxiety screening scores also trended toward improvement. However, participants were not able to sustain these gains. Three months after the conclusion of the program wellness measures had returned to preintervention levels.

Conclusions: The results of this study support the use of mindfulness-based interventions in resident wellness programs. The lack of an enduring effect indicates the need for a maintenance phase intervention.

Keywords

mindfulness, internship and residency, burnout, resiliency

Introduction

The journey through medical school and postgraduate training as well as into medical practice is challenging. Students enter medical school with similar or better mental health profiles than matched controls, but often deteriorate in the course of medical training.^{1,2} One method of tracking this deterioration is from the perspective of burnout—a syndrome characterized by exhaustion, cynicism, detachment, and a sense of reduced personal accomplishment.³ The prevalence of burnout in U.S. medicine has been estimated at approximately 56% in medical students,² 60% in residents/fellows,² and 44% in practicing physicians.⁴ Burnout is associated with a range of negative personal consequences including increased risk for illness and premature death, alcohol abuse, strained personal relationships, depression, and suicidality.⁵⁻⁹ In addition, burnout is associated with undesirable professional consequences including increased medical errors and suboptimal patient care.¹⁰⁻¹⁴ Lastly, physician burnout has negative financial impacts on health-care organizations including increased turnover and decreased productivity.¹⁵

Despite residency being a peak time for the development of burnout, research on preventive and restorative interventions for residents is limited and inconclusive.¹⁶⁻²⁰ The solutions to reducing resident burnout are unlikely to be simple or unidimensional. The limited data currently available suggests the need for a multipronged effort with attention to the work and learning environment as well as resident-based interventions.¹¹

With regard to developing resident-based interventions, certain factors are potentially relevant. Preliminary evidence suggests that work-related distress tends to start early in training. For instance, a longitudinal study of pediatric residents

demonstrated a steep increase in the prevalence of burnout from the start of residency to the midpoint of internship year.²¹ Along a similar timeline, interns in internal medicine demonstrated a waning of enthusiasm concurrent with increases in depression, anger, fatigue, and a reduced empathic concern for patients.²² Trainee emotional distress is an important determinant of empathy decline during training, and it intensifies with increased patient contact and care responsibility.²³ Some domains of mood disturbance, empathy decline, and burnout do not fully recover during or after training.^{24,25} Collectively, these factors underscore the need for an increased focus on understanding the phenomenology of distress in residency and its relationship to burnout, resilience, mood disorders, and empathy—especially as these factors relate to the development of intervention programs.

In contrast to factors associated with resident distress, mindfulness and self-compassion have been demonstrated to be positively associated with resilience and inversely associated with burnout in first-year residents.²⁶ This finding encourages an interest in mindfulness-based interventions (MBIs) that might facilitate the development of these qualities in residents.

While there is evidence that MBIs are effective in supporting wellness in practicing physicians and medical students,^{27–30} their efficacy in residency is not well established. An MBI consisting of two or three 1-h resilience training sessions for residents showed no significant short-term changes in stress, burnout, or mindfulness.³¹ Similarly, mindfulness-based stress reduction (MBSR)—a more extensive and well-established MBI³²—did not demonstrate a reduction in burnout for residents,³³ but did support the development of skills such as self-compassion, self-reflection, acceptance, nonjudgment, and an enhanced ability to relate to others.^{33,34} A modified MBSR intervention, while not demonstrating a significant impact on burnout, demonstrated increased mindfulness, improved executive function, and enhanced emotional regulation.³⁵ Lastly, a resident resilience program, that included mindfulness training, was effective in reducing depersonalization and emotional exhaustion—core components of the burnout syndrome.³⁶ In summary, the limited amount of research available suggests that MBIs may have positive impacts on resident well-being. But the exact nature of those impacts, and how they might support resident wellness, requires additional research.

The goal of the current paper is to describe the structure, content, implementation, and evaluation of a pilot MBI program designated PRACTICE (presence, resilience and compassion training in clinical education) that was designed specifically to support resident well-being.

Methods

Setting and participants

The program was implemented over a two-month period in Fall/Winter of 2018 as a quality improvement (QI) project. Participants were a combined group of

postgraduate year one (PGY1) residents from two nonsurgical training programs at the University of Hawaii. Inclusion in the program was based upon the interest and willingness of the respective program directors. The program was integrated into residents' regular didactic curriculum. To preserve the anonymity of program participants, the specific programs involved are not identified.

Intervention

The PRACTICE program was developed specifically for this pilot intervention. While newly developed, its philosophical, practical, and evidence-based foundation was informed by the University of Rochester Mindful Practice program.^{27,37}

A total of 14 PGY1 residents participated in the PRACTICE program. It consisted of four 2-h sessions conducted once every two weeks and taught by the first author (RRS) who is a trained Mindful Practice³⁷ facilitator. The curricular time limitations present in most residency programs were considered when developing the program. Available evidence suggests that a short MBI (two or three 1-h sessions) does not have an impact on resident burnout.³¹ However, the 20+ h time commitment necessary for established MBIs, such as MBSR,³² was felt to be unrealistic for most residency programs. Hence, this pilot program was concentrated into 8 h with a specific focus on issues felt to be relevant to residents in training. Table 1 summarizes the session modules.

Individual session structure consisted of (1) guided formal mindfulness meditation practice; (2) didactic presentations specific to the module themes; (3) experiential exercises intended to move from theory to practice (exercises

Table 1. PRACTICE curriculum session topics and descriptions.

Session	Topic	Description
1	Introduction to Mindfulness I— <i>Presence</i>	An exploration of the phenomenology of attention and the development of presence—a capacity to be more engaged with the immediacy of experience and less prone to automaticity.
2	Introduction to Mindfulness II— <i>Resilience</i>	Mindfulness practice as a support for emotional regulation when dealing with challenges related to training.
3	Introduction to Mindfulness III— <i>Compassion</i>	Mindfulness practice as a support for emotional regulation when dealing with patients' illness, suffering and death—cultivation of compassion for self and others.
4	Mindfulness and Cognition	Mindfulness practice as a support for intellect as it relates to diagnosis, treatment and creative problem solving in medicine.

included mindfulness-based self-regulation, narrative medicine, appreciative inquiry, etc.); and (4) homework: daily formal meditation practice along with informal mindfulness practices (exercises in bringing mindful attention to day-to-day professional and personal living).

Outcomes and measures

Resident wellness was evaluated preintervention (week before the first session), postintervention (week after the last session), and at three months after the conclusion of the program. The Professional Fulfillment Index (PFI)³⁸ was used to assess the core features of professional satisfaction (mean score from Professional Fulfillment (PF) subscale), distress (mean scores from work exhaustion (WE) subscale, interpersonal disengagement (ID) subscale) and burnout (BO; mean composite from WE and ID scores). The PFI was selected as an accessible, reliable, and valid instrument that is well correlated with other tools commonly used to assess physician wellness. The Patient Health Questionnaire-4 (PHQ-4)³⁹ was used to measure depressive (total rating score) and anxiety (total rating score) symptoms. In addition, engagement—number of sessions attended, frequency of formal meditation practice, and frequency of informal mindfulness practice—was measured on a four-point Likert-type scale (self-reported based upon resident recall) and totaled (possible range: 3–12) at the conclusion of the course, and at three months (possible range: 2–8 for formal and informal mindfulness practice) postintervention. Anonymous survey responses were programmed to be linked over time points.

Analysis

Repeated measures analyses of variance were conducted to examine differences in preintervention, postintervention, and 3-month follow-up scores on the PFI for the PF, WE, and ID subscales, overall BO score, and also for the PHQ-4 Depression and PHQ-4 Anxiety symptom scales. A dichotomized variable for high engagement (score of 6 or higher) versus low engagement (<6) was also examined for patterns by engagement level on BO scores. All statistical procedures were performed using SPSS for Windows v. 25.

Results

As shown in Table 2, mean scores across time were not significantly different for PF; however, they were significantly different for WE; post hoc tests with Bonferroni correction showed a trend for decrease from pre- to postintervention ($p = .06$), with an increase in the three-month follow-up ($p = .024$). ID scores differed significantly across all three time points, with post hoc tests showing a reduction from pre- to postintervention ($p = .037$) and an increase in the three-month follow-up ($p = .006$). The composite score of burnout similarly showed

Table 2. Estimated means and standard error and statistical test for outcome measures across preintervention, postintervention, and 3-month follow-up.

(n = 13)	Preintervention	Postintervention	3-month follow-up	Test (Greenhouse-Geisser)	Significance
Professional fulfillment	2.227 ± .258	2.423 ± .126	2.440 ± .231	F(1.582, 15.823) = .630	P = .510
Work exhaustion	1.841 ± .163	1.250 ± .126	1.682 ± .135	F(1.587, 15.869) = 5.698	P = .018
Interpersonal disengagement	1.364 ± .15	.744 ± .152	1.274 ± .153	F(1.237, 12.366) = 9.626	P = .007
Burnout	1.555 ± .134	.945 ± .127	1.436 ± .126	F(1.211, 12.108) = 11.151	P = .004
PHQ-depression	1.364 ± .432	.273 ± .141	.909 ± .285	F(1.587, 15.872) = 3.949	P = .049
PHQ-anxiety	2.818 ± .536	1.909 ± .547	1.818 ± .400	F(1.328, 13.280) = 1.805	P = .204

Note: Post hoc comparisons that were significantly different from the preceding time point are bolded. PHQ: Patient Health Questionnaire.

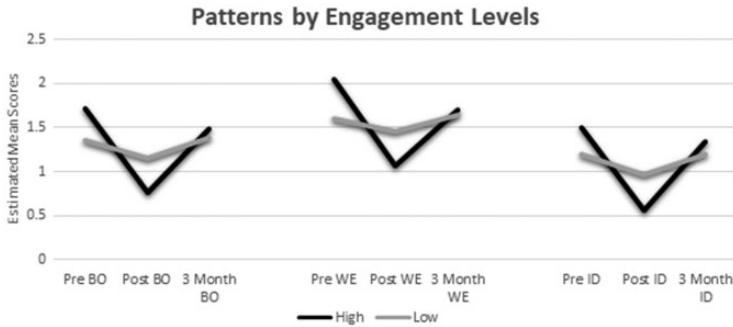


Figure 1. BO, WE, and ID scores across pre-, post-, and 3-month follow-up for high engagement versus low engagement groups. BO: burnout; WE: work exhaustion; ID: interpersonal disengagement.

significant differences over the three time points with post hoc comparisons showing decrease from pre- to postintervention ($p = .023$) and increase in the three-month follow-up ($p = .002$). Although there were reductions in the PHQ-4 depression and anxiety scores at the postintervention time point, only depression scores overall were significantly different. Furthermore, in post hoc comparisons, there were no significant differences in PHQ-4 anxiety or depression scores between the time points.

Besides the main effect of the intervention as measured by differences in scores over the time points, further examination of burnout (BO) by level of engagement (high ($N = 8$) vs. low ($N = 5$)) during the program was also significantly different for the interaction across the time points ($F(1.204, 10.837) = 5.652$; $p = .032$) seen in Figure 1. Visual patterns of decrease in BO, WE, and ID

scores for high engagement individuals showed more marked decrease in the postintervention score (but also subsequent greater increase to preintervention baseline at the three-month follow-up) compared to individuals who had low engagement during the program. BO scores did not significantly differ by engagement level at three months *after* the program ($F(1.572, 14.150) = .169$; $p = .796$). There were no significant differences for PHQ-4 anxiety or depression scores across the time points by level of engagement.

Discussion

At the conclusion of the PRACTICE program participants' PFI scores indicated a statistically significant reduction in burnout. Depression and anxiety screening scores followed a similar pattern of improvement but did not reach statistical significance. Also, there was a positive association between high engagement with program elements and reduced burnout scores at the conclusion of the program—suggesting that improvements were related to implementation of program elements in a dose-dependent fashion. The short-term improvements are encouraging, suggesting that an MBI can be an effective part of a resident wellness program. However, the improvements were not enduring. Three months after the conclusion of the program, wellness measures had returned to preintervention levels. This suggests the need to extend the intervention into a maintenance phase.

The PRACTICE program focused on applying mindfulness-based skills to the unique challenges of residency training. A particular focus was on increasing the capacity for regulation of distressing emotion.^{40–42} Physicians often cope with the emotionally evocative situations by downregulating emotional reactivity.⁴³ While this strategy can be adaptive, an attenuation of emotionality also has the potential to become nonadaptive and evolve into disengagement, depersonalization, and a reduced capacity for empathy—elements associated with the burnout syndrome.^{44,45}

An enhanced ability to regulate emotion is thought to support physician well-being by attenuating the use of emotional disengagement and depersonalization and increasing the capacity for presence. Presence indicates a capacity to be mindfully engaged with the immediacy of experience and less prone to disengagement and withdrawal. It can be considered a foundation for meaningful work and compassionate care.^{46,47} Although presence was not measured directly in this study, postintervention disengagement scores—measured by the ID subscale of the PFI—were significantly reduced, suggesting an increase in presence in program participants. The focus on regulation of emotion and increasing presence is theorized to have been an important contributor to the improvements described in this pilot study.

This study has limitations. The PRACTICE program was implemented as a QI project. It was provided as a part of regular educational curriculum and the

number of participants was small. One facilitator was used in the program and only participants from nonsurgical specialties were included. The development of a greater capacity for presence was a focus of the intervention, but improvements in this regard could only be inferred indirectly from the data gathered. Also, the current study cannot address whether the improvements noted translated into significant changes in educational or clinical performance. Lastly, the retrospective before-and-after evaluation design employed in this study provides less strength of evidence than a randomized controlled trial.

Conclusion

The results of this study support the use of MBIs in resident wellness programs. The lack of an enduring effect indicates the need for a maintenance phase intervention. Additional research is needed to further clarify the optimal structure, content, duration, and expected outcomes when utilizing MBIs for residents.

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Compliance With Ethical Standards

This study was conducted under the review and approved by the University of Hawaii Institutional Review Board—Committee for Human Subject Protections.


Declaration of conflicting interests


The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: The primary author Dr. Szuster is the developer of the program.

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