

Enhancing Resident Well-being: Illuminating the Path Forward

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Training to become a physician is a challenging and stressful journey. Numerous studies have documented a high prevalence of burnout and symptoms of depression among residents.^{1,2} Despite starting medical school with mental health profiles better than similarly aged college graduates who pursued other careers, residents are more likely to have burnout and depression symptoms than age-similar peers.^{1,2} A 2012 national study of 1701 residents found 50% had burnout symptoms in comparison to 31% among age-matched college graduates not studying medicine.³ Although less common than burnout symptoms, nearly a third (28.8%) of residents have substantial symptoms of depression, and the prevalence of depression increases during training.¹

The prevalence of burnout and depression among residents is alarming as the potential personal and professional consequences can be profound. Residents with burnout are more likely to report difficulty concentrating at work,² and differences in in-training examination scores across levels of emotional exhaustion (a domain of burnout) are as large as differences across years of training for internal medicine residents.⁴ Burnout also predicts perceptions of having committed major medical errors.⁵ In other studies of residents, burnout has been associated with lower career satisfaction and increased thoughts of changing specialty and leaving medicine altogether.² High levels of burnout have also been shown to predict involvement in motor vehicle accidents, suggesting burnout may impact residents' personal safety.⁶ Furthermore, burnout is an independent predictor of developing thoughts of suicide.⁷

Drivers of resident burnout are rooted in the work and learning environment.² Most studies suggest that excessive workload, educational debt, lack of timely feedback, stressful relationships with supervisors, loss of social support at work, and medical errors are contributing factors.² Unfortunately, we remain largely in the dark about how to best mitigate the risk of burnout among residents, intervene when it does happen, and help residents regain their enthusiasm for medicine. Two recent systematic reviews and meta-analyses reported that few intervention studies on resident burnout have been conducted

to date.^{8,9} Most published studies have focused on individual strategies, including mindfulness-based stress reduction (MBSR). However, rigorous randomized trials of MBSR among residents have been lacking.

In this issue of *Journal of General Internal Medicine*, Verweij and colleagues describe the results of a randomized controlled trial evaluating the effectiveness of a MBSR training curriculum on medical residents' emotional exhaustion,¹⁰ shedding light on one potential solution to resident well-being issues. Residents at a university medical center in the Netherlands were asked to volunteer to participate in a MBSR program involving 2.5 h per week in the evening for 8 weeks and a 6-h silent day during a weekend. During the evening sessions, participants received education about stress and practiced mindfulness exercises. In addition, participants were instructed to practice mindfulness exercises daily at home for 45 min during the 3-month study period. The investigators used a wait-list cross-over trial design with participants completing instruments measuring burnout, worry, work-home interference, mindfulness, self-compassion, positive mental health, and empathy at baseline and 3 months later corresponding to the last MBSR session. The primary outcome measure was emotional exhaustion as measured by the Utrecht Burnout Scale, a 20-item Dutch version of the original 22-item Maslach Burnout Inventory.

Among participants in this MBSR trial, the change in mean emotional exhaustion score from baseline to post-intervention did not significantly differ between the MBSR (16.5 vs. 15.0) and control (14.5 vs. 13.7) groups. The authors conducted a post hoc exploratory interaction analysis suggesting that participants randomized to MBSR who had higher baseline levels of emotional exhaustion experienced greater reduction in their emotional exhaustion than those randomized to MBSR who had lower baseline levels of emotional exhaustion.

Although the primary result of this study of MBSR's impact on emotional exhaustion is not statistically significant, several factors preclude a conclusion of lack of effect of MBSR. First, the 95% confidence interval for the adjusted difference in pre-post scores between the two groups was –1.73 to 1.92. Notably, a 1.7-point improvement or, conversely, a 1.9-point worsening of emotional exhaustion score may be clinically or educationally important. For example, in a longitudinal study of internal medicine residents, a 1-point increase in emotional exhaustion was associated with a 6% increased odds of subsequently perceiving having committed a medical error over the ensuing 3 months.⁵ Also, in a longitudinal study of

medical students, a 1-point increase in emotional exhaustion score was associated with a 5% increased odds of developing suicidal ideation over the following year.⁷ Hence, although the present study result is negative for its primary outcome, the sample is not large enough to rule out potentially important positive or negative effects of the MBSR intervention.

Second, the greater benefit from MBSR observed among residents with higher baseline levels of emotional exhaustion implies that it may be a more useful intervention for those residents struggling with higher degrees of emotional exhaustion. As the baseline burnout scores in the study sample were somewhat lower than has been found in many prior resident studies,² it is possible that a meaningful effect of MBSR among those who would benefit the most was obscured by the relative well-being of the study sample.

Finally, Verweij and colleagues also explored if MBSR impacted a variety of secondary outcomes.¹⁰ Small to moderate improvements in personal accomplishment, worry, self-compassion, mindfulness, and perspective taking domain of empathy scores were found among residents in the intervention group relative to control. The clinical or educational significance of these secondary outcomes is unknown, but these results leave open the possibility that MBSR exerts beneficial effects across multiple domains of well-being.

This study does have a number of limitations, as discussed by the authors. It was a single-institution study conducted in the Netherlands. Only 148 of the approximately 1200 eligible residents (12%) participated, and male and surgical residents were underrepresented. The results may therefore not be fully generalizable to all resident populations. As with most other MBSR trials, the findings are also vulnerable to volunteer bias. A previous study of MBSR conducted in medical students found that a required MBSR curriculum did not result in measurable gains in well-being.¹¹ With self-selection comes potentially greater engagement by participants, and MBSR training requires practice and active reflection. Additionally, for the secondary outcomes, there was no adjustment of *p* values or adjustment for the post hoc analysis; hence, these results should be considered preliminary. Lastly, as there was no long-term follow-up, whether the impact on the secondary outcomes was durable after the intervention is unknown. Despite these limitations, as a rigorous randomized controlled trial of a scalable intervention that was evaluated with standardized metrics, the authors should be commended for conducting this study.

Program directors and training organizations should consider offering MBSR as an option for interested residents, as the current evidence in total suggests that select trainees may find MBSR a useful strategy to promote well-being across multiple domains. In addition, program directors and training organizations should support a multi-faceted approach to reduce the risk of burnout and help those who have burnout recover. Individual residents may need support after perceived medical errors, additional instruction for work-related tasks that are stressful and challenging,

guidance in setting reasonable expectations for the amount of clinical and non-clinical work (such as research endeavors) that can be accomplished during training, encouragement to regularly complete self-assessments to calibrate personal distress and well-being, and assistance for burnout and other psychological concerns.² In addition, training programs and institutions should formalize well-being curricula, provide access to self-assessment tools, and endorse strategies to identify and address work-related stressors contributing to burnout. Visible initiatives to make structural changes to the residency program and work environment demonstrate a necessary organizational commitment to resident well-being.

Resident well-being is a shared responsibility of individual trainees, their training programs and sponsoring institutions, accrediting bodies, and organized medicine. Given the rigors of residency and the multitude of stressors, finding scalable, affordable individually focused and structurally focused interventions that are effective will be difficult. Further intervention studies are needed to guide evidence-based approaches and should evaluate not only individual strategies but also structural and programmatic interventions that reduce excessive stress and improve the learning environment.² As stewards of the next generation of physicians and caretakers of patients, it is our moral and ethical imperative to continue to conduct well-designed intervention studies, such as the one by Verweij and colleagues,¹⁰ and implement what we learn from these studies.

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