

Resident Physician Perspectives on Mindfulness Education in Residency: A Multispecialty Qualitative Assessment of Clinical Care Impact

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ABSTRACT

Background Mindfulness training positively influences residents personally and professionally. Routine integration into residency may be impacted by limited understanding of the ways in which mindfulness training enhances clinical care.

Objective We explored residents' direct experience and personal application of mindfulness in their clinical work following 10 hours of mindfulness training.

Methods Mindfulness training sessions were facilitated between 2017 and 2019 for 5 groups of residents: pediatrics, ophthalmology, postgraduate year (PGY)-1 anesthesiology, and 2 different years of PGY-1 family medicine residents. Training was integrated into resident protected didactic time and attendance was expected, although not mandated, with the exception of pediatrics, in which the department mandated the training. Qualitative evaluation was conducted using a voluntary, semi-structured, de-identified phone interview within 2 months post-training. Reviewers independently coded the transcripts and then dialogued to reach consensus around emergent themes.

Results Thirty-six of 72 residents (50%) who participated in the training completed interviews. Themes were similar across specialties. All residents acknowledged the potential usefulness of mindfulness training during residency. Six residents (17%) reported they had not applied the mindfulness training to their daily work by the end of the course. There were 4 emergent themes related to clinical application of mindfulness training: integrating brief moments of mindfulness practice, self-awareness, relational presence with patients, and maintaining perspective during clinical encounters and residency training as a whole.

Conclusions After completing a 10-hour mindfulness training program, residents reported enhanced perspective-taking and relationship-building with themselves and their patients in clinical settings across medical and procedural specialties.

Introduction

Inordinately high levels of stress and burnout continue to plague the experience of graduate medical education.¹⁻⁶ This circumstance has a significant negative impact on personal and interpersonal relationships in clinical care and is associated with resident suicidal ideation and self-harm.⁷⁻¹⁰

Over the past 40 years, mindfulness-based interventions have been incorporated into allopathic medicine to support patients suffering from conditions such as depression,¹¹⁻¹⁴ anxiety,^{11,14,15} and chronic pain.^{14,16} These interventions were originally developed by Jon Kabat-Zinn through the 8-week Mindfulness-Based Stress Reduction (MBSR) program at the University of Massachusetts Medical School.¹⁷ Since that time, a wide variety of mindfulness-based interventions have been developed, modified, and/or adapted for the graduate medical education population.¹⁸⁻²² All these interventions introduce mindfulness practice in which

a participant may “pay attention, in the present moment, purposefully, and without judgment.”²³

Initial studies using mindfulness-based interventions during residency education found associations of mindfulness training with reduced resident burnout,^{21,24,25} depression,²¹ anxiety,²¹ perceived stress,²² and worry,²⁶ as well as improved self-compassion,²⁶ resilience,²⁴ and positive affect.²⁷ More recent studies have assessed the impact of mindfulness training on specific clinical skills within individual specialties, finding improvements in working memory,²⁸ empathy,²⁹ communication,³⁰ procedural skill efficiency,²⁸ and simulation training performance.³¹ There is, however, limited information about how residents perceive the personal and interpersonal impact of mindfulness practices as they engage in clinical care.

The purpose of this program evaluation was to assess residents' perspectives on how a 10-hour multispecialty mindfulness training changed their thoughts and behaviors during clinical work. By understanding residents' experiences, we may continue to grow a body of knowledge that informs best practices for integrating mindfulness training into graduate medical education programs.

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Editor's Note: The online version of this article contains the full course details, facilitator guide, interview questions, bracketing questions, and reviewer responses to a select question.

Methods

Setting and Participants

This study was a multispecialty, single-site program evaluation of a mindfulness-based course for residents conducted between 2017 and 2019. Graduate medical education at the University of Wisconsin (UW) School of Medicine and Public Health, where this study occurred, includes more than 75 Accreditation Council for Graduate Medical Education (ACGME)-accredited specialty and subspecialty programs.

Curricular Intervention

Supportive Training for Residency through Education in Mindfulness (STREaM) is a 10-hour mindfulness-based skills course created for first-year residents. The development and pilot data from this course have been previously described.²² Curricular content details are available on the course website.³²

STREaM was first developed and piloted in 2016 with the intention of building skills to support family medicine residents through the challenges of residency education.²² The training was developed to allow for flexible integration into resident protected educational time. The STREaM curriculum used between 2017 and 2019 was revised based on feedback from our pilot study. Themes of the course included awareness and attention, practicing mindfulness “short times, many times,” uncovering our wholeness, and compassion and mindful presence in clinical practice. Each session began with a moving meditation and a seated meditation followed by a combination of self-reflection, dyad conversations, and large group dialogue. Each session closed with an invitation to continue brief mindfulness practices individually between sessions. Please review online supplementary data for full course details.

Course faculty included a UW Health Mindfulness Program manager who had trained in and taught mindfulness since 1999, a pediatric hospitalist (S.W.) who had completed MBSR training through the UW Health Mindfulness Program, and a family physician trained in integrative medicine who completed the UW Health MBSR Teaching Fellowship as well as the University of California San Diego Mindfulness Teacher Training Intensive program.

Four residency programs participated between fall 2017 and spring 2019. There were 2 cohorts from family medicine and one each from ophthalmology, anesthesiology, and pediatrics. Participants were generally first-year residents, except in ophthalmology where all residents attended. Course sessions were scheduled during protected educational time within each program. Sessions varied between 60 and 90 minutes, with all courses totaling 10 hours. The last

Objectives

Our goal was to assess residents' perspectives of how a 10-hour multispecialty mindfulness training changed their thoughts and behaviors during clinical work.

Findings

We identified 4 major themes related to how residents noticed mindfulness training showing up in their clinical practice: brief moments, self-awareness, relational presence, and perspective-taking.

Limitations

Limitations of this study include participation bias, a question of reproducibility, and a qualitative coding method that is not widely accepted.

Bottom Line

By developing mindfulness training curricula based on resident physicians' self-identified clinical skills improvements, such training may have the potential to better serve residents and their future careers.

session was generally a longer session lasting 3 to 4 hours. Participation was expected but not mandated, except the final session of the STREaM curriculum in pediatrics, which was held during a curricular block when available residents were expected to attend.

The theoretical construct that aligns most closely with the current state of the literature and the STREaM curriculum intention is outlined in Braun et al.³³ The authors propose 3 potential patient care-related outcomes from mindfulness-based interventions: improved treatment outcomes, improved patient-health care professional relationship, and improved patient safety. Our program evaluation sought to assess resident physicians' perspectives on the ways in which mindfulness training may inform the patient-health care professional relationship, whether that be indirectly through greater self-awareness or directly during resident-patient interactions.

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Study Recruitment and Data Collection

During the last course session, residents were invited to provide contact information if they were willing to participate in a post-course interview with a non-teaching research staff (M.G.) who has experience in conducting qualitative research interviews. M.G. administered semi-structured interviews using a facilitator guide (provided as online supplementary data). M.G. was neither course faculty nor involved in any way with residents' program evaluations. Interviews were completed by phone between 2018 and 2019 and took place within 1 month of the resident's completion of the STREaM program.

Interview questions were piloted and revised based on feedback from our pilot study in 2016-2017. The primary questions that our qualitative analysis team analyzed for this study were related to how residents applied mindfulness training in clinical environments. The prompts were: “How has the training you have done ‘shown up’ in your clinical practice?” “What has changed about your approach to patient care?” and “What has changed about how you interact with colleagues?” The full list of questions for the interview is in the online supplementary data. The interview guide did not change during data collection. Semi-structured interviews were audio recorded, transcribed by a research assistant, and de-identified prior to analysis. The facilitator was not known to the participants, had prior experience in conducting qualitative research interviews, and was instrumental in revising the interview questions after the pilot study. She did not have any formal training in mindfulness and had not been through medical school or residency training. The researcher who conducted the interviews contacted residents 3 times post-training to schedule interviews and did not hear back about specific reasons for nonparticipation.

Data Analysis

A 5-member team, consisting of 2 family physicians (B.B., V.M.), one pediatrician (S.W.), one senior mindfulness instructor (C.S.), and one emergency medicine fellow (C.V.), performed qualitative data analysis of the de-identified transcribed phone interviews. All except one had previous experience with qualitative analysis. The authors (V.M., S.W.) were the only 2 reviewers who had personal and professional experience in both medical education and mindfulness. Prior to starting the analysis, each member of the team underwent a reflexive bracketing process^{34,35} to identify their relationship with the subject material and associated biases. The complete list of bracketing questions and each reviewer’s assumptions about how mindfulness affects patient care are in the online supplementary data. After completing the bracketing process, the total number of transcripts was divided into 2 groups due to the large volume of transcripts to be reviewed. We consulted with an experienced qualitative researcher (N.J.) in designing these methods. Each transcript was independently reviewed and coded by 2 or 3 members of the team with a focus on the transcript content related to the personal and interpersonal impact of mindfulness practices as residents engage in clinical care. V.M. then facilitated open discussion with each of the 2 groups to identify common emergent themes. V.M. compiled the emergent themes from the 2

groups and then shared these themes with all members of the team. There was agreement across all team members that the cumulative themes were congruent with their analyses. Emergent themes from the completed interviews were similar across specialties.

This study was assigned exempt status by the University of Wisconsin Institutional Review Board because it was designated as a program evaluation.

Results

Between August 2017 and April 2019, 72 residents from 4 residency programs were invited to participate in the STREaM mindfulness training program. Session attendance for each cohort is outlined in TABLE 1. Thirty-six of 72 residents (50%) who participated in the training volunteered and completed interviews.

Six residents (3 family medicine, 1 anesthesiology, 1 pediatrics, 1 ophthalmology) responded during their interview that by the conclusion of the course they had not yet perceived an impact of this mindfulness training on how they practiced medicine. All residents acknowledged that mindfulness can be a useful tool in clinical practice. Through an inductive qualitative process, we identified 4 major themes related to how residents noticed mindfulness training showing up in their clinical practice: brief moments, self-awareness, relational presence, and perspective-taking.

Brief Moments

Residents across all 4 departments described ways in which mindfulness training inspired brief moments of intentional awareness in the clinical setting. The residents shared they tended to integrate their mindfulness training into certain parts of their workday and found a few practices to be particularly supportive.

Residents noted that they would practice right before going into a patient room or a surgery as well as in between seeing patients, particularly when there are heightened levels of stress present (TABLE 2). Brief moments of pause help when “*the pace is getting too fast or just getting overwhelm[ing].*” (family medicine [FM]2-9) In addition, brief moments using mindfulness training appeared to support transitioning to or away from patients whom residents identified as challenging: “*When I have [...] an emotionally challenging or [...] emotionally heavy patient encounter [...] I have used some of the [...] grounding practices that they taught us to try and [...] pause.*” (FM108) Another resident identified brief moments of mindfulness practice to be supportive with the task of note writing: “*I’ve definitely used it*

TABLE 1
Session Attendance for Each Residency Program Cohort

Department	Academic Year	Postgraduate Year	Total No. of Residents	% of Residents Who Attended All 10 Hours	% of Residents Who Attended 5+ Hours	% of Residents Who Attended 1+ Hours	% of Residents Who Did Not Attend Any of the Course	No. of Interviews Conducted per Course
Family medicine and community health	2017-2018	1	18	11.1 (2/18)	55.6 (10/18)	100 (18/18)	0 (0/18)	11
Family medicine and community health	2018-2019	1	18	0 (0/18)	61.1 (11/18)	100 (18/18)	0 (0/18)	13
Ophthalmology	2018-2019	3	9	55.6 (5/9)	77.8 (7/9)	77.8 (7/9)	22.2 (2/9)	6
Anesthesiology	2018-2019	Preliminary Year	12	50 (6/12)	91.7 (11/12)	100 (12/12)	0 (0/12)	4
Pediatrics	2018-2019	1	15	0 (0/15)	86.7 (13/15)	93.3 (14/15)	6.7 (1/15)	2
Overall	2017-2019		72	18.1 (13/72)	72.2 (52/72)	95.8 (69/72)	4.2 (3/72)	36

before I go into a patient room or when I'm sitting at a computer and feeling like oh gosh [and] thinking about [...] the pile of notes I have to write." (FM111)

Residents found walking mindfulness practices and breath awareness practices to be particularly helpful in hospital and clinic settings. One resident described how they practiced mindful walking in clinic: "The way that [mindfulness training has] shown up [for me is] walking mindfully between patient rooms [...] It's a very small piece of time, but kind of helps me feel a little grounded." (FM102) Pausing to take a few breaths was also a common and supportive way of practicing mindfulness in brief moments (TABLE 2). "I do think it keeps me calmer throughout the day, especially on days where you know you have 5 admissions in 1 hour and things are crazy [...] I just have to take a couple of breaths, how do you feel, and then move along. I do, I do think I am a better physician for that." (pediatrics [Peds]36)

Self-Awareness

After the course, residents described a greater sense of self-awareness in their clinical practices. This included being aware of sensations in the body, thoughts, and emotions, which is a core practice in mindfulness training (TABLE 2).

One resident noted how they experienced great awareness of body sensations: "I've tried to start noticing [...] when I am at work being like, "My heart is starting to race. I think I am starting to get agitated." And just sitting there and coming back to the breath and rooting myself like in the chair or my feet on the floor has really helped me to not let stressful situations upset [me] as much as they used to." (anesthesiology [A]22)

A greater identification of thought patterns was also noted after the course. One resident shared how noticing thought patterns supported patient care in the moment. "I have the patients before me, or a patient's listing off like 7 concerns and I'm feeling like we're never going to get through these. I use [mindfulness training] to [...] take a moment to reset [...] Don't worry about if you're not able to get through all of these patient's concerns. Just more like doing your best in this moment with what you are able to tackle." (FM111)

In addition, new awareness and acceptance of residents' own emotions were noted during clinical work (TABLE 2): "It's really kind of a self-analysis of your emotions and [...] taking a logical look at your thought process to try and alleviate some of your stress or negative emotions that you may be going through at that time and to just try to find the center again rather than being at extreme [ranges of

TABLE 2

Example Quotes Representing the 4 Themes Related to Clinical Practice

Themes	Representative Quotes
Brief moments	“In between patients or if there is a particularly difficult case, I'll just take a brief 5 second pause and [...] decompress a little bit and get my mind straight so I don't [...] take my frustration into the next patient's room, or the next case that I'm about to do.” (Ophtho2) “Just [...] stopping and taking a second before [going into] a room. [...] I found myself on more stressful days doing [...] mini body scans [...] to just [...] relax a little bit, and [not] feel so [...] stretched thin.” (FM2-11) “Tak[ing] a couple of cleansing breaths when I know there's going to be a little bit more of a challenging patient or a patient that I don't align very well with in my clinic before I go in and see them.” (FM109) “After participating in the mindfulness training, one resident shared, ‘I really liked [...] the idea of consciously [...] walking and taking steps and being aware [...]’ I found that [was] something I could really integrate into [...] clinic when I'm going to and from a patient's room or staffing [...] I just need to take a minute or 2 and unload and be more aware of my body and how I'm moving in space [...] It was helpful.” (FM110) “Trying to be more mindful doesn't mean I have to sit down and meditate for a long time every day or anything like that. I can do it in small moments throughout my day, even like in clinic just taking a couple breaths and settling in more to make the day go a little easier.” (Ophtho1) “I really like the walking meditation part [...] I probably practiced that [...] more like 3 or 4 days a week.” (Ophtho3)
Self-awareness	“I notice more when I'm starting to get stressed [...] I'm able to [...] take a couple breaths and settle into the day more. [I]t makes me focus more on what I'm doing with my patients instead of scatterbrained thinking [...]. It sort of helps me settle in [...] and focus on what I'm doing.” (Ophtho1) “I think it's definitely been something that I've [used] to stop a bad day from progressing in its tracks and sort of starting over and going at it again with new energy or less [...] nervous energy or frustrated energy.” (FM105)
Relational presence	“We talked about [becoming] aware of yourself and aware of the situation and it doesn't become like oh I have these 5 people on my schedule and I'm already running late because of the last person, and I need to get this done so that the next person isn't late. I think it's like really helped me focus in and become more present with my patients.” (FM2-5) “When it comes to [...] a complex patient [mindfulness training] really just kind of changed my approach a little bit with them, to be a little bit more at peace with whatever the outcome is. [...] Not getting too attached to whether they do what you say or anything like that. [...] and not necessarily judging your successes on things that you can't necessarily control.” (FM2-2) “I can think of one [instance] in particular when I was in clinic and I just had a very challenging patient and I ended up getting kind of frustrated and I was like letting that get the best of me and I remember[ed] thinking [...] be mindful I guess and just process those emotions rather than like let them build up or ignore them and possibly like interfere with my patient care. And that really did help, it didn't make them fully go away, no, but I think it made me just kind of like re-center on things.” (FM2-6) “I had a weird patient interaction [...] it was really out of the blue [...] how this patient felt she was being treated versus my perception of it [...] [But] I felt like I was kind of able to sit there for a minute and be like, “This isn't the end of the world for me it's not the end of the world for the patient, we're both going to figure this out. [...] So it kind of allowed me [...] a moment to pause. Just [...] relax and move on.” (Ophtho6) “Especially with more challenging patients or complex patients, [I took some] time to maybe do some mindful thinking, mindful breathing, just kind of thinking big picture about our goals [in the encounter].” (FM2-2)
Perspective-taking	“I think that's the main thing just kind of knowing that you have that little tool in your toolbox to just kind of pause where you are and then go, versus just letting it build, build, build, build, and then one random time you [...] explode or you're just kind exhausted, or you're just not happy.” (Ophtho5) “Just being a little more mindful during those times that you're working, so it doesn't seem like all of that time is wasted. Sometimes when you just kind of go through it monotonously. . .it doesn't seem like that time is really worth it during your day. But I think if we do kind of take a step back and think about it [...] we can have meaningful times during our day too if you just approach it a little differently.” (FM2-2) “I think that's been really valuable in allowing me to pause and remember why I am going through this [residency] training.” (FM2-12)

Abbreviations: Ophtho, ophthalmology; FM, family medicine.

emotions].” (FM2-13) One resident shared how awareness of emotion supported them in identifying their own needs: “*I find that doing mindfulness has let me, or has made me more aware of my feelings and made me not be too ashamed to say this is how I feel today or I need help with this.*” (Peds36)

Relational Presence

Residents consistently identified mindfulness as a practice that supported their patient relationships. Specifically, residents noted present mindedness as an aid to navigating complex thought processes during clinical encounters (TABLE 2). “*My main takeaway [from the mindfulness training] is [...] trying to be present in the moment especially with our patients and not trying to think like 20 steps ahead and just kind of appreciating where we are at the time that we are in.*” (FM2-1) Another resident noted that “*[Mindfulness] makes me focus more on what I’m doing with my patients instead of scatterbrained thinking about, oh I have to go do this consult or do this [‘other thing’]. It sort of helps me settle in to doing what I am doing right now and focus on what I’m doing.*” (Ophtho1)

In addition, this enhanced relational presence allowed residents to work through challenging encounters (TABLE 2), seeing patients as individuals rather than a list of problems. “*I think [mindfulness training] made it easier to look at each patient [...] like [an] individual.*” (FM2-5) Mindful presence during patient encounters led to a greater capacity to partner with patients and align resident and patient goals of care: “*[Mindfulness training helped with] tackling those more complex patients and not getting so bogged down in the facts so much and kind of making sure we’re on the same page and not coming with too many expectations of what I want to get done.*” (FM2-2)

Perspective-Taking

Mindfulness helped resident physicians maintain a healthy perspective in the midst of “*being within a tornado every single day.*” (ophthalmology [Ophtho]5) Residents described their experience of perspective-taking through mindfulness training as taking a “*step back*” (Ophtho 4), a “*reset*” (FM108, FM111), and “*bringing it down a notch.*” (FM110)

This perspective-taking skill, or awareness of the larger context of their clinical work, seemed to serve residents in what might otherwise be difficult or exhausting days in residency (TABLE 2). “*Just being a little more aware and more present throughout the day, not getting bogged down in the details and the*

difficulties of the situation, [...] you kind of forget big picture that this will end.” (FM2-2)

Mindfulness training allowed them to connect to a greater sense of meaning in their clinical work during residency and to recognize that they are not alone (TABLE 2). “*[Mindfulness training] reset me, so I became more enthusiastic going back to work, I felt like a start button was pushed. [S]ometimes when you are in the midst of things you think everyone else has everything put together and it’s only you running around like a chicken without their head, but when we do these mindfulness classes and you hear your colleagues talking about their struggles and how they’re overwhelmed, it makes you think, ‘Oh, ok, it’s not just me.’*” (Peds36)

Discussion

This qualitative assessment revealed that a 10-hour mindfulness training program was used by residents across specialties and had personal and interpersonal impacts on clinical care. Analysis of resident interviews elicited 4 ways residents identified clinical skills development through mindfulness training: the use of brief moments; enhanced self-awareness of body sensations, thoughts, and emotions; improved relational presence with patients; and a greater capacity to maintain perspective amid the challenges of residency training.

A growing number of studies in health professions education have reported how mindfulness training may enhance clinical skills. For example, evaluation of a modified MBSR training for PGY-1 surgery residents demonstrated improved working memory and manual surgery skills (as measured by laparoscopic circle cutting time) in the intervention group versus the active control group.²⁸ In a 2020 randomized controlled trial, otolaryngology residents in France were able to perform significantly better in communication and empathy in a simulated bad news consultation immediately after completing a 5-minute prerecorded mindfulness session.³⁶ While these studies measured specific clinical skill development, they did not necessarily access the full spectrum of impact that mindfulness training had on participating resident physicians.

Our study is the first qualitative examination within both medical and procedural ACGME-accredited residency programs of resident physicians’ perspectives on the impact of mindfulness training related to their clinical practices. Two prior European studies have demonstrated similar results of resident-identified improvements in clinical skills. A 2018 qualitative assessment of an MBSR training for 19 multispecialty resident physicians in the Netherlands shared themes,

including residents' increased self-reflection at work while also improving work-life balance and communication with colleagues.³⁷ In addition, a 2021 randomized controlled trial of German multispecialty resident physicians noted increased self-awareness, equanimity, and being more present with their patients.³⁸

This qualitative approach to assess resident physicians' perspectives has the potential to inform a humanistic learner-centered educational philosophy. For example, while there are data that suggest mindfulness training may improve burnout scores,^{21,24,25} this approach to assessing mindfulness efficacy can be short-sighted and lead to the misconception that mindfulness training is an individual "fix" for health care crises like physician burnout that, in fact, are more appropriately and effectively improved through organizational strategies.³⁹ By developing mindfulness training curricula based on resident physicians' self-identified clinical skills improvements, such training may have the potential to better serve residents and their future careers.

Based on this and previous studies' evaluations, there are many future areas for exploration into mindfulness training during residency. First, what is the ideal amount of time that a residency program might dedicate to resident mindfulness training? As seen in previous studies, the range of effective training may be from 5 minutes to a full MBSR class of more than 20 hours. Our work used 10 hours as a guide. It would be helpful to explore the "dose" that may inform future conversations about integrating mindfulness training into ACGME requirements. Second, what practices are most beneficial to residents? Residents in this qualitative assessment identified walking meditation and breath awareness practices as some of the most frequently applied learnings from the STREaM course. In addition, centering practices that include self-awareness, relational presence, and perspective-taking may be particularly supportive for residents' clinical skills development. A systematic evaluation of similar mindfulness training programs may be useful to focus future development of resident-specific mindfulness education. Third, long-term evaluation of clinical skills may be useful to ascertain the mindfulness practices that persist and support physicians into post-residency clinical work. Finally, assessment of mindfulness training on other aspects of patient care including treatment outcomes and patient safety, as outlined by the theoretical framework of Braun et al,³³ would likely strengthen this field of study.

There are several limitations to our work. First, this evaluation is subject to participation bias, given

that neither attendance nor post-training interviews were mandatory. We mitigated this limitation by hosting the sessions during protected educational time. Second, it is unclear if this specific mindfulness curriculum would be reproducible in other academic health centers as the primary author (V.M.) was involved in developing and facilitating both the pilot program and the series of trainings evaluated in this study. We invited 2 other faculty into the facilitation and curricular revisions of this course so this limitation may have been minimized. Finally, our qualitative coding method is not widely accepted; however, we developed this strategy in partnership with an experienced qualitative researcher (N.J.), and the primary author (V.M.) shared back the emergent themes with all coders to limit differences across groups and incorporate all data into common themes.

Conclusions

This study sought to understand residents' perspectives of the clinical impact of a 10-hour mindfulness training across multiple specialties. Residents found mindfulness to have personal and interpersonal impacts on clinical care, specifically in brief moments throughout their clinical work, while enhancing their self-awareness, relational presence with patients, and capacity for perspective-taking.

References

1. Thrush CR, Guise JB, Gathright MM, et al. A one-year institutional view of resident physician burnout. *Acad Psychiatry*. 2019;43(4):361-368. doi:10.1007/s40596-019-01043-9
2. Brunsberg KA, Landrigan CP, Garcia BM, et al. Association of pediatric resident physician depression and burnout with harmful medical errors on inpatient services. *Acad Med*. 2019;94(8):1150-1156. doi:10.1097/ACM.0000000000002778
3. Rodrigues H, Cobucci R, Oliveira A, et al. Burnout syndrome among medical residents: a systematic review and meta-analysis. *PLoS One*. 2018;13(11):e0206840. doi:10.1371/journal.pone.0206840
4. Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. *Med Educ*. 2016;50(1):132-149. doi:10.1111/medu.12927
5. Nene Y, Tadi P. Resident burnout. *StatPearls*. Treasure Island (FL): StatPearls Publishing; 2022. Accessed March 28, 2023. <https://www.ncbi.nlm.nih.gov/books/NBK553176/>
6. Chong MYF, Lin SHX, Lim WY, Ong J, Kam PCA, Ong SGK. Burnout in anesthesiology residents: a systematic review of its prevalence and stressors. *Eur J*

- Anaesthesiol.* 2022;39(4):368-377. doi:10.1097/EJA.0000000000001585
7. Ishikawa M. Relationships between overwork, burnout and suicidal ideation among resident physicians in hospitals in Japan with medical residency programmes: a nationwide questionnaire-based survey. *BMJ Open.* 2022;12(3):e056283. doi:10.1136/bmjopen-2021-056283
 8. Hewitt DB, Ellis RJ, Hu YY, et al. Evaluating the association of multiple burnout definitions and thresholds with prevalence and outcomes. *JAMA Surg.* 2020;155(11):1043-1049. doi:10.1001/jamasurg.2020.3351
 9. Laramée J, Kuhl D. Suicidal ideation among family practice residents at the University of British Columbia. *Can Fam Physician.* 2019;65(10):730-735.
 10. Jennings JM, Gold PA, Nellans K, Boraiah S. Orthopaedic surgeons have a high prevalence of burnout, depression, and suicide: review of factors which contribute or reduce further harm. *J Am Acad Orthop Surg.* 2022;30(5):e528-e535. doi:10.5435/JAAOS-D-21-00299
 11. Johannsen M, Nissen ER, Lundorff M, O'Toole MS. Mediators of acceptance and mindfulness-based therapies for anxiety and depression: a systematic review and meta-analysis. *Clin Psychol Rev.* 2022;94:102156. doi:10.1016/j.cpr.2022.102156
 12. Yan H, Wu Y, Li H. Effect of mindfulness-based interventions on mental health of perinatal women with or without current mental health issues: a systematic review and meta-analysis of randomized controlled trials. *J Affect Disord.* 2022;305:102-114. doi:10.1016/j.jad.2022.03.002
 13. Chan SH, Lui D, Chan H, et al. Effects of mindfulness-based intervention programs on sleep among people with common mental disorders: a systematic review and meta-analysis. *World J Psychiatry.* 2022;12(4):636-650. doi:10.5498/wjp.v12.i4.636
 14. Hempel S, Taylor SL, Marshall NJ, et al. Evidence map of mindfulness. Washington (DC): Department of Veterans Affairs (US); 2014.
 15. Oberoi S, Yang J, Woodgate RL, et al. Association of mindfulness-based interventions with anxiety severity in adults with cancer: a systematic review and meta-analysis. *JAMA Netw Open.* 2020;3(8):e2012598. doi:10.1001/jamanetworkopen.2020.12598
 16. Lin TH, Tam KW, Yang YL, Liou TH, Hsu TH, Rau CL. Meditation-based therapy for chronic low back pain management: a systematic review and meta-analysis of randomized controlled trials. *Pain Med.* 2022:pnac037. doi:10.1093/pm/pnac037
 17. Kabat-Zinn J. Mindfulness Based Stress Reduction (MBSR). *Construct Human Sci.* 2003;8(2):73-83.
 18. Brennan J, McGrady A. Designing and implementing a resiliency program for family medicine residents. *Int J Psychiatry Med.* 2015;50(1):104-114. doi:10.1177/0091217415592369
 19. Runyan C, Savageau JA, Potts S, Weinreb L. Impact of a family medicine resident wellness curriculum: a feasibility study. *Med Educ Online.* 2016;21:30648. doi:10.3402/meo.v21.30648
 20. Romceovich LE, Reed S, Flowers SR, Kemper KJ, Mahan JD. Mind-body skills training for resident wellness: a pilot study of a brief mindfulness intervention. *J Med Educ Curric Dev.* 2018;5:2382120518773061. doi:10.1177/2382120518773061
 21. Szuster RR, Onoye JM, Eckert MD, Kurahara DK, Ikeda RK, Matsu CR. Presence, resilience, and compassion training in clinical education (PRACTICE): evaluation of a mindfulness-based intervention for residents. *Int J Psychiatry Med.* 2020;55(2):131-141. doi:10.1177/0091217419887639
 22. Minichiello V, Hayer S, Gillespie B, Goss M, Barrett B. Developing a mindfulness skills-based training program for resident physicians. *Fam Med.* 2020;52(1):48-52. doi:10.22454/FamMed.2020.461348
 23. Kabat-Zinn J. *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness.* Bantam Books; 2013:4.
 24. Olson K, Kemper KJ, Mahan JD. What factors promote resilience and protect against burnout in first-year pediatric and medicine-pediatric residents? *J Evid Based Complementary Altern Med.* 2015;20(3):192-198. doi:10.1177/2156587214568894
 25. Goldhagen BE, Kingsolver K, Stinnett SS, Rosdahl JA. Stress and burnout in residents: impact of mindfulness-based resilience training. *Adv Med Educ Pract.* 2015;6:525-532. doi:10.2147/AMEP.S88580
 26. Verweij H, van Ravesteijn H, van Hooff MLM, Lagro-Janssen ALM, Speckens AEM. Mindfulness-based stress reduction for residents: a randomized controlled trial. *J Gen Intern Med.* 2018;33(4):429-436. doi:10.1007/s11606-017-4249-x
 27. Wen L, Sweeney TE, Welton L, Trockel M, Katznelson L. Encouraging mindfulness in medical house staff via smartphone app: a pilot study. *Acad Psychiatry.* 2017;41(5):646-650. doi:10.1007/s40596-017-0768-3
 28. Lebares CC, Guvva EV, Olaru M, et al. Efficacy of mindfulness-based cognitive training in surgery: additional analysis of the mindful surgeon pilot randomized clinical trial. *JAMA Netw Open.* 2019;2(5):e194108. doi:10.1001/jamanetworkopen.2019.4108
 29. Bentley PG, Kaplan SG, Mokonogho J. Relational mindfulness for psychiatry residents: a pilot course in empathy development and burnout prevention. *Acad Psychiatry.* 2018;42(5):668-673. doi:10.1007/s40596-018-0914-6
 30. Real K, Fields-Elswick K, Bernard AC. Understanding resident performance, mindfulness, and

- communication in critical care rotations. *J Surg Educ*. 2017;74(3):503-512. doi:10.1016/j.jsurg.2016.11.010
31. Cheung EO, Barsuk JH, Mitra D, et al. Preliminary efficacy of a brief mindfulness intervention for procedural stress in medical intern simulated performance: a randomized controlled pilot trial. *J Altern Complement Med*. 2020;26(4):282-290. doi:10.1089/acm.2019.0209
 32. University of Wisconsin-Madison. STREaM - Course Curriculum. Accessed June 15, 2022. <https://www.fammed.wisc.edu/stream/course-curriculum/>
 33. Braun SE, Kinser PA, Rybarczyk B. Can mindfulness in health care professionals improve patient care? An integrative review and proposed model. *Transl Behav Med*. 2019;9(2):187-201. doi:10.1093/tbm/iby059
 34. Fischer CT. Bracketing in qualitative research: conceptual and practical matters. *Psychother Res*. 2009;19(4-5):583-590. doi:10.1080/10503300902798375
 35. Ahern KJ. Ten tips for reflexive bracketing. *Qual Health Res*. 1999;9(3):407-411. doi:10.1177/104973239900900309
 36. Mengin AC, Kayser C, Tuzin N, et al. Mindfulness improves otolaryngology residents' performance in a simulated bad-news consultation: a pilot study. *J Surg Educ*. 2021;78(4):1357-1365. doi:10.1016/j.jsurg.2020.11.009
 37. Verweij H, van Ravesteijn H, van Hooft MLM, Lagro-Janssen ALM, Speckens AEM. Does mindfulness training enhance the professional development of residents? A qualitative study. *Acad Med*. 2018;93(9):1335-1340. doi:10.1097/ACM.0000000000002260
 38. Aeschbach VM, Fendel JC, Schmidt S, Göritz AS. A tailored mindfulness-based program for resident physicians: a qualitative study. *Complement Ther Clin Pract*. 2021;43:101333. doi:10.1016/j.ctcp.2021.101333
 39. De Simone S, Vargas M, Servillo G. Organizational strategies to reduce physician burnout: a systematic review and meta-analysis. *Aging Clin Exp Res*. 2021;33(4):883-894. doi:10.1007/s40520-019-01368-3



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