

Introducing Mindfulness Practices to the Healer's Art Course for Medical Students: A Feasibility Study

Kirin Saint^{*}; C. Kenzie Corbin, MD[†]; Michael F. Barton, MD, MPH[‡]; Julie Barrett, MD, MPH[§]; Heather L. Burrows, MD, PhD[¶]

Introduction: Burnout is common among medical students in the United States and can be debilitating. Mindfulness practices can reduce stress levels and burnout. Integrating mindfulness practices into pre-existing medical courses such as the Healer's Art can potentially reduce burnout.

Methods: We evaluated the impact of introducing meditation and yoga into the Healer's Art course at a midwestern medical school. Half of the students were randomized into a meditation class (n=11), and the other half were randomized into a yoga class (n=12). Students were given pre- and post-session surveys to assess measures of mindfulness, burnout, and energy levels, adapted from validated survey instruments. Paired two-sample t tests were used to assess the relationship between each intervention and each pre-specified outcome.

Results: Twenty-three medical students participated in a one-time yoga or meditation session. The yoga intervention resulted in a statistically significant increase in energy and breath awareness outcomes. The meditation intervention resulted in a significant increase in mindfulness. Both yoga and meditation were found to decrease burnout among participants in the immediate aftermath. Ninety-six percent of participants (22 of 23)

^{*}University of Michigan Medical School, ksaint@umich.edu (corresponding author)

[†]University of New Mexico, cacorbin@salud.unm.edu

[‡]University of Chicago, mfbarton7@gmail.com

[§]University of Michigan Michigan Medicine, Medical School, Ann Arbor, MI, USA, jubarret@med.umich.edu

[¶]University of Michigan Michigan Medicine, armadill@med.umich.edu

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expressed that mindfulness practices should be incorporated into future the Healer's Art courses, with a mean recommendation score of 4.5 out of 5.

Conclusions: Yoga and meditation classes might reduce medical student burnout. Randomized control trials are needed to assess longevity and generalizability of findings.

Keywords

Mindfulness • yoga • meditation • burnout • medical education • Healer's Art

Introduction

Nearly half of all medical students in the United States report symptoms of burnout.¹ In addition, 80% of medical students report psychological distress, with higher rates of depression and fatigue than in similar-aged individuals in the general population.²⁻⁴ Burnout is described as a triad of emotional exhaustion, de-personalization, and decreased personal accomplishment and often begins during medical training.^{5,6} Higher rates of burnout symptoms are associated with an increased likelihood of leaving medical school, increased suicidal ideation, and lower patient satisfaction.⁷⁻⁹

Mindfulness practices such as yoga and meditation are a potential intervention to reduce stress levels and burnout among healthcare workers.¹⁰⁻¹² Intervening during medical education is key to preventing burnout.⁵ One potential intervention is to integrate mindfulness practices into pre-existing courses within the medical undergraduate curriculum, such as the Healer's Art.¹³ The Healer's Art is an elective course offered for medical students at 113 different institutions in 9 countries, primarily in the United States.¹⁴ Originally created for medical students at the University of California, San Francisco in 1992, its course goal is to reconnect medical providers to the values of compassion, service, reverence for life, and harmlessness in an effort to discover meaning and value in medical training.^{13,15,16} The Healer's Art has helped medical students expand their view of physicianhood to include wholeness, presence, and love.¹⁷ This course has also demonstrated a positive impact on the clinical work and teaching of its faculty facilitators.¹⁸ The Healer's Art is now offered to nursing, physician assistant, and veterinary students, in addition to medical students.¹⁹⁻²¹

We identified the Healer's Art course at our medical school as a promising place to offer mindfulness practices for students, requiring minimal structural change. The Healer's Art is an optional elective for medical students and attracts between 30 and 40 students per year. It is a 10-hour course divided into 5 sessions. Each session starts in a large group where a specific topic is introduced, and then the topic is further discussed in small groups led by faculty, residents, and senior medical students. The session topics are wholeness, grief and loss, mystery and awe, and service, with two sessions devoted to grief and loss. Importantly, any changes to the Healer's Art curriculum must first be approved by the leadership at Remen Institute for the Study of Health and Illness (RISHI): Rachel Naomi Remen, MD, RISHI founding director, and Evangeline Andarsio, MD, RISHI director. Recently, we incorporated mindfulness practices (ie, meditation and yoga) into the second grief and loss session at our medical school.

Little is known to date about the impact of integrating mindfulness practices into the Healer's Art course. Given the importance of preventing and reducing medical student burnout, our study sought to address the following questions: (1) Do mindfulness practices (meditation and

yoga) impact student burnout and energy levels? (2) Is one mindfulness practice more effective than the other? (3) Is the Healer's Art course an appropriate place to offer mindfulness practices? We hypothesize that students in both intervention groups will report decreased measures of burnout and increased measures of energy.

Methods

Study Design and Setting

Our study utilized the Healer's Art elective for medical students at the University of Michigan Medical School (UMMS) during the Spring semester (February-May 2022). This course consisted of 5 sessions, with each 2-hour session focused on a topic pertaining to medical training and providing patient care. Sessions were taught in the medical school library and led by faculty and senior students. For the 2022 Healer's Art course, we integrated mindfulness practices into the third session. Again, please note that any changes to the Healer's Art program must be first approved by the RISHI leadership team. Half of the students were randomized into a meditation session, while the other half was randomized into a yoga session. Investigators were not blinded to the study groups.

Prior to the first session of the course, students were given a pre-course survey (Appendix A) to assess baseline measures of mindfulness, burnout, and energy levels. Pre- and post-mindfulness session surveys (Appendices B, C) were administered to the students at the third session to evaluate immediate changes in mindfulness, burnout, and energy levels.

Surveys were administered to participants immediately before and after participation in the yoga or meditation sessions to assess the intervention's short-term impact. Study authors collected all surveys. Study authors were not blinded to the groups as they participated in the sessions. Please see Appendices B and C for the full surveys.

Feasibility Endpoints

Our feasibility endpoints were based on students' reactions to the class and if they would recommend continuing a mindfulness practice in the Healer's Art course. On the post-intervention survey, students were asked on a scale of 1 to 5 if they agree that the class should be continued. This survey also captured student reactions to the class.

Interventions

Yoga Session

The yoga class was designed and taught by two of the study authors, both 200-hour certified yoga teachers with prior experience teaching medical students. The yoga class was one hour long and consisted of gentle mind-body practices, including breathwork, sun salutations, Vinyasa-style flows, and restorative postures. The class was designed for all levels, and modifications were offered as needed. The class started with a 10-minute warm-up of breathwork and grounding exercises, followed by 10 minutes of sun salutations. The next 20 minutes consisted of a Vinyasa-style flow, in which each movement was synced with the practitioner's breath. The final 10 minutes of the class consisted of restorative seated postures.

Meditation Session

The meditation class was designed and taught by a certified meditation instructor and obstetrician-gynecologist with prior experience teaching medical students. The instructor taught via Zoom due to the COVID-19 pandemic, while the participants were in-person. The session was one hour long and consisted of a presentation outlining meditation principles followed by a seated meditation practice.

Analysis

To explore intervention effectiveness, we analyzed our pre- and post-intervention outcome data from surveys in Appendices B and C. Baseline survey data (Appendix A) was collected but was not analyzed, consistent with our a priori statistical analysis plan. We analyzed each intervention (yoga and meditation) separately. We report the percentage change from pre-intervention to post-intervention for each outcome; 95% confidence intervals were constructed. Paired two-sample t tests were used to assess significance of the effect of each intervention on each of our outcomes. Additionally, we performed a comparative analysis exploring whether either intervention had a significantly greater effect than the other on any of our outcomes. For this, we utilized a two-sample t test comparing the mean pre- and post-test differences for the yoga and mindfulness groups for all outcomes. Two-sided testing and an alpha level of 0.05 were used for all analyses. Additionally, mean ratings for course recommendations were reported as descriptive statistics for each intervention. Listwise deletion was used to address missing data. All analyses were performed using R software version 4.1.2.²²

Results

Demographic Information

Twenty-three students participated in the study (100% response rate). Nineteen students were from the graduating class of 2025, 2 students from the class of 2023, and 1 student each from the classes of 2024 and 2022. Twenty students used she/her pronouns, and 3 students used he/him pronouns (Table 1). Twelve and 11 students were randomized to the yoga and meditation interventions, respectively. All participating students filled out pre- and post-intervention surveys. There was one missing response on a single baseline survey.

Effectiveness of Yoga and Meditation Interventions

The yoga intervention resulted in increase in energy (26%, $p=0.01$) and increase in breath (13%, $p=0.03$) outcomes as well as a decreased level of burnout (14%, $p=0.03$; see Table 2, Figure 1). Simultaneously, the meditation intervention resulted in an increase in mindfulness (22%, $p=0.01$) as well as a decreased level of burnout (10%, $p=0.02$). When comparing the two modalities of mindfulness, both of our interventions were found to be statistically significant to decrease burnout among participants. The effects on our outcomes were not statistically significantly different for the yoga and mindfulness interventions.

Recommendation Scores

The mean recommendation score (out of 5) was 4.8 for the yoga group and 4.1 for the meditation group.

Table 1. Participant Characteristics

	Yoga (n=12)	Meditation (n=11)	Overall (N=23)
Class			
2022	1 (8.3%)	0 (0%)	1 (4.3%)
2023	2 (16.7%)	0 (0%)	2 (8.7%)
2024	1 (8.3%)	0 (0%)	1 (4.3%)
2025	8 (66.7%)	11 (100%)	19 (82.6%)
Pronouns			
he/him	2 (16.7%)	1 (9.1%)	3 (13.0%)
she/her	10 (83.3%)	10 (90.9%)	20 (87.0%)

Table 2. Intervention Effectiveness Results: Yoga and Meditation

Yoga				Meditation			
Outcome	Percentage change	95% confidence interval	P-value	Outcome	Percentage change	95% confidence interval	P-value
Mindfulness	21.1	(-0.8, 42.9)	0.057	Mindfulness	21.6	(6.2, 36.9)	0.011*
Comfortable	14.3	(-0.2, 28.8)	0.053	Comfortable	10.5	(-2.6, 23.6)	0.104
Moving	0	(-8.2, 8.2)	1	Moving	2.1	(-6.2, 10.4)	0.588
Breath	12.8	(1.8, 23.7)	0.026*	Breath	10.9	(-0.2, 21.9)	0.053
Energy	26.5	(7.1, 45.9)	0.012*	Energy	9.7	(-1.5, 20.8)	0.082
Burnout	-14.2	(-26.4, -1.9)	0.027*	Burnout	-10.2	(-18.3, -2.1)	0.019*

*Statistically significant at p<0.05 level.

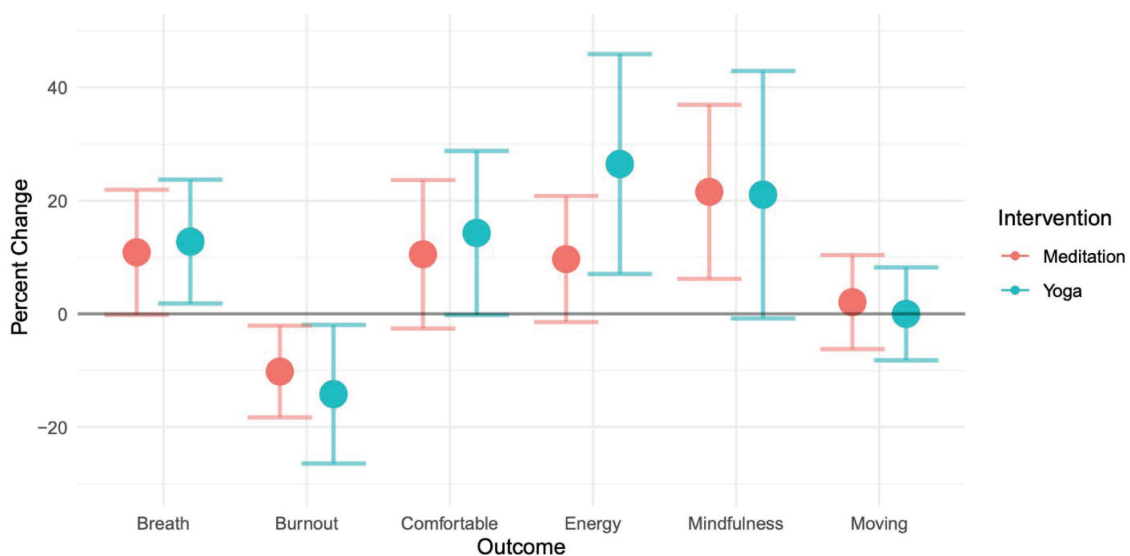


Figure 1. Impact of Yoga and Meditation on Wellness Markers

Discussion

Burnout among medical providers, especially medical students, is statistically greater than among age-matched controls, with nearly 1 in every 2 students experiencing detrimental clinical burnout.^{4,25} Our feasibility study aimed to integrate mindfulness practices into a pre-existing course for medical students, the Healer's Art, to examine immediate effects on students and the course's potential use as a space to offer mindfulness practice for medical students across the nation, with the ultimate goal of reducing burnout.

Our study results demonstrate a short-term decrease in burnout measures, an increase in energy and breath awareness, and an increase of mindfulness measures after a one-hour session of mind-body practices. Of note, between the two groups, there was no significant difference in the degree of decrease in burnout. This suggests that in order to achieve decreased burnout, perhaps the type of mindfulness activity performed, whether it involves physical movement, does not matter as much as simply incorporating the practice of mindfulness.

Our feasibility measure was included in the post-intervention survey: we asked participants to respond to the statement "Yoga or meditation should be incorporated into future Healer's Art courses." We found that 22 of the 23 students agreed or strongly agreed with this statement, indicating the Healer's Art course is a potentially acceptable space for mindfulness practices. Thus, we found our intervention to be feasible and acceptable.

In addition, on the post-intervention survey, we elicited feedback from students on the session. Although a full qualitative analysis was not performed, anecdotally some of the students reported, "I really enjoyed this (yoga session)" and "Loved this (yoga session)!" One student wrote, "I would have loved to do one hour of meditation *and* one hour of yoga, rather than just one." Another student said, "I think yoga is awesome for med students but idk if it should be in Healer's Art." This comment implies that further qualitative exploration is necessary in understanding students' reactions to this session.

Our findings build on prior studies that have shown the benefits of implementing mindfulness practices into pre-existing programming for medical trainees and physicians. Thompson et al's²⁶ 2022 study evaluated the effects of offering restorative yoga to third-year medical students during their core pediatrics rotation. They found that students reported feeling more relaxed and better about themselves following this 6-week intervention.²⁶ A study by Chung et al²⁷ found that integrating mindfulness into a pre-existing emergency medicine clerkship for third- and fourth-year medical students improved students' ability to meditate, and students reported these practices became important to their well-being. Krasner et al²⁸ evaluated the effects of a mindfulness-based training as part of continuing medical education credits for primary care physicians. They found this intervention decreased levels of burnout among the physician group and improved attitudes associated with patient-centered care, both in the immediate aftermath and 3 months post-intervention.²⁸ In addition, Hassed et al²⁹ studied the impact of a mindfulness program at Monash University and found improved student well-being on all markers and decreased depression among students in the pre-exam period.

Interestingly, Dobkin and Hutchinson's³⁰ 2013 study found that most mindfulness classes offered in medical schools are electives as opposed to being a mandatory component of the curriculum. This suggests the students are already motivated to engage in these practices and thus experience more benefit. This is an important finding because students choosing elective courses such as the Healer's Art might experience more self-motivation to engage in all aspects of the course's programming as opposed to an enforced curriculum. However, Rabow et al's³¹ 2016 study specifically evaluated medical students taking the Healer's Art and found no difference in outcomes between those who elected to take the course and those who were mandated to do so.

Thus, further research is needed to understand if differences in outcomes exist between elective wellness and mandatory wellness.

We recommend a future mixed methods randomized control trial to evaluate the effectiveness of mindfulness practices for the reduction of burnout in medical school students. Mindfulness practice might be offered to students in addition to the Healer's Art 5-session curriculum. We acknowledge the importance of the third session centering on grief and loss and thus recommend mindfulness practices to be incorporated after at least an hour discussion centering on grief and loss. More comprehensive surveys — such as the Five Facet Mindfulness Questionnaire²⁴ and Maslach Burnout Inventory²³ in their entirety — could be used with longer duration of follow-up, such as 6 months or longer following the intervention. Qualitative interviews would be helpful in further understanding students' reactions to the intervention. Additionally, further research can investigate the difference between one longer mindfulness session versus shorter, more consistent sessions throughout a semester.

Further studies could examine the impact of incorporating mindfulness into the Healer's Art courses in other health professional schools more broadly, with the appropriate approval by RISHI leadership. The Healer's Art course has now expanded to curricula for physician assistant (PA), nursing, and veterinary students, for whom burnout is also unfortunately increasing and only accelerated during the COVID-19 pandemic.³²⁻³⁵ Thus, there is great potential in offering mindfulness classes across the Healer's Art courses in these adjacent healthcare fields, and this could be an important area of future study.

Our study needs to be interpreted within the context of the following limitations. First, the study has a small sample size and was implemented within a self-selecting group of medical students at one institution for a single session. Future studies would need to explore the impact on a larger group of students in geographically diverse settings and perhaps among other types of medical trainees (eg, PA and nursing students). Second, our results were obtained immediately after students completed the intervention and thus cannot be used to demonstrate sustained outcomes. It would be useful to obtain follow-up data 6 months or longer after the intervention. Third, student participants self-selected to participate in this course, which limits generalizability to students who did not elect to participate in this course. Finally, there was a discrepancy between the yoga instructors teaching in-person and the meditation instructor teaching remotely via Zoom due to the unforeseen COVID-19 pandemic.

Conclusion

Our simple intervention of integrating mindfulness into the Healer's Art course is a feasible method of using mindfulness practice to reduce student burnout. Before widespread adoption, however, additional studies at varying sites would be necessary to show generalizability of our findings. For example, a mixed methods randomized control trial that uses the full Maslach Burnout Inventory instrument would be reasonable. We intend to continue this intervention at our medical school and also undertake a sustainability assessment.

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Appendix A: Pre-Course Survey

Thank you for taking 5 minutes of your time to fill out this survey.

Class Year _____

Pronouns _____

On a scale from 1 to 5, to what extent do you agree with the following statements based on how you feel right now:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It seems I am “running on automatic” without much awareness of what I’m doing.	1	2	3	4	5
I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.	1	2	3	4	5
I find myself preoccupied with thoughts of the past or future.	1	2	3	4	5
I make judgments about whether my thoughts are good or bad.	1	2	3	4	5
I feel comfortable in my body.	1	2	3	4	5
I feel a sense of belonging in the medical school.	1	2	3	4	5
Moving my body can help me calm down.	1	2	3	4	5
I can use my breath to help me calm down.	1	2	3	4	5
I feel full of energy.	1	2	3	4	5
I feel emotionally drained from my studies.	1	2	3	4	5
I doubt the significance of my studies.	1	2	3	4	5
In my opinion, I am a competent student.	1	2	3	4	5

Are you willing to participate in a 60-minute yoga or meditation class during our Healer’s Art session on Tuesday, April 5?

Yes No

Note: There will be **no** effect on your grade if you choose to opt out of this portion of the class.

Appendix B: Pre-Intervention Survey

Class Year _____

Pronouns _____

Select One: I will participate in Yoga or Meditation

On a scale from 1 to 5, to what extent do you agree with the following statements based on how you feel right now:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It seems I am “running on automatic” without much awareness of what I’m doing.	1	2	3	4	5
I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.	1	2	3	4	5
I find myself preoccupied with thoughts of the past or future.	1	2	3	4	5
I make judgments about whether my thoughts are good or bad.	1	2	3	4	5
I feel comfortable in my body.	1	2	3	4	5
I feel a sense of belonging in the medical school.	1	2	3	4	5
Moving my body can help me calm down.	1	2	3	4	5
I can use my breath to help me calm down.	1	2	3	4	5
I feel full of energy.	1	2	3	4	5
I feel emotionally drained from my studies.	1	2	3	4	5
I doubt the significance of my studies.	1	2	3	4	5
In my opinion, I am a competent student.	1	2	3	4	5

Class Year _____

Pronouns _____

Appendix C: Post-Intervention Survey

Select One: I participated in Yoga or Meditation

On a scale from 1 to 5, to what extent do you agree with the following statements based on how you feel right now:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
It seems I am “running on automatic” without much awareness of what I’m doing.	1	2	3	4	5
I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.	1	2	3	4	5
I find myself preoccupied with thoughts of the past or future.	1	2	3	4	5
I make judgments about whether my thoughts are good or bad.	1	2	3	4	5
I feel comfortable in my body.	1	2	3	4	5
I feel a sense of belonging in the medical school.	1	2	3	4	5
Moving my body can help me calm down.	1	2	3	4	5
I can use my breath to help me calm down.	1	2	3	4	5
I feel full of energy.	1	2	3	4	5
I feel emotionally drained from my studies.	1	2	3	4	5
I doubt the significance of my studies.	1	2	3	4	5
In my opinion, I am a competent student.	1	2	3	4	5
Yoga or meditation should be incorporated into future Healer’s Art courses.	1	2	3	4	5

Additional Comments: _____

I am interested in participating in a compensated focus group about this activity:

Yes No

If yes, please write your email address and we will contact you with more information.

Email: _____

Study Sample and Randomization Process

All students enrolled in the UMMS Healer's Art course during the 2022 Spring semester participated in the third session, incorporating mindfulness (n=23). The pre-course survey administered prior to the start of the first session included a choice for students to opt out of the mindfulness session. Faculty facilitators were excluded from this study. Although they participated in the yoga and meditation sessions, they did not fill out the surveys, as our study focused on current students' experiences. We randomly assigned students to participate in one of two different mindfulness sessions: yoga (n=12 students) or meditation (n=11 students). Random assignment was done using a random number generator in R software version 4.1.2 (R Core Team).²²

Ethics

The University of Michigan Medical School Institutional Review Board granted exemption 3(i)(A) and/or 3(i)(B) at 45 CFR 46.104(d) on March 14, 2022. Participants were given the opportunity to opt out of the study. UM Federalwide Assurance: FWA00004969, eResearch ID: [HUM00213308](#).

Study Outcomes

Students were given a pre-course survey to assess baseline measures of mindfulness, burnout, and energy levels, adapted from the Maslach Burnout Inventory²³ and the Five Facet Mindfulness Questionnaire²⁴ (Appendix A). The Maslach Burnout Inventory is a well-validated survey consisting of 22 questions that evaluate various aspects of burnout, including occupational exhaustion, de-personalization or loss of empathy, and personal accomplishment, using a 7-point Likert scale.²³ The Five Facet Mindfulness Questionnaire²⁴ consists of 39 questions evaluating various factors of mindfulness. For the purpose of our study, we used 4 modified questions from each of these validated surveys. The study authors also created 4 questions targeting students' perception of comfort in their body, sense of community, and ability to use their breath and movement to calm themselves. These questions were discussed and finalized among the research group members. Appendix D has further description of the questionnaire, including how each question evaluated a specific outcome that we are investigating.

Appendix D: Survey Question Descriptions

Survey Questions Description

Our baseline, pre-intervention, and post-intervention surveys (Appendices A-C) consisted of 13, 12, and 13 questions, respectively. The first 12 questions were the same on all 3 surveys. The baseline survey had an additional question asking if students were willing to participate in a yoga or meditation session. The post-intervention survey had an additional question to evaluate if students would recommend a mindfulness class in Healer's Art.

We used a 5-point Likert scale for all Questions 1–12 and Question 13 in Appendix C, with the answer options of “Strongly disagree,” “Disagree,” “Neither agree nor disagree,” “Agree,” or “Strongly agree.” Students were only allowed to choose one answer, not multiple answers.

Questions 1–4

The Five Facet Mindfulness Questionnaire (FFMQ) is a validated survey instrument used to **assess factors of mindfulness**, including the participant's ability to act with awareness, ability to describe and observe their inner experiences, and non-judgment and non-reactivity of inner experiences.¹ We chose 4 questions from this survey. Three of the questions (1, 2, and 4) were used verbatim from the FFMQ. Question 3 was modified, as below. All of these questions were used to compile the “Mindfulness” outcome.

1. **It seems I am “running on automatic” without much awareness of what I’m doing.**
 - a. This question was used verbatim from FFMQ and assesses the ability to act with awareness.
2. **I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.**
 - a. This question was used verbatim from FFMQ and assesses skills of observation.
3. **I find myself preoccupied with thoughts of the past or future.**
 - a. This question was adapted from Question 18 of the survey: “I find it difficult to stay focused on what’s happening in the present.” This assesses one’s ability to act with awareness.
4. **I make judgments about whether my thoughts are good or bad.**
 - a. This question was used verbatim from FFMQ, and it evaluates non-judging of inner experience.

Questions 5–8

The study authors created 4 questions to **assess student perceptions of comfort in their body, sense of belonging, and ability to use body movement or breath to calm down**. These questions were discussed among study authors and with fellow medical students, with edits made based on student feedback.

5. **I feel comfortable in my body.**
 - a. This was used for the “comfortable” outcome.
6. **I feel a sense of belonging in the medical school.**
 - a. This was used for the “belonging” outcome.

7. **Moving my body can help me calm down.**
 - a. This was used for the “moving” outcome.
8. **I can use my breath to help me calm down.**
 - a. This was used for the “breath” outcome.

Questions 9–12

Maslach’s Burnout Inventory (MBI) is a well-validated survey instrument consisting of 22 questions that **evaluate various aspects of burnout**, including occupational exhaustion, de-personalization or loss of empathy, and personal accomplishment, using a 7-point Likert scale.² We adapted questions from the MBI-Human Services Survey (MBI-HSS) and MBI-General Survey for Students (MBI-GS(S)),³ as below.

9. **I feel full of energy.**
 - a. This question was used verbatim from MBI-HSS to assess energy levels and was used for the “energy” outcome.
10. **I feel emotionally drained from my studies.**
 - a. This question was adapted from the original question in MBI-HSS, “I feel emotionally drained from my work,” to better apply to medical students. It assesses emotional exhaustion and was used for the “burnout” outcome.
11. **I doubt the significance of my studies.**
 - a. This statement was used verbatim from MBI-GS(S) to assess cynicism. It was used for the “burnout” outcome.
12. **In my opinion, I am a competent student.**
 - a. This was adapted from the statement “In my opinion, I am a good student” in the MBI-GS(S) to assess academic efficacy and was used for the “burnout” outcome.

Appendix References

- 1 Baer RA, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self-report assessment methods to explore facets of mindfulness. *Assessment*. 2006;13(1):27–45. doi:10.1177/1073191105283504
- 2 Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav*. 1981;2(2):99–113. doi:10.1002/job.4030020205
- 3 Hu Q, Schaufeli WB. The factorial validity of the Maslach Burnout Inventory-Student Survey in China. *Psychol Rep*. 2009;105(2):394–408. doi:10.2466/PR0.105.2.394-408