ORIGINAL RESEARCH

Impact of an Online Group-Coaching Program on Ambulatory Faculty Physician Well-Being: A Randomized Trial

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Background: Physician burnout contributes to distress, turnover, and poor patient outcomes. Evidence suggests individual professional coaching may mitigate burnout but is costly and time intensive. Group coaching evidence is lacking. Here, we assess a group coaching program in ambulatory-based faculty.

Methods: A randomized trial occurred from February 1, 2023, to May 31, 2023, in 5 ambulatory and/or primary care-based departments at an academic institution. Participants were randomly assigned to an intervention (offered a 4-month, online, group coaching) or to a control group (not offered coaching). Surveys measuring validated dimensions of distress (burnout, impostor syndrome, moral injury, loneliness) and well-being (self-compassion, flourishing) were administered before and after the intervention. A linear mixed model analysis was performed on an intent-to-treat basis.

Results: Among 160 participants, the mean (SD) age was 42.0 (8.4), 131 (81.9%) identified as female, and 135 (85.4%) as White. Group coaching improved intervention participants' burnout domain of depersonalization (δ: -1.72 points [CI: -3.26, -0.17]; $P = .03$), impostor syndrome (δ: -0.82 points [95% CI: -1.47, -0.18, $P = .01$), and flourishing (0.35 points (95% CI: 0.03, 0.66), $P = .03$) compared with the control. There were no significant differences in the other domains of burnout, or moral injury, loneliness, or self-compassion.

Discussion: Four months of group-coaching improved some well-being outcomes in ambulatory-based clinicians. The intervention may be particularly useful given its accessibility, and online delivery supports greater scalability and lower cost than individual coaching.

Conclusion: Group coaching is an institutionally provided, individually harnessed tool to heal physician burnout.

Trial Registration: ClinicalTrials.gov Identifier: NCT05635448. (J Am Board Fam Med 2024;00:000–000.)

Keywords: Burnout, Coaching, Physicians, Psychological Well-Being

Introduction

Physician burnout is highly prevalent in the US and is associated with job turnover, higher medical errors, patient mortality, and physician substance abuse and depression.[1,2] Burnout is more frequent in female physicians and those who are early in

their career.[3–6] Primary care based physicians are highly impacted by burnout with rates recently estimated at 57% for Family Medicine, 60% for Internal Medicine, 59% for Pediatrics, and 58% for Obstetrics and Gynecology.[7] The Association of American Medical Colleges has recently predicted a shortage of between 21,400 and 55,200 primary care physicians by 2033.[8] The US Surgeon General has declared physician burnout a crisis deserving of a multipronged approach toward "bold, fundamental change," yet little is known about scalable, effective interventions to mitigate risk.[9,10]

Professional coaching ("coaching") is a promising intervention to reduce burnout. The 2022 Surgeon General's Advisory emphasized building a culture of well-being in institutions and included coaching as a recommended tool.[10] Coaching, unlike therapy, does not diagnose or treat, and instead uses inquiry and metacognition ("thinking about one's thinking") to guide self-progress.[11] Evidence supporting physician coaching is growing, but predominantly describes one-on-one coaching led by nonphysician or noncertified faculty coaches, which can be both expensive and time consuming.[12–14] Individual coaching is more traditional and well established in the literature,[12,15] though group coaching studies are growing and offer scalability, low-cost and feasibility (especially if digital) and can therefore democratize coaching.[16–19] Another benefit of group coaching is the development of community and the benefit of having challenges normalized among peers.[19,20]

An online group-coaching program, Better Together Physician Coaching (BT), was developed in response to growing burnout and the need for a scalable, pragmatic intervention that appeals to busy clinicians.[16,20,21] BT was initially evaluated in the physician trainee population and has been shown to improve burnout, impostor syndrome, self-compassion, moral injury and flourishing in a national sample.[17] Building on previous work, we conducted a pilot randomized trial (RCT) to evaluate the effect of the 4-month BT program in a sample of ambulatory-based faculty clinicians, the majority in primary care, on several dimensions of distress (burnout, impostor syndrome, moral injury, and loneliness) and well-being (self-compassion and flourishing).

Methods
Trial Oversight
We conducted this trial from February 1, 2023, to May 31, 2023, at the University of Colorado (CU), a tertiary care center with academic, county, Veterans' Administration, and community-based hospitals and clinics. Enrollment was voluntary, and all participants completed written informed consent, and the intervention followed the Consolidated Standards of Reporting Trials reporting guidelines.[22] The study was approved by the Colorado Multiple Institutional Review Board (COMIRB 22 to 2158) (Supplement 1, Trial Protocol). Data were collected and managed with CU's Research Electronic Data Capture (REDCap).[23]

Participants and Trial Groups
Ambulatory and/or primary care-based CU faculty physicians with at least some clinical time in the departments of Family Medicine, Internal Medicine (divisions of General Internal Medicine, Geriatrics, and outpatient-based Oncology, Infectious disease, Endocrinology, and Rheumatology), Physical Medicine and Rehabilitation, Obstetrics and Gynecology, and ambulatory-based Pediatrics were eligible. The department of Family Medicine elected to also include non-MD behavioral health clinicians who were perceived to have similar burnout drivers as their physicians. The other departments elected to include only MD or DOs. In total, 764 individuals were eligible and recruited through e-mail to consent and enroll. After enrolment, participants were randomly assigned to the intervention (access to BT) or to a waitlist control group (no access). Randomization was stratified based on gender (male, female, or another gender identity) and departmental specialty (Family Medicine, Internal Medicine, Pediatrics, Physical Medicine and Rehabilitation, or other). Intervention participants were not given protected time for the coaching program. All were asked to complete baseline (before randomization) and 4-month (end of intervention) surveys containing demographic questions and validated instruments measuring dimensions of distress and well-being. The control group was offered access to BT after the study (Figure 1).

Intervention: Better Together
Better Together Physician Coaching is a 4-month, online, group-coaching program developed by 2 professional physician coaches (TF and AM) shown to improve measures of well-being and distress both immediately and at 12 months after coaching ends in physician trainees.[16,17,20,21] BT is delivered by a cohort of physician coaches, all certified by The Life Coach School.[TM] Coach selection, onboarding and facets of the BT curriculum are described in the national physician trainee trial.[17] The BT program

Figure 1. Study schema.
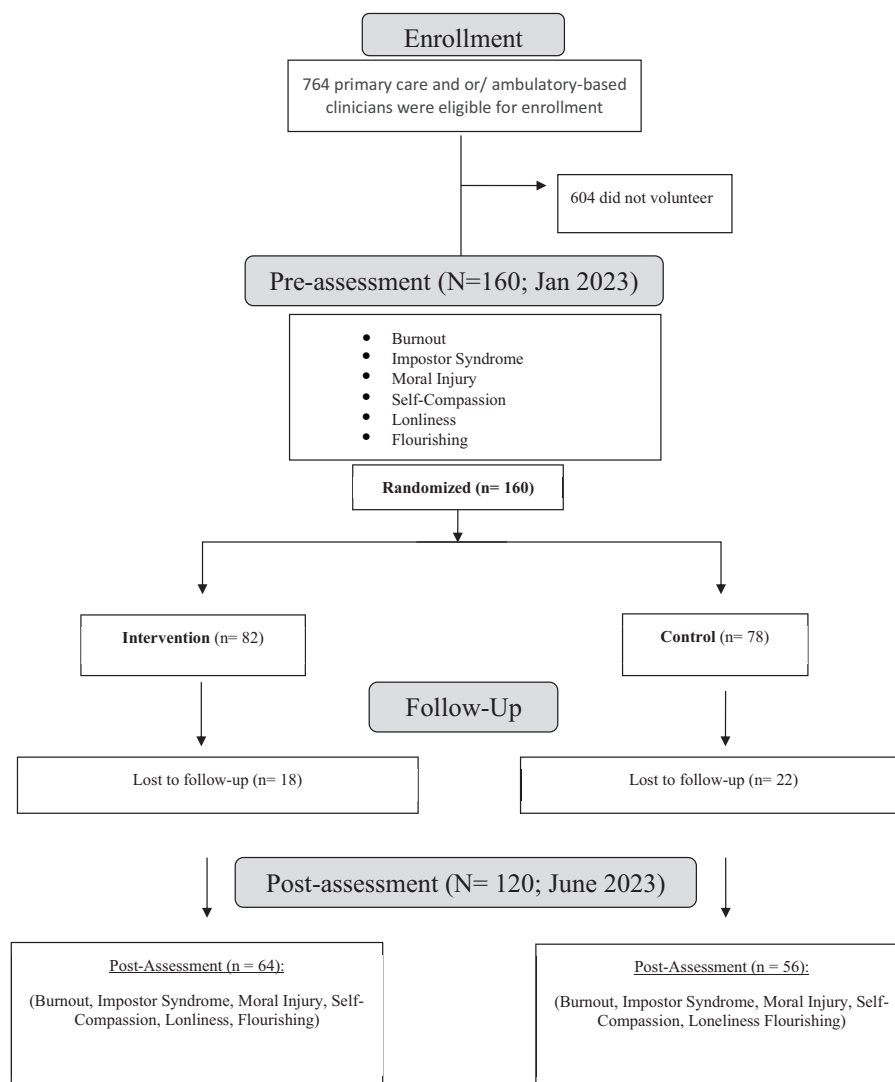
incorporates facets of the work of Short et al. to engage a user (self-monitoring, reminders, aesthetics, etc.),[24] and the Cole-Lewis' framework for behavior change (as a modular, course-like weekly introduction of content).[25] BT participants had access to the following services housed on a members-only, password-protected website: 1) 2 live group coaching calls weekly on Zoom (recorded for asynchronous listening via private podcast), 2) unlimited anonymous written coaching, and 3) weekly self-study modules on pertinent topics.

Distress Outcomes

Burnout

Burnout refers to feelings of exhaustion, negativism, and reduced personal efficacy resulting from the workplace.[26] The 22-item Maslach Burnout Inventory (MBI) is considered the standard to measure burnout and was used under license by Mindgarden.com.[27] The MBI contains 3 subscales: emotional exhaustion (EE, score range 0 to 54), depersonalization (DP, score range 0 to 30), and personal accomplishment (PA, score range 0 to 48). We used established threshold definitions of high emotional exhaustion (EE) ($\geq$27), high DP ($\geq$10), and low PA ($\leq$33), and considered those with high EE or DP to have at least 1 manifestation of burnout.[12,13,28]

Impostor Syndrome

Impostor Syndrome refers to a phenomenon of self-doubt of intellect, skills, or accomplishments despite evidence to the contrary.[29] The Young Impostor Syndrome Scale (YISS) is an 8-item

instrument with yes/no scoring.[30] A score ≥5 indicates the presence of impostor syndrome.

Moral Injury
Moral Injury is a sense of transgression and includes feelings of shame, grief, meaninglessness, and remorse from having violated core moral beliefs.[31,32] The Moral Injury Symptom Scale–Health care Professionals (MISS-HP) is a 10-item instrument with scores ranging from 10 to 100.[33] Scores >36 indicate functional impairment with higher scores indicating greater moral injury.

Loneliness
Loneliness refers to feelings of social isolation.[34] The UCLA 3-item Loneliness scale[35] measures 3 dimensions of loneliness: relational connectedness, social connectedness, and self-perceived isolation. Higher scores indicate greater loneliness.

Well-Being Outcomes
Self-Compassion
Self-Compassion is a source of coping that involves being supportive toward oneself with kindness and understanding.[36] Neff's Self-Compassion Scale–Short Form (SCS-SF)[37] is a 12-item instrument, total scale range 12 to 60. Scores of 12 to 30 are considered low, 31 to 42 moderate, and 43 to 60 high.

Flourishing
Flourishing refers to a state of human thriving in which aspects of life are favorable.[38] The Secure Flourishing Index[39] (SFI) is a 12-item instrument assessing 5 domains of flourishing. Scores range from 0 to 12, higher scores indicate greater flourishing.

Statistical Analysis
Descriptive statistics were computed for characteristics overall and by intervention arm, with comparisons made using Wilcoxon rank sum tests for continuous covariates and Fisher's exact or Chi-Square tests for categorical covariates. Characteristics of final survey responders and nonresponders were compared.

An intent-to-treat analysis was performed on all participants regardless of postsurvey completion using linear and logistic mixed effects models including the main effects of the period (baseline vs Postintervention), treatment (intervention vs control), the interaction between period and treatment, and a random intercept for participants estimated using restricted maximum likelihood. Mean change from baseline within each group and the difference in mean change between groups and their 95% CIs were reported. All P-values are from 2-sided hypothesis tests and statistical significance was assessed at the $\alpha = 0.05$ level. All linear and mixed logistic effect analyses were performed using SAS version 9.4 (SAS Institute, Cary, NC).

Results
Participants
In total, 160 participants voluntarily enrolled in the study (Figure 1). Of those, 82 were assigned to the intervention. The mean (SD) participant age was 42.0 (8.4) years, 131 (81.9%) identified and self-reported as female, and 135 (85.4%) as White. In terms of departmental specialty, 65 (40.6%) were in Family Medicine, 54 (33.8%) in internal medicine, 17 (10.6%) in Obstetrics and Gynecology, 13 (8.1%) in Pediatrics, 7 (4.4%) in Physical Medicine and Rehab, and 4 (2.5%) answering "other/prefer not to say." Over a third (63, 39.4%) work >75% clinical, 41 (25.6%) between 51 to 75% clinical, 38 (23.8%) between 26 to 50% clinical and 18 (11.3%) ≤25% clinical. There were no significant baseline differences in demographics or outcome scores between groups except the intervention group had slightly more MD/DO's while the control group had more participants that endorsed "Other" as a degree ($P = .03$). (Table 1).

At baseline, average (SD) emotional exhaustion subscale score of burnout was high at 30.0 (10.0), depersonalization was just below the threshold of high 9.4 (5.7), and personal accomplishment was moderate at 37.6 (5.9). There were 104 (66%) participants with at least 1 manifestation of burnout. The average (SD) imposter syndrome score was 4.83 (2.30), with a majority (57%) scoring positively for impostor syndrome. The average (SD) moral injury score was high at 39 (13), self-compassion was moderate at 36 (7) and flourishing was moderate at 7.02 (1.1). There were 120 participants (75%) who responded to the follow-up survey, with more in the control group (64 participants [53%; 95% CI, 44% to 62%]) than the intervention group (56 participants [47%; 95% CI, 38% to 56%]) ($P < .05$). There were no demographic differences in those who responded to the follow up survey aside from degree (MD/DO and PhD more likely to respond to the post survey than PsyD) (Appendix 2).

Table 1. Baseline Characteristics of All Enrolled Participants (ITT)

Variable/Outcome	Overall N = 160[1]	Waitlist N = 78[1]	Intervention N = 82[1]	P value[2]
Age				0.70
Mean (SD)	42.0 (8.4)	42.1 (8.1)	41.9 (8.7)	
Median (Range)	40.0 (26.0 to 68.0)	41.0 (31.0 to 65.0)	40.0 (26.0 to 68.0)	
Years since training ended				0.85
Mean (SD)	10.4 (8.2)	10.4 (7.8)	10.5 (8.6)	
Median (Range)	8.0 (0.0 to 36.0)	9.3 (0.0 to 30.0)	8.0 (0.0 to 36.0)	
Department/Specialty				0.89
Family medicine	65 (40.6%)	32 (41.0%)	33 (40.2%)	
Internal medicine	54 (33.8%)	28 (35.9%)	26 (31.7%)	
OBGYN	17 (10.6%)	9 (11.5%)	8 (9.8%)	
Pediatrics	13 (8.1%)	5 (6.4%)	8 (9.8%)	
Physical medicine and rehab	7 (4.4%)	3 (3.8%)	4 (4.9%)	
Other/Prefer not to answer	4 (2.5%)	1 (1.3%)	3 (1.9%)	
Degree				0.03
MD or DO	141 (88.1%)	64 (82.1%)	77 (93.9%)	
Other	12 (7.5%)	10 (12.8%)	2 (2.4%)	
PhD	4 (2.5%)	3 (3.8%)	1 (1.2%)	
PsyD	3 (1.9%)	1 (1.3%)	2 (2.4%)	
Behavioral health clinician				0.56
No	148 (92.5%)	71 (91.0%)	77 (94.0%)	
Yes	12 (7.5%)	5 (6.4%)	7	
Gender identity				0.24
Cis female	131 (81.9%)	67 (85.9%)	64 (78.0%)	
Cis male	27 (16.9%)	11 (14.1%)	16 (19.5%)	
Other	2 (1.3%)	0 (0.0%)	2 (2.4%)	
Race and ethnic identity				0.56
Asian	6 (3.8%)	4 (5.2%)	2 (2.5%)	
Hispanic or Latinx	4 (2.5%)	1 (1.3%)	3 (3.7%)	
Other	13 (8.2%)	5 (6.5%)	8 (9.9%)	
Unanswered	2 (1.3%)	1 (0.6%)	1 (0.6%)	
White	135 (85.4%)	67 (87.0%)	68 (84.0%)	
Clinical Full Time Equivalents (FTE)				0.2
>76%	63 (39.4%)	33 (42.3%)	30 (36.6%)	
51 to 75%	41 (25.6%)	15 (19.2%)	26 (31.7%)	
26 to 50%	38 (23.8%)	22 (28.2%)	16 (19.5%)	
0 to 25%	18 (11.3%)	8 (10.3%)	10 (12.2%)	
Outcomes at Baseline				
Distress outcomes:				
Burnout				
MBI mmotional exhaustion scale				0.7
Mean (SD)	30 (10)	30 (11)	30 (9)	
Median (IQR)	31 (23, 37)	32 (23, 38)	31 (25, 37)	
Range	6 to 52	6 to 52	7 to 49	
MBI personal accomplishment scale				0.4
Mean (SD)	37.6 (5.9)	38.1 (5.7)	37.1 (6.1)	
Median (IQR)	38.0 (34.0, 42.3)	39.0 (34.0, 43.0)	38.0 (33.5, 42.0)	
Range	22 to 48	24 to 48	22.0 to 48.0	
MBI depersonalization scale				0.6
Mean (SD, range)	9.4 (5.7)	9.2 (6.0)	9.5 (5.3)	

Continued

Table 1. Continued

Variable/Outcome	Overall N = 160[1]	Waitlist N = 78[1]	Intervention N = 82[1]	P value[2]
Median (IQR)	9.0 (5.0, 13.0)	8.0 (5.0, 13.0)	9.5 (5.0, 12.8)	
Range	0 to 24	0 to 24	0 to 22	
Met definition for positive burnout	104 (66%)	48 (63%)	56 (68%)	0.5
Imposter syndrome				
Young imposter syndrome scale				0.4
Mean (SD)	4.83 (2.30)	4.66 (2.28)	4.99 (2.32)	
Median (IQR)	5.0 (3.0, 7.0)	5.00 (3.0, 6.0)	5.00 (3.0, 7.0)	
Range	0 to 8	0 to 8	0 to 8	
Met definition for positive impostor syndrome	89 (57%)	42 (55%)	47 (59%)	0.6
Moral injury				
Moral injury symptom scale				0.2
Mean (SD)	39 (13)	38 (12)	41 (14)	
Median (IQR)	38 (30, 49)	37 (30, 45)	39 (31, 51)	
Range	11-79	11-66	15-79	
Loneliness				
UCLA Loneliness scale				>0.9
Mean (SD)	4.91 (1.8)	4.92 (1.8)	4.89 (1.8)	
Median (IQR)	5.00 (3.0, 6.0)	5.00 (3.0, 6.0)	5.00 (3.0, 6.0)	
Range	3.0-9.0	3.0-9.0	3.0-9.0	
Well-being outcomes				
Self-compassion				
Self compassion scale score				0.9
Mean (SD)	36 (7)	36 (7)	36 (8)	
Median (IQR)	35 (31, 40)	36 (31, 40)	35 (31, 40)	
Range	17-57	22-55	17-57	
Flourishing				
Secure flourishing index				0.2
Mean (SD)	7.02 (1.1)	7.13 (1.2)	6.91 (1.1)	
Median (IQR)	7.1 (6.3, 7.9)	7.21 (6.5, 8.0)	6.88 (6.2, 7.8)	
Range	3.1-9.3	3.1-9.3	4.50-9.08	

[1]n (%).
[2]Wilcoxon rank sum test; Fisher's exact test.
Abbreviations: SD, standard deviation; IQR, interquartile range.

Distress Outcomes

See Figure 2 and Table 2
Burnout
Professional coaching improved intervention participants' burnout in the domain of depersonalization (δ: −1.72 points [CI: −3.26, −0.17]; $P = .03$). Emotional exhaustion also improved in the intervention group compared with the control, though this finding was not statistically significant (δ: −1.22 points [CI: −4.16, 1.72]; $P = .41$). Personal accomplishment trended toward improvement with an absolute difference of 1.65 points (95% CI: −0.02, 3.32, $P = .05$);

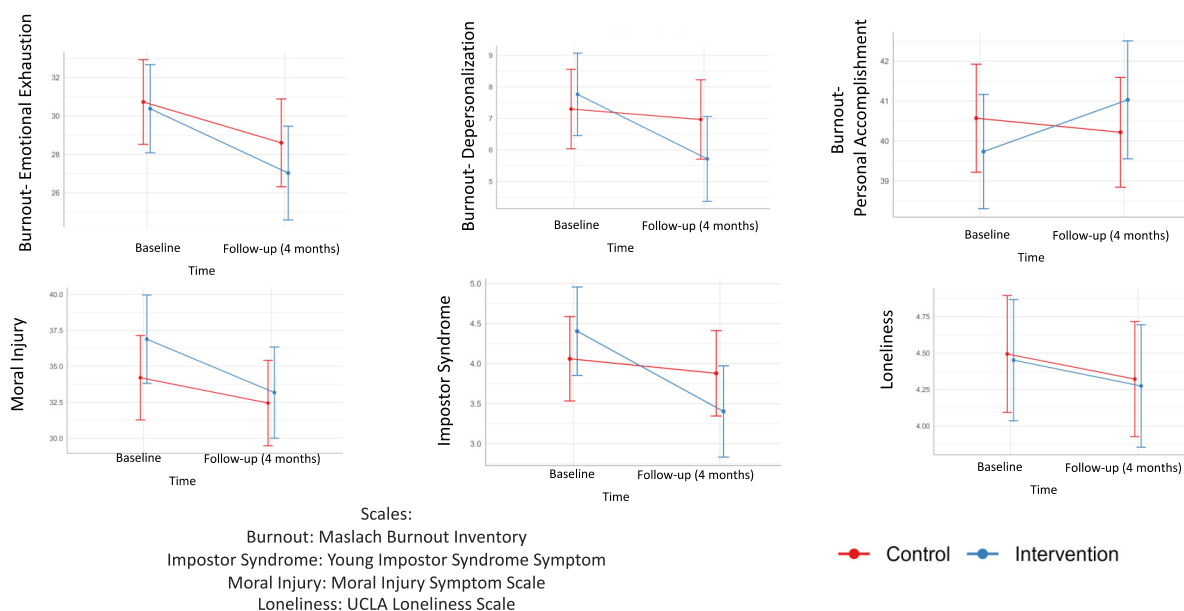although this change was also technically not statistically significant.

Impostor Syndrome
Intervention participants experienced a significant decrease in impostor syndrome with an absolute difference of −0.82 points (95% CI: −1.47, −0.18, $P = .01$).

Moral Injury
There was no difference in moral injury scores between the groups.

Loneliness
There was no difference in loneliness scores between the groups.

Figure 2. Mean change in distress scales from baseline visit, estimated from linear mixed effects models.

Scales:
Burnout: Maslach Burnout Inventory
Impostor Syndrome: Young Impostor Syndrome Symptom
Moral Injury: Moral Injury Symptom Scale
Loneliness: UCLA Loneliness Scale

Well-Being Outcomes
See Figure 3.

Self-Compassion
There was no difference in self compassion scores between the groups.

Flourishing
There was a statistically significant difference in the absolute change in secure flourishing (0.35 points (95% CI: 0.03, 0.66), P = .03) (Table 2).

Discussion
In this pilot RCT, faculty clinicians who received BT over 4 months had substantial reductions in some dimensions of professional distress (burnout and impostor syndrome) and improvements in well-being (flourishing), while not showing differences in others. This is similar to findings in other well-being interventions.[12,14,16] BT has previously demonstrated reduced burnout, moral injury, imposter syndrome and improved self-compassion and flourishing among female physician trainees across specialties in a multisite national sample.[17] The different results seen here may be attributed to a lack of power to detect a difference in outcomes at this single site with a smaller population, differences in response of faculty compared with trainees, or to the fact that this population was limited to ambulatory-predominant specialties and did not include surgical specialties, who may respond differently.

Interventions to improve physician well-being (including domains of distress and thriving) are understudied, especially in the general practitioner literature, while the problem of physician burnout continues to grow.[40] Most participants reported at least one symptom of burnout. Their scores are also consistent with expected burnout trends for midcareer (10 to 20 years) versus early-career (<10 years) physicians with a higher incidence of emotional exhaustion.[5]

The intervention group had a significant reduction in the depersonalization subscale of the MBI compared with the control. Depersonalization includes viewing patients as objects rather than human beings and becoming more callous.[2] It is characterized by insensitivity, negativism, and detachment from patient care.[27] Historically, emotional exhaustion has been thought to be the dominant domain of burnout, but depersonalization has been shown to align more strongly with the most negative consequences of burnout.[41] For each 1-point higher score on the depersonalization subscale physicians have been shown to be up to 10.9% more likely to report suicidality[42] and has also been associated with an 11% increase in the likelihood of physicians reporting a medical error.[43] Increased depersonalization scores have also been associated with longer recovery periods for hospitalized

Table 2. Mean Change in Response from Baseline, Established from Linear Mixed-Effects Models

		Control Group No.	Estimated Change, Points (S.E.) [95% CI]	Intervention Group No.	Estimated Change, Points (S.E.) [95% CI]	Absolute Difference (S.E.) in Score Change, Intervention vs Control [95% CI]	P value
Distress outcomes							
Burnout							
Emotional exhaustion score	Pre	76	−2.13 (1.02)	82	−3.35 (1.08)	−1.22 (−4.16 to 1.72)	0.41
	Post	62		53			
Depersonalization Score	Pre	77	−0.33 (0.53)	82	−2.05 (0.57)	−1.72 (−3.26 to −0.17)	0.03
	Post	64		56			
Personal accomplishment score	Pre	77	−0.35 (0.58)	79	1.3 (0.61)	1.65 (−0.02 to 3.32)	0.05
	Post	63		56			
Moral injury							
Moral injury symptom scale score	Pre	77	−1.76 (1.18)	80	−3.71 (1.24)	−1.95 (−5.32 to 1.42)	0.26
	Post	62		55			
Imposter syndrome							
Young imposter syndrome scale score	Pre	76	−0.18 (0.22)	79	−1 (0.24)	−0.82 (−1.47 to −0.18)	0.01
	Post	62		53			
Loneliness							
UCLA Loneliness scale score	Pre	77	−0.17 (0.16)	81	−0.18 (0.16)	−0.01 (−0.45 to 0.44)	0.98
	Post	63		55			
Well-being outcomes							
Self-compassion							
Self-compassion score	Pre	76	1.54 (1.1)	79	2.48 (1.19)	0.95 (−2.25 to 4.15)	0.56
	Post	64		55			
Flourishing							
Secure flourishing index	Pre	74	0.04 (0.11)	74	0.39 (0.12)	0.35 (0.03 to 0.66)	0.03
	Post	60		53			
Mean change in response from baseline, established from linear mixed-effects models							
Burnout							
Emotional exhaustion score	Pre	76	−2.13 (1.02)	82	−3.35 (1.08)	−1.22 (−4.16 to 1.72)	0.41
	Post	62		53			

Continued

Table 2. Continued

		Control Group No.	Estimated Change, Points (S.E.) [95% CI]	Intervention Group No.	Estimated Change, Points (S.E.) [95% CI]	Absolute Difference (S.E.) in Score Change, Intervention vs Control [95% CI]	P value
Depersonalization score	Pre	77	−0.33 (0.53)	82	−2.05 (0.57)	−1.72 (−3.26 to −0.17)	0.03
	Post	64		56			
Personal accomplishment score	Pre	77	−0.35 (0.58)	79	1.3 (0.61)	1.65 (−0.02 to 3.32)	0.05
	Post	63		56			
Imposter syndrome							
Young imposter syndrome scale score	Pre	76	−0.18 (0.22)	79	−1 (0.24)	−0.82 (−1.47 to −0.18)	0.01
	Post	62		53			
	Post	63		55			
Flourishing							
Secure flourishing index	Pre	74	0.04 (0.11)	74	0.39 (0.12)	0.35 (0.03 to 0.66)	0.03
	Post	60		53			

Abbreviations: SE, standard error; CI, confidence interval.

patients after discharge.[44] Maslach et al. explain how depersonalization is a tool to distance oneself from components of work in reaction to feeling burnout.[26] The improvements in depersonalization seen here are important and suggest that clinician coaching can lessen the emotional distress associated with work– the distress that drives physicians to distance themselves, and ultimately leave the workforce.

The level of improvement in impostor syndrome we found was also statistically significant and clinically meaningful, as imposter syndrome has been associated with depression, anxiety, and exacerbation of other behavioral health issues, as well as negative career outcomes.[29] A systematic review from 2020 of imposter syndrome found no studies that evaluated treatments, making our findings particularly relevant.[45] Expert recommendations for mitigating imposter syndrome include fostering a culture that allows physicians to express vulnerability, authenticity and sharing personal stories in small group discussions, which describes the foundational model of BT,[46] as well as a major theme that arose from a qualitative analysis of participants' experience of BT: increased sense of connection, even during a time of profound social isolation brought about by the COVID-19 pandemic.[20]

Professional coaching likely mitigates both depersonalization and impostor syndrome by reframing thoughts to recognize rather than dismiss accomplishments.[46] Coaching may be particularly powerful in this population since it typically has higher access and lower stigma than other mental health resources.[47,48] The group and online delivery of BT support greater scalability, accessibility, and lower cost compared with individual coaching. BT is an example of an institutionally provided, individually harnessed tool to build a culture of connection that is necessary to heal physician burnout.

Finally, we found improvements in flourishing in the intervention compared with the control group. Taking a holistic perspective of well-being by including positive well-being constructs provides an important focus on a strength-based approach that promotes engagement with personal and professional resources that can encourage satisfaction, happiness, and meaning.[49,50] Improvements in this domain might provide a buffer against future burnout and distress.

Limitations

Voluntary participation may create selection bias. This study enrolled only those in ambulatory

Figure 3. Mean change in well-being scales from baseline visit, estimated from linear mixed effects models.

Scales:
Self-Compassion: Self Compassion Scale-Short Form,
Flourishing: Secure Flourishing Index
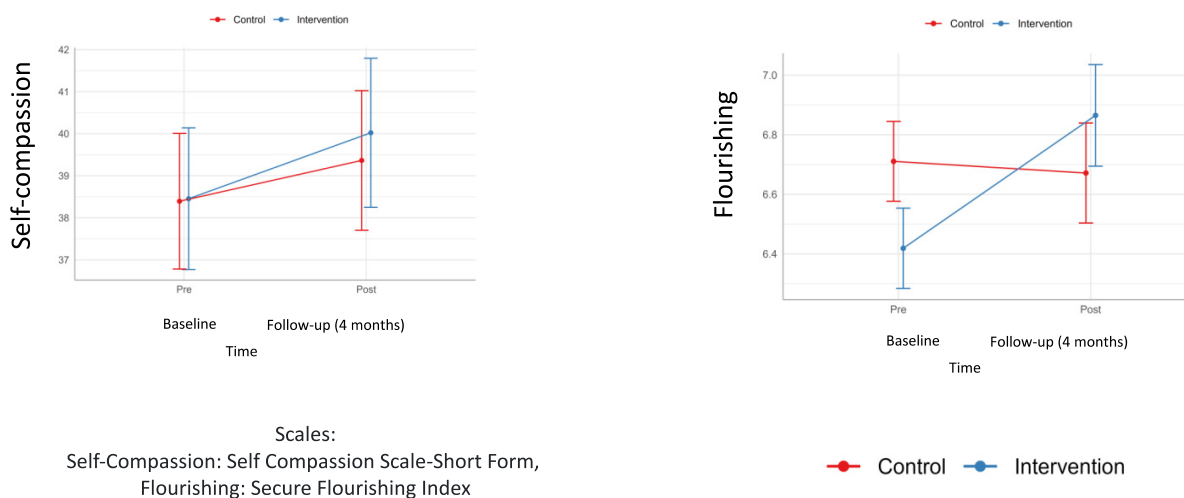
specialties, so the effect in surgical, hospital or procedural based specialties is unknown. There was loss to follow up, with a more significant loss in the intervention group than the control group, perhaps as a reflection of eagerness from the control group to receive the intervention, and intervention participants experiencing some e-mail fatigue (the intervention group received at least 2 e-mails weekly during the program). Because participants did not use the same log on for each coaching call or downloaded podcast or module, we were unable to directly measure engagement or correlate it with outcomes. In addition, the study team and participants could not be masked. Outcomes could have accrued in part from participant expectations, so we attempted to mitigate this by providing both groups access to non-coaching well-being resources as a plausible alternative. Finally, we did not evaluate the postintervention effect, and this warrants future study.

Conclusion

An online 4-month group-coaching program for physicians delivered by certified physician coaches resulted in significant improvement in professional distress and well-being. Integration of coaching into the health care workforce has already demonstrated effect and feasibility and holds great promise; however, widespread adoption and long-term sustainability will depend on institutional and societal investment in physician well-being.

References

1. Dzau VJ, Kirch DG, Nasca TJ. To care is human - collectively confronting the clinician-burnout crisis. N Engl J Med 2018;378:312–4.
2. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: contributors, consequences and solutions. J Intern Med 2018;283:516–29.
3. Lyubarova R, Salman L, Rittenberg E. Gender differences in physician burnout: driving factors and potential solutions. Perm J 2023;27:130–6.
4. Spataro BM, Tilstra SA, Rubio DM, McNeil MA. The toxicity of self-blame: sex differences in burnout and coping in internal medicine trainees. J Womens Health 2016;25:1147–52.
5. Del Carmen MG, Herman J, Rao S, et al. Trends and factors associated with physician burnout at a multispecialty academic faculty practice organization. JAMA Netw Open 2019;2:e190554.
6. Dillon EC, Stults CD, Deng S, et al. Women, younger clinicians', and caregivers' experiences of burnout and well-being during COVID-19 in a US healthcare system. J Gen Intern Med 2022;37:145–53.
7. Kane L. I cry but no one cares: physician burnout & depression report 2023. Medscape 2023. Available at: https://www.medscape.com/slideshow/2023-lifestyle-burnout-6016058#1.

8. AAMC. The complexities of physician supply and demand: projections from 2018 to 2033. Association of American Medical Colleges 2020; Accessed Dec 11, 2023. Available at: https://www.aamc.org/media/75236/download?attachment.

9. Murthy VH. Confronting health worker burnout and well-being. N Engl J Med 2022;387:577–9.

10. Murthy VH. Addressing health worker burnout, the US Surgeon General's Advisory on Building a Thriving Health Workforce. Health and Human Services [Internet]. Available at: https://www.hhs.gov/surgeongeneral/priorities/health-worker-burnout/index.html.

11. Deiorio NM, Carney PA, Kahl LE, Bonura EM, Juve AM. Coaching: a new model for academic and career achievement. Med Educ Online 2016;21:33480.

12. Dyrbye LN, Shanafelt TD, Gill PR, Satele DV, West CP. Effect of a professional coaching intervention on the well-being and distress of physicians: a pilot randomized clinical trial. JAMA Intern Med 2019;179:1406–14.

13. Dyrbye LN, Gill PR, Satele DV, West CP. Professional coaching and surgeon well-being: a randomized controlled trial. Ann Surg 2023;277:565–71.

14. Palamara K, McKinley SK, Chu JT, et al. Impact of a virtual professional development coaching program on the professional fulfillment and well-being of women surgery residents: a randomized controlled trial. Ann Surg 2023;277:188–95.

15. Palamara K, Kauffman C, Chang Y, et al. Professional development coaching for residents: results of a 3-year positive psychology coaching intervention. J Gen Intern Med 2018;33:1842–4.

16. Fainstad T, Mann A, Suresh K, et al. Effect of a novel online group-coaching program to reduce burnout in female resident physicians: a randomized clinical trial. JAMA Netw Open 2022;5:e2210752.

17. Mann A, Shah AN, Thibodeau PS, et al. Online well-being group coaching program for women physician trainees: a randomized clinical trial. JAMA Netw Open 2023;6:e2335541.

18. Feddeck MF, Cola P, Quinn JF, Boyatzis RE, Passarelli A. Coaching in medicine: the way forward. Academy of Management Proceedings 2023.

19. de Lasson L, Just E, Stegeager N, Malling B. Professional identity formation in the transition from medical school to working life: a qualitative study of group-coaching courses for junior doctors. BMC Med Educ 2016;16:165.

20. Mann A, Fainstad T, Shah P, et al. We're all going through it: impact of an online group coaching program for medical trainees: a qualitative analysis. BMC Med Educ 2022;22:675–10.

21. Fainstad T, Syed A, Shah Thibodeau P, et al. Better Together: a novel online physician group coaching program to reduce burnout in trainees: a longitudinal analysis. Acad Med 2023;98:S201–S202.

22. Boutron I, Altman DG, Moher D, Schulz KF, Ravaud P, CONSORT NPT Group. CONSORT statement for randomized trials of nonpharmacologic treatments: a 2017 update and a CONSORT extension for non-pharmacologic trial abstracts. Ann Intern Med 2017;167:40–7.

23. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)–a metadata-driven methodology and workflow process for providing translational research informatics support. J Biomed Inform 2009;42:377–81.

24. Short C, Rebar A, Plotnikoff R, Vandelanotte C. Designing engaging online behaviour change interventions: a proposed model of user engagement. The European Health Psychologist 2015;17:32–8.

25. Cole-Lewis H, Ezeanochie N, Turgiss J. Understanding health behavior technology engagement: pathway to measuring digital behavior change interventions. JMIR Form Res 2019;3:e14052.

26. Maslach C, Jackson SE, Leiter MP. *Maslach Burnout Inventory Manual*. Palo Alto, CA: Consulting Psychologists Press; 1996.

27. Maslach C, Jackson SE, Leiter MP, Schaufeli W, Schwab R. Maslach burnout inventory manual 4th Edition. 2016. Menlo Park, CA: Mind Garden Inc.

28. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. Ann Intern Med 2002;136:358–67.

29. Huecker MR, Shreffler J, McKeny PTDD. Imposter phenomenon. In: *StatPearls*. Treasure Island, FL: StatPearls Publishing; 2023.

30. Villwock JA, Sobin LB, Koester LA, Harris TM. Impostor syndrome and burnout among American medical students: a pilot study. Int J Med Educ 2016;7:364–9.

31. Litz BT, Kerig PK. Introduction to the special issue on moral injury: conceptual challenges, methodological issues, and clinical applications. J Trauma Stress 2019;32:341–9.

32. Griffin BJ, Purcell N, Burkman K, et al. Moral injury: an integrative review. J Trauma Stress 2019;32:350–62.

33. Mantri S, Lawson JM, Wang Z, Koenig HG. Identifying moral injury in healthcare professionals: the moral injury symptom scale-HP. J Relig Health 2020;59:2323–40.

34. Jaffe S. US Surgeon General: loneliness is a public health crisis. Lancet 2023;401:1560.

35. Russell D, Peplau LA, Ferguson ML. Developing a measure of loneliness. J Pers Assess 1978;42:290–4.

36. Neff KD. Self-compassion: theory, method, research, and intervention. Annu Rev Psychol 2023;74:193–218.

37. Neff KD. Self-compassion scale. PsycTESTS Dataset 2012.

38. Kelly-Hedrick M, Rodriguez MM, Ruble AE, Wright SM, Chisolm MS. Measuring flourishing among internal medicine and psychiatry residents. J Grad Med Educ 2020;12:312–9.

39. Weziak-Bialowolska D, McNeely E, VanderWeele TJ. Flourish index and secure flourish index – validation in workplace settings. Cogent Psychology 2019;6:1598926.

40. Murray M, Murray L, Donnelly M. Systematic review of interventions to improve the psychological well-being of general practitioners. BMC Fam Pract 2016;17:36.

41. Leiter MP, Maslach C. Latent burnout profiles: a new approach to understanding the burnout experience. Burnout Research 2016;3:89–100.

42. Shanafelt TD, Balch CM, Dyrbye L, et al. Special report: suicidal ideation among American surgeons. Arch Surg 2011;146:54–62.

43. Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. Ann Surg 2010;251:995–1000.

44. Halbesleben JRB, Rathert C. Linking physician burnout and patient outcomes: exploring the dyadic relationship between physicians and patients. Health Care Manage Rev 2008;33:29–39.

45. Bravata DM, Watts SA, Keefer AL, et al. Prevalence, predictors, and treatment of impostor syndrome: a systematic review. J Gen Intern Med 2020; 35:1252–75.

46. Shanafelt TD, Dyrbye LN, Sinsky C, et al. Imposter phenomenon in US physicians relative to the US working population. Mayo Clin Proc 2022;97:1981–93.

47. Jordan M, Livingstone JB. Coaching vs psychotherapy in health and wellness: overlap, dissimilarities, and the potential for collaboration. Glob Adv Health Med 2013;2:20–7.

48. Sen S. Is it burnout or depression? Expanding efforts to improve physician well-being. N Engl J Med 2022;387:1629–30.

49. Gielissen KA, Taylor EP, Vermette D, Doolittle B. Thriving among primary care physicians: a qualitative study. J Gen Intern Med 2021;36:3759–65.

50. Naehrig D, Schokman A, Hughes JK, Epstein R, Hickie IB, Glozier N. Effect of interventions for the well-being, satisfaction and flourishing of general practitioners-a systematic review. BMJ Open 2021;11:e046599.

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Appendix 1:

Trial Protocol

COMIRB Protocol

COLORADO MULTIPLE INSTITUTIONAL REVIEW BOARD

CAMPUS BOX F-490 TELEPHONE: 303-724-1055 Fax: 303-724-0990

Protocol #: 22-2158

Project Title:Better Together Physician Coaching: Addressing Burnout Amongst Clinicians

Principal Investigator: Dr. Tyra Fainstad, tyra.fainstad@cuanschutz.edu, 720-480-4970

Version Date:December 7, 2022

I. Hypotheses and Specific Aims:

Our HYPOTHESIS is that Better Together Physician Coaching ("Better Together", or "BT"), a 4-month, web-based positive psychology multimodal coaching program will result in decreased burnout in University of Colorado (CU) School of Medicine (SOM) clinicians.

- Aim 1: Implement Better Together for clinicians in various SOM departments at the University of Colorado.
- Aim 2: Assess outcomes: primary: reduce burnout as measured by the Maslach Burnout Index (goal: 10% relative improvement), and secondary: self-compassion, imposter syndrome, flourishing, moral injury, and loneliness.
- Aim 3: Advance the field of coaching in health care through innovation and dissemination of evidence-based approaches to clinician wellbeing.

II. Background and Significance:

Burnout refers to feelings of exhaustion, negativism, and reduced personal efficacy resulting from chronic workplace stress. In healthcare, burnout leads to increased medical errors, poorer patient care and negatively affects professional development and retention. Burnout is a growing problem that begins early in medical training. Professional coaching is a metacognition tool with a sustainable positive effect on physician well-being but typically relies on expensive consultants or time-consuming faculty development, often making it infeasible for medical training programs to offer.[1–5] To overcome this barrier, we created Better Together Physician Coaching (BT) a 4-month coaching program at the University of Colorado. BT includes regular online group-coaching, written coaching, and weekly self-study modules delivered by physician life coaches (Co-PIs). In 2021, we studied BT in a group of female-identifying resident trainees and found that the program significantly improved burnout, imposter syndrome, and self-compassion.[6] This finding supports previous data that life coaching is effective for physicians and physicians in training.[7,8]

We initially focused on women since burnout affects women to a greater degree than their male counterparts, and may have long-lasting consequences on their careers, contributing to a "leaky pipeline" effect. Our pilot randomized controlled trial (RCT) of 101 BT women participants demonstrated a statistically significant improvement in burnout, self-compassion, and imposter syndrome in the intervention group.

We now seek to understand if our coaching program is also effective in clinician faculty members at CU SOM. This will enable us to study faculty (versus trainees) and participants of both genders. This project will test Better Together amongst these participants, and the program will be evaluated by the CU research team to see if the program has the same impacts.

We seek to build a diverse, inclusive cohort, and we welcome all clinicians in the eligible departments. Clinician is defined in this case to include physicians, advanced practice providers and behavioral health providers. We plan to use inclusive language to describe that our program aims to recruit all eligible participants regardless of gender identification Please see our recruitment email for further details.

III. Preliminary Studies/Progress Report:

Within the past year, Co-PIs Drs. Tyra Fainstad and Adrienne Mann (TF, AM) created and implemented Better Together Physician Coaching (Better Together, or BT) for GME trainees at CU and its affiliate hospitals (Denver Health, Rocky Mountain Regional VA Medical Center, and The Children's Hospital). Using coaching techniques, BT challenges long-held paradigms fostered by medical training such as perfectionism, overworking, and a fixed mindset. BT aims primarily to reduce burnout as measured by the MBI with secondary aims to increase self-compassion and flourishing, and reduce imposter syndrome and moral injury.

The Co-PIs are both certified coaches through The Life Coach School[TM], a training institution for thought-based coaching. This type of coaching focuses on thoughts and beliefs. It combines a cognitive behavioral therapy (CBT) model with mindfulness-based awareness and integrates theories of acceptance and commitment therapy (ACT), nonattachment, and radical questioning from Socratic and Greek philosophies.[4] BT delivers a robust coaching experience via a 4-month web-based, group-coaching model. This novel program allows residents to participate as actively as they are inclined and able, offering flexibility via multiple modalities of coaching: twice weekly group coaching calls, unlimited anonymous written coaching, and weekly self-study modules that are housed on a secure members-only website.

To study the BT program in 2021, the Co-PIs received institutional support from the CU Department of Medicine to conduct a pilot randomized controlled trial (RCT), which included support for professional research assistants to both implement and evaluate the program. A convenience sample of 101 female-identifying CU GME trainees from 12 specialties (IM, Family

Medicine, Otolaryngology, Pediatrics, OBGYN, General Surgery, Emergency Medicine, Dermatology, Psychiatry, Medicine-Pediatrics, Pathology, and Neurology) was recruited and randomized to receive the 6-month Better Together Program or no-intervention from January-June 2021. The median participant age was 29 years, and all were female-identifying. Of the 101 participants, 33 (32.7%) were PGY-1, 43 (42.6%) were PGY-2, 18 (17.8%) were PGY-3, and 7 (7%) PGY-4 or greater. Nineteen (19%) of participants were in a surgical residency specialty (general surgery, OBGYN, otolaryngology). There were no significant differences in these characteristics between the intervention and control groups at baseline.

All participants completed a pre-survey assessing burnout with the MBI (15) which defines burnout by three subscales (Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA) as described above). Each item is a 7-point Likert-type question with a frequency response scale ranging from 0 = never to 6 = every day. Higher scores on the EE and DP, and lower scores on the PA subscales indicate greater burnout. Secondary outcomes included Self-compassion with Self-Compassion Scale Short-form (SCSS) where higher scores indicate greater self-compassion,[16] the Young Imposter Syndrome Scale (YISS) where a score of more than 5 out of 8 points is diagnostic for Imposter Syndrome[17] and the Moral Injury Symptom Scale (MISS) (score 10-100 points) where higher scores equal more moral injury.[18]

Participants were randomized to the intervention group, (N=50) or control group (N=51). The intervention group received the 6-month BT coaching program. The control group received the usual wellbeing curriculum provided by their training program, but no BT intervention. Within the BT coaching group, the most frequent topics of coaching included feedback reception, professional appearance, approval-addiction, deficit hiding, balancing motherhood with residency, and low self-confidence. Participants engaged in the live coaching sessions with curiosity, vulnerability, and authenticity, often bringing highly personal and emotional issues to the sessions and supporting each other through encouragement in the Zoom chat function.

From the pilot RCT, we found that at baseline over half of all participants were experiencing moderate or high burnout, consistent with national data. Participants were also experiencing low-moderate self-compassion (mean = 33.6 out of 60; SD=7.17); imposter syndrome (mean = 5.4 out of 8, where score of 5+ is diagnostic for imposter syndrome; SD=2.13); and moderate moral injury (mean =42.02 out of 100; SD=11.08). At the end of 6 months of coaching, a post-survey was offered to both the intervention and control groups. Of the 101 initial survey respondents, 79 responded to the post-survey (78%). A t-test was used to compare the change in subscale score means from baseline to 6 months in the BT coaching versus control groups for the primary and secondary outcomes.

The results on the MBI showed a statistically significant decrease in the emotional exhaustion (EE) dimension of burnout in the intervention group (p=0.03), and the DP and PA components of burnout both trended toward improvement. Self-compassion improved significantly in the intervention group compared to the control group, and imposter syndrome scores improved in the BT coaching group from 5.4 to 4.2 (p=0.01), effectively improving mean scores out of the range for imposter syndrome in this group. Moral injury also trended towards an improvement in the coaching vs control group from baseline to 6 months (40.7 to 35.6 versus 43.7 to 41.7 in intervention vs control, mean difference -3.84, p 0.10), but was not statistically significant.

Based on these promising findings in our pilot RCT, we now propose implementing Better Together for additional groups to reduce burnout.

We are iteratively improving the intervention to optimize the content, duration, timing, and implementation. After three rounds of the 6-month program at CU, we have made the decision to condense the coaching material to 4 months instead. This is based on both participant and coach feedback around program flow and engagement. Our iterative experience with the coaching program has allowed for real-time improvements, including this one. Importantly, and specifically, we are not changing or removing any part of the program's content, only condensing certain months' content into a shorter time. All studied content will still be available to participants to interact with asynchronously, but the timeline of presentation will shift to four months.

IV. Research Methods

A. Outcome Measure(s):

The primary outcome measure will include measures of burnout using the Maslach Burnout Inventory (MBI). Additional outcomes will include measures of self-compassion, imposter syndrome, moral injury, and flourishing as well as participation (administrative data). All data collection will be done in an aggregated format and in a confidential manner.

B. Description of Population to be Enrolled:

All eligible CU departments including CU clinical departments focused on primary care and others (until enrollment targets are reached) will send out an email to faculty inviting participation in the program. Inclusion criteria include CU SOM faculty and clinician status. Clinician is defined in this case to include physicians, advanced practice providers and behavioral health providers. Enrollment in the program will be entirely voluntary and clinicians can cease enrollment at any time.

C. Recruitment and Consent Process

Participants will receive communications (primarily through email from faculty to department listservs serving clinicians, but also through discussion at meetings) inviting participation. Features of the program and confidentiality will be briefly explained.

Participants interested in participating will go to the online REDCap survey from a link in the email invitation. They will read the information about the program and then a consent form (see attached) will be provided to outline the procedures if they choose to participate. It will be stated that completion of the survey constitutes approval to participate in the study.

D. Study Design and Research Methods

This is a randomized controlled trial. All enrolled participants will complete the pretest baseline survey. After baseline data collection is completed, the participants will be randomized into either a wait list control or intervention group. This randomized controlled trial study design will offer the BT coaching to the intervention group for the during of 4-months (February 1st 2023-May 31st 2023) and to the control group for the duration of 4-months (September 1st 2023 – December 31st 2023).

At two different timepoints, all participants will be offered surveys containing the following validated indices: burnout, imposter syndrome, self-compassion, moral injury, and flourishing. All participants will be offered the survey at baseline-January 2023 (T0), post intervention-May 2023 (T1).

Primary Outcome Measures:
1. Burnout as defined by the Maslach Burnout Inventory (MBI)[15] [Time Frame: pretest will occur prior to the intervention and posttest will occur after the 4-month intervention.]

The Maslach burnout inventory (MBI) is a 22-item measurement of worker burnout which assesses emotional exhaustion (EE), depersonalization (DP), and personal fulfillment (PF) domains. Possible scores range from 0-6 on a Likert scale for each item. Scores of $EE \geq 27$ points, $DP \geq 10$, and PF <33 would indicate a high degree of burnout. Scores of $EE \leq 18$ points, $DP \leq 5$ points, and $PF \geq 40$ points would indicate a low degree of burnout.

Secondary Outcome Measures:
1. Self-Compassion as defined by Neff's Self Compassion Score Short Form (SCS-SF)[16] [Time Frame: pretest will occur prior to the intervention and posttest will occur after the 4-month intervention.]

Neff's Self Compassion Score Short Form (SCS-SF) is a 12-item measurement of self-compassion. Possible scores range from 0-6 on a Likert scale for each item, where the higher scale scores indicate greater self-compassion. Scores of 1.0-2.49 are considered to be low, between 2.5-3.5 to be moderate, and 3.51-5.0 to be high.
2. Moral Injury as defined by the Moral Injury Symptom Scale for Health Professions (MISS-HP)[18] [Time Frame: pretest will occur prior to the intervention and posttest will occur after the 4-month intervention.]

Moral Injury Symptom Scale for Health Professions (MISS-HP) is a 10-item measurement of moral injury. Possible scores range from 0-5 on a Likert scale for each item, where the higher scale

scores indicate greater moral injury. Scores >35 (on a possible score range of 10 to 100) are considered high for moral injury symptoms causing moderate to extreme problems with family, social, and occupational functioning.
3. Imposter Syndrome as defined by Young's Imposter Syndrome Symptoms Scale (YISS)[17] [Time Frame: pretest will occur prior to the intervention and posttest will occur after the 4-month intervention.]

Young's Imposter Syndrome Symptoms Scale (YISS) is a 8-item measurement of imposter syndrome. Scoring is yes/no where a score of >5/8 is felt to be positive for imposter syndrome.
4. Flourishing as defined by the Secure Flourish Index (SFI)[19] [Time Frame: pretest will occur prior to the intervention and posttest will occur after the 4-month intervention.]

The Secure Flourish Index (SFI) is a 12-item measurement of flourishing at work and includes the domains of (D1) happiness and life satisfaction; (D2) physical and mental health; (D3) meaning and purpose; (D4) character and virtue; and (D5) close social relationships plus 2 questions on having adequate stability as well as material and financial resources so that flourishing is likely to continue. Scores range from a low of 0 to a high of 120, though the secure flourishing scores are often reported as averages of the questions (rather than sums) so that all scores are on a scale of 0-10.
5. Loneliness as defined by the UCLA 3-item Loneliness Scale[20] [Time Frame: pretest will occur prior to the intervention and posttest will occur after the 4-month intervention.]

The UCLA 3-item Loneliness Scale measures feelings of loneliness. It is a shortened version of the 20-item Revised UCLA Loneliness Scale. Possible scores range from 1-3 on a Likert scale for each item with 1 = Hardly ever; 2 = Some of the time; 3 = Often. The three items are summed to give a total score between 3 to 9 with higher scores indicating a higher degree of loneliness.

E. Description, Risks and Justification of Procedures and Data Collection Tools:

This is a low-risk intervention. Positive psychology coaching is not meant to replace or function as evaluation, medical, or mental health care. We are using an internally developed survey in addition to multiple validated surveys that reflect the literature in similar programs. Any participant who demonstrates medically concerning issues during the coaching intervention will be immediately referred to appropriate evaluation. The content of the program is not intended for evaluation, so will not be shared with supervisors in the associated departments. The participants will be instructed to maintain confidentiality of their peers' information, although given the group nature of this intervention, confidentiality cannot be assured. All faculty coaches will recuse themselves from educational assessment for any faculty participant if the

opportunity arises. To minimize risk, the control and intervention groups will both receive the intervention, simply at different timepoints.

F. Potential Scientific Problems:

The evaluation will rely on self-reported outcome measures, although we have made effort to identify and utilize evidence-based and validated evaluation tools. We cannot control for selection bias in how volunteers choose to participate in the program.

G. Data Analysis Plan:

Statistical analysis will be performed in an intent-to-treat basis. We will utilize univariate statistics for characterization of the sampled group. Comparisons between the group MBI and SCS over time will be used with paired t-test.

H. Summarize Knowledge to be Gained:

Our pilot results demonstrate that our innovative coaching program is highly effective in mitigating and preventing burnout among female identifying GME trainees at CU. Because of our program design and already existing online platform for content, Better Together is easily adaptable, and this project can easily be applied to clinicians. Despite being implemented in females prior to this, none of our content is gender specific or needs modifying.

A particular strength of the BT program format is that the web based, group coaching model with asynchronous elements like self-study modules and written coaching allows for a dramatically larger population to be served compared to models that rely on 1:1 coaching. Additionally, this structure allows for coaching by certified physician coaches as opposed to what exists in the prior coaching literature: using volunteer faculty "coaches" who are not certified, or certified but non-physician coaches without the same degree of expertise or experience.

References

1. Rock D, Schwartz J. A brain-based approach to coaching. of Coaching. 2006. https://researchportal.coachfederation.org/Document/Pdf/2886.pdf.
2. Rock D, Page LJ. Coaching with the Brain in Mind: Foundations for Practice. John Wiley & Sons; 2009.
3. Palamara K, Kauffman C, Chang Y, et al. Professional development coaching for residents: results of a 3-year positive psychology coaching intervention. J Gen Intern Med 2018;33(11):1842–1844.
4. Castillo B. Self Coaching 101. Futures Unlimited Coaching; 2008.
5. Mura A. Executive Coaching Summit I: Documenting the Emerging Field of Coaching in Organizations. International Journal of Coaching in Organizations 2003;1:19–26.
6. Fainstad T, Mann A, Suresh K, , et al. Effect of a novel online group-coaching program to reduce burnout in female resident physicians: a randomized clinical trial. JAMA Netw Open 2022;5(5):e2210752.
7. Dyrbye L, Shanafelt T. A narrative review on burnout experienced by medical students and residents. Med Educ 2016;50(1):132–149
8. Dyrbye LN, Shanafelt TD, Gill PR, Satele DV, West CP. Effect of a professional coaching intervention on the well-being and distress of physicians: a pilot randomized clinical trial. JAMA Intern Med 2019.
9. Artz B, et al. Gender role perspectives and job burnout. Rev Econ Househ 2022;20(2):447–470.
10. Optum: "How gender and work site affect employee engagement: a joint national business group Optum™ study" White Paper. 2014
11. Sharkey T, et al. Effectiveness of gender-targeted versus gender-neutral interventions aimed at improving dietary intake, physical activity and/or overweight/obesity in young adults (aged 17–35 years): a systematic review and meta-analysis. Nutr J 2020;19(1):78.
12. Reid N, et al. Promoting wellness and recovery of young women experiencing gender-based violence and homelessness: the role of trauma-informed health promotion interventions. Violence Against Women 2021;27(9):1297–1316.
13. Dr. Prem: "The need for gender specific corporate wellness programs for working women. Dr. Prem Wellness Reports: https://drprem.com/wellness/the-need-for-gender-specific-corporate-wellness-programs-for-working-women/"
14. Agam-Bitton R, et al. Girls-only vs. mixed-gender groups in the delivery of a universal wellness programme among adolescents: a cluster-randomized controlled trial." PLoS One 2018; 13(6): e0198872.
15. Maslach
16. Neff KD. Self-Compassion Scale. PsycTESTS Dataset 2012.
17. Villwock JA, Sobin LB, Koester LA, Harris TM. Impostor syndrome and burnout among American medical students: a pilot study. J Int Assoc Med Sci Educ 2016;7:364–369.
18. Mantri S, Lawson JM, Wang Z, Koenig HG. Identifying moral injury in healthcare professionals: the moral injury symptom scale-HP. J Relig Health 2020;59(5):2323–2340.
19. Kelly-Hedrick, et al. Measuring flourishing among internal medicine and psychiatry residents. J Grad Med Educ 2020;12(3):312–319.
20. Hughes ME, Waite LJ, Hawkley LC, Cacioppo JT. A short scale for measuring loneliness in large surveys: results from two population-based studies. Res Aging 2004;26(6):655–672.