



Well-being in Residency: Impact of an Online Physician Well-being Course on Resiliency and Burnout in Incoming Residents

Mari Ricker, MD; Audrey J. Brooks, PhD; Sarah Bodine, MD; Patricia Lebensohn, MD; Victoria Maizes, MD

BACKGROUND AND OBJECTIVES: Wellness in residency has come to the forefront of national graduate medical education initiatives. Exponential growth in knowledge and skill development occurs under immense pressures, with physical, mental, and emotional stressors putting residents at burnout risk. The Accreditation Council for Graduate Medical Education requires programs to attend to resident wellness, providing the structure, environment, and resources to address burnout. This study's purpose was to evaluate the Andrew Weil Center for Integrative Medicine online Physician Well-being Course (PWC) with incoming postgraduate year-1 (PGY-1) residents in multiple residencies across a single health care system. The PWC teaches the learner strategies for building resilience, managing stress, identifying signs of burnout, and mindfulness practices including a self-selected daily 10-minute resiliency activity (meditation, gratitude journaling, and finding meaning journaling) for 14 days.

METHODS: Incoming PGY-1 residents were enrolled in PWC 1 month prior to 2018 orientation. Validated measures of resiliency, burnout and gratitude were completed pre- and postcourse. We assessed pre/postcourse changes with paired *t* tests. We asked participants whether they incorporated any wellness behavior changes postcourse.

RESULTS: Almost two-thirds of the incoming trainees completed the course ($n=53/87$, 61%). We found significant improvements ($P<.05$) for resiliency and burnout (emotional exhaustion, depersonalization). Gratitude did not change. The personal accomplishment burnout scale declined. The most frequently reported wellness behaviors were in the area of sleep, exercise, and diet.

CONCLUSIONS: Resiliency, emotional exhaustion, and depersonalization improved, personal accomplishment declined, while gratitude remained the same. This project demonstrates an accessible and scalable approach to teaching well-being to incoming residents.

(Fam Med. 2021;53(2):123-8.)
doi: 10.22454/FamMed.2021.314886

Resident well-being is at the forefront of national graduate medical education initiatives. Medical students often enter residency with high levels of burnout.¹ Burnout is a well-established residency problem; rates range from 27% to 75% across specialties.^{2,3} The Accreditation Council for Graduate Medical Education (ACGME) requires residency programs to address resident well-being and provide structure, environment, and resources to support physician well-being.⁴

Individual-focused interventions and organizational strategies decrease burnout.⁵ Work hour restrictions, self-care workshops, and a meditation intervention improve burnout.⁶ Resilience^{7,8} and mindfulness⁹ are associated with decreased burnout. However, burnout is not a phenomenon that occurs in isolation. Systemic factors including clerical burden, inefficient clinical practices, and electronic health record challenges contribute. Work-life imbalance, poor morale, challenging patient populations, and unrealistic expectations also contribute.¹⁰ Wellness behaviors¹¹ and wellness-promoting activities¹⁰ can be implemented to reduce burnout. These factors cannot be ignored when

From the Andrew Weil Center for Integrative Medicine, University of Arizona, Tucson, AZ.

developing a comprehensive plan to improve physician well-being and must be approached collaboratively within the system.¹² The Andrew Weil Center for Integrative Medicine (AWCIM) created and investigated the impact of an online, interactive, self-paced, well-being course (https://integrativemedicine.arizona.edu/education/physician_wellbeing.html). As course creators, we hypothesized that 4.5 hours of well-being curriculum distributed online, to multiple residencies in a single health care system at residency start, could improve resiliency, offering residents tools to prevent future burnout.

Methods

Setting and Participants

The AWCIM Physician Well-being Course (PWC) was offered to all incoming PGY-1 residents at the University of Arizona, College of Medicine Tucson in June 2018.

Intervention

Residents were enrolled in PWC 1 month prior to orientation, with support from the designated institutional officials and graduate medical education well-being subcommittee. Participation was voluntary. The 4.5-hour online course teaches foundations of well-being (sleep, nutrition, exercise, resiliency, and mindfulness), and includes a 2-week daily, self-selected, 10-minute, resiliency activity. Participants complete precourse self-assessments, reflecting on their results. Strategies for building resilience, managing stress, preventing burnout, and developing mindfulness practices are explored.

After completing the coursework, residents select a resiliency activity (meditation, gratitude journaling, or finding meaning journaling). Weekly emails remind them to continue their daily activity, returning after 2 weeks for postcourse

self-assessments. Participants view their pre- and postcourse self-assessments. We requested completion by July 1, 2018, with a 30-day grace period. The University of Arizona Institutional Review Board approved the study.

Measures

Validated burnout,^{13,14} resiliency,¹⁵⁻¹⁸ and gratitude¹⁹ measures were administered pre/postcourse. We administered wellness behavior and course evaluation surveys developed by AWCIM postcourse (Table 1). We deidentified measures for analysis.

Analysis

Descriptive statistics are presented for completion, wellness behaviors, and course evaluation results. We conducted paired *t* tests to assess pre/post changes on burnout, resiliency, and gratitude measures. We conducted χ^2 analyses on the

Table 1: Measures

Measure	Description
Demographic survey	Five items assessing gender, credentials, age range, ethnicity, and race.
Maslach Burnout Inventory ^{13,14}	22 items; three subscales: EE—feelings of being emotionally overextended and exhausted by one's work; DEP—an unfeeling and impersonal response toward recipients of one's care; PA—feelings of competence and successful achievement in one's work with people. Burnout risk level group based on normative data for medical providers were created. ¹⁰ High risk—scoring in the high burnout category on EE and DEP; low risk—scoring in the low burnout category on EE and DEP; moderate risk—remaining individuals.
Dispositional Resiliency Scale ^{15,16}	Measures personality hardiness includes three subscales: <i>control</i> , the ability to influence one's own destiny; <i>challenge</i> , zest for life leads to perceiving change as exciting; and <i>commitment</i> , sense of meaning and purpose in one's existence encompassing self, work, others. Higher scores indicate greater resiliency. Hardiness groups based on established norms (very low to very high) were created.
Connor-Davidson Resiliency Scale ¹⁷	Measures ability to cope with adversity. Higher scores indicate greater resiliency.
Response to Stressful Experiences ¹⁸	Measures coping processes. Higher scores indicate greater resiliency.
Gratitude ¹⁹	A 6-item scale designed to assess individual differences in the proneness to experience gratitude in daily life. Higher scores indicate more gratitude.
Wellness behaviors	A 7-item survey asked, "Did you incorporate any of the following wellness behaviors into your life?" (yes/no) for six specific wellness behaviors (exercise, sleep, meditation, journaling, gratitude, mindfulness) as well as a seventh category of "other" which included a free text response. Created by AWCIM the survey was administered at the end of the course.
Course evaluation survey	A brief survey created by AWCIM to obtain course feedback administered at the end of the course. Seven items assess course content and delivery. Items are rated on a 5-point scale (1=lowest, 5=highest). One item evaluates perception of length of time completing course. One item asks whether the unit should be incorporated into mandatory materials (yes, maybe, no).

Abbreviations: EE, emotional exhaustion; DEP, depersonalization; PA, personal accomplishment; AWCIM, Andrew Weil Center for Integrative Medicine.

demographic, categorical resiliency (hardiness), and burnout measures. We conducted analyses using IBM SPSS Statistics Desktop V25.0 (Armonk, New York).

Results

Sample Characteristics and Completion Rates

Eighty-seven residents from 15 specialties (Table 2) were enrolled and 53 completed the course (61%). There were no differences in demographic characteristics between completers and noncompleters.

Impact on Burnout, Resiliency, Gratitude, and Wellness Behaviors

We observed statistically significant improvements in emotional exhaustion, depersonalization, and

resiliency (Table 3). Resiliency increased while emotional exhaustion, depersonalization, and personal accomplishment decreased. At post-test the number of participants in the high/very high hardiness categories increased, while participants in the average/low categories decreased. The number of participants in the low-risk burnout group increased. Participants in the moderate and high-risk groups decreased. The most frequently selected resiliency activity was meditation (n=36/53, 68%). The most frequently reported wellness behavior was sleep.

Course Evaluation

Smoothness of technology, free of commercial bias, and met objectives received the highest ratings (Table 5); while course delivery and

usefulness ratings were between neutral and helpful/useful. One-half thought the course should definitely/maybe be incorporated into mandatory material (n=29/53, 55%), with most (n=39/52, 75%) indicating that less time could have been devoted to activity.

Discussion

This brief, online course teaching foundational well-being and resiliency skills increased self-reported resiliency and decreased burnout inventory scores in incoming residents. PWC provides introductory knowledge about personal well-being, burnout, and resiliency skills. Positive preventive skills learned in this course can be employed with challenging experiences during training.

Table 2: Completion by Specialty and Demographic Characteristics

Characteristic	Did Not Finish, n (N=34)	Completed, n (N=53)	Completed %	Total, n (N=87)	P Value
Specialty					.061
Anesthesiology	0	1	100	1	
Emergency medicine	4	9	69	13	
Family medicine	4	5	56	9	
Internal medicine	9	12	57	21	
Neurosurgery	0	1	100	1	
Neurology	1	0	0	1	
Obstetrics/gynecology	0	2	100	2	
Orthopedic surgery	2	1	33	3	
Otolaryngology	0	1	100	1	
Pathology	1	0	0	1	
Pediatrics	4	8	67	12	
Pediatrics-emergency medicine	0	3	100	3	
Psychiatry	7	1	13	8	
Radiology-diagnostic	1	0	0	1	
Surgery/surgical specialties	1	9	90	10	
Credentials					.314
MD	25	39	73.6	64	
MD/MPH	0	3	5.7	3	
MD/PhD, MD/JD/equivalent	1	0	0.0	1	
DO—osteopathic medicine	8	11	20.8	19	

(continued on next page)

Table 2: Continued

Characteristic	Did Not Finish, n (N=34)	Completed, n (N=53)	Completed %	Total, n (N=87)	P Value
Gender					.915
Male	19	29	54.7	48	
Female	15	24	45.3	39	
Age Range, in Years					.753
21 to 25	2	5	9.4	7	
26 to 30	23	36	67.9	59	
31 to 35	7	10	18.9	17	
36 to 40	1	0	0.0	1	
41 to 50	1	1	1.9	2	
51 to 60	0	1	1.9	1	
Ethnicity					.32
Not Spanish/Hispanic/Latino	27	45	84.9		
Spanish/Hispanic/Latino	4	7	13.2		
Prefer not to answer	3	1	1.9		
Race					.718
White	21	36	67.9		
Asian	9	11	20.8		
Black or African American	0	2	3.8		
Multiple races	1	1	1.9		
Prefer not to answer	3	3	5.7		

Course completion was high (61%). Massive open online course completion rates tend to be low (1%-52%, median 13%).²⁰ Very few students (22%) who intended to complete an online course actually completed one.²¹ One key strategy for our high completion rate was offering PWC prior to residency. Previously, we offered PWC to all resident years during fall 2016; despite having strong programmatic interest and high enrollment, completion was low. Offering the course during onboarding captures trainees in transition during a period when they have additional time and energy. Timing may have adversely affected perceived usefulness of the course as residency training brings up different sources of stress and increased burnout. While offering the course to incoming interns is a limitation,

fourth-year medical students and incoming interns demonstrate significant burnout rates.²²

Residents self-reported incorporating wellness behaviors, suggesting a possible impact extending beyond well-being knowledge. Personal accomplishment scores declined. It may be difficult for new residents to answer questions regarding personal accomplishment prior to starting residency. Gratitude scores did not change significantly, likely due to the high pretest scores.

Study limitations include the lack of control group or comparison intervention and the inability to confirm the extent to which participants adhered to their resiliency activity. Also, there is no follow-up data to assess whether the reported behaviors and resiliency gained were maintained under the stress of residency.

The study results are guiding PWC review to include content regarding the systemic aspects of burnout in health care and methods to capture follow-up assessments to determine if benefits are sustained.

Conclusion

An online course designed to teach residents about well-being and resiliency skills was distributed to all incoming PGY-1 residents. Participants scored higher on resiliency and lower on burnout scales upon completion. Limitations include the lack of control group, timing, and absence of follow up. While cost may be a barrier for some institutions, PWC is a scalable, asynchronous online course, making it an accessible strategy to meet ACGME well-being requirements.

Table 3: Change in Burnout, Resiliency, and Gratitude: N=52/53 Responding (98%-100%)

Measure	N	Pretest Mean (SD)	Posttest Mean (SD)	t, χ^2 (df)	P Value
Dispositional resiliency ^a	53	32.57 (4.0)	34.3 (4.7)	-3.86 (52)	<.001
Connor-Davidson Resiliency ^b	52	31.77 (4.7)	33.23 (4.6)	-2.60 (51)	.012
Response to stressful experiences ^c	53	14.3 (1.6)	14.98 (1.7)	-2.32 (52)	.024
MBI—emotional exhaustion ^d	52	14.63 (8.2)	11.85 (8.3)	2.38 (51)	.021
MBI—depersonalization ^e	52	6.06 (5.0)	4.21 (5.1)	3.32 (51)	.002
MBI—personal accomplishment ^f	52	40.42 (8.1)	36.56 (15.3)	2.27 (51)	.028
Gratitude ^g	52	38.83 (4.3)	38.67 (5.0)	0.31 (51)	.754
DSR—Hardiness Groups	53	Pre % (n)	Post % (n)	59.1 (9)	<.001
Very low		0% (0)	0% (0)		
Low		11.3% (6)	7.5% (4)		
Average		49.1% (26)	34.0% (18)		
High		32.1% (17)	41.5% (22)		
Very high		7.5% (4)	17.0% (9)		
MBI—Burnout Risk Group	52	Pre % (n)	Post % (n)	35.9 (4)	<.001
Low risk ^h		50.0% (26)	65.4% (34)		
Moderate risk ⁱ		40.4% (21)	30.8% (16)		
At risk ^j		9.6% (5)	3.8% (2)		

^a Measures personality hardiness

^b Measures ability to cope with adversity

^c Measures coping processes

^d Measures feelings of being emotionally overextended and exhausted by one's work

^e Measures an unfeeling and impersonal response toward recipients of one's care

^f Measures feelings of competence and successful achievement in one's work with people

^g Measures proneness to experience gratitude in daily life

^h Scoring in low burnout category on EE and DEP

ⁱ Not scoring in the low or high categories on both EE and DEP scales

^j Scoring in the high burnout category on EE and DEP

Abbreviations: MBI, Maslach Burnout Inventory; EE, emotional exhaustion; DEP, depersonalization.

Table 4: Frequency of Wellness Behaviors (68% Response Rate)

Did you incorporate any of the following wellness behaviors into your life?	Count, n (N=36)	Percent
Sleep	22	61
Exercise	21	58
Diet	19	53
Meditation	16	44
Mindfulness practice	16	44
Gratitude practice	13	36
Journaling	7	19
Other	2	6
None yet	0	0

Table 5: Course Evaluation Ratings

Item (Rating Scale)	N	Mean	Percent Top-Two Ratings
Objectives (not at all—definitely)	53	4.24	77-89
Patient Care (not at all—very useful)	52	3.77	63.4
Resources (not at all—very helpful)	52	3.62	55.8
Reflection Questions (not at all—very helpful)	52	3.69	65.4
View Reflections (not at all—very helpful)	52	3.44	50
Technology (not at all—very smooth)	53	4.68	90.5
Presentation free of commercial bias	52	4.67	96.2
Length of Time Completing	N		
Way too long	4	N/A	7.7
Moderately long	12	N/A	23.1
Somewhat long	23	N/A	44.2
Appropriately long	13	N/A	25
Should the module be incorporated into mandatory material?			
No	24	N/A	45.3
Maybe	20	N/A	37.7
Yes	9	N/A	17

ACKNOWLEDGMENTS: The authors sincerely thank all the residents and fellows participating in the Well-being in Residency study and the Designated Institutional Officials, Dr Conrad Clemens and Dr Victoria Murrain, and the Graduate Medical Education Well-being Subcommittee who supported this initiative. The authors also thank Janice Curtis for her invaluable assistance enrolling course participants and preparing this manuscript.

CONFLICT OF INTEREST STATEMENT: The authors were involved in writing and creating the course that was studied in this paper as employees of the Andrew Weil Center for Integrative Medicine.

ETHICAL APPROVAL: The University of Arizona Institutional Review Board granted approval for this study.

PRESENTATIONS: This study was partially reported at the 9th Annual Integrated Medicine for the Underserved (IM4US) Annual Conference, August 22-24, 2019, Santa Clara, CA.

CORRESPONDING AUTHOR: Address correspondence to Dr Mari Ricker, Andrew Weil Center for Integrative Medicine, PO Box 245153, Tucson, AZ 85724-5153. 520-626-3248. rickerm@arizona.edu.

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