Education Research: Evaluation of curriculum to teach resilience skills to neurology residents

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Abstract

Objective
To evaluate feasibility and acceptability of a health professional resilience skills training program with neurology residents.

Methods
The curriculum consists of five 1-hour-long modules that included the following skills: reflective narrative practices, emotion regulation, communication with highly distressed individuals, boundary management, and the identification of depression and trauma. Using a web-based survey tool, we administered the Brief Resilience Scale (BRS) and Abbreviated Maslach Burnout Inventory (aMBI) at baseline, in addition to a pre- and post-survey assessing change in beliefs and self-efficacy, as well as satisfaction with the intervention. Means were compared using the Wilcoxon rank-sum and signed rank tests.

Results
Twenty-two residents representing each year of training completed the pre-survey; 41% were women. Subscale scores on the aMBI revealed that 50% had moderate or high emotional exhaustion, 41% had moderate depersonalization, and 37% had moderate or low personal accomplishment, though 77.3% reported high career satisfaction. Female residents had lower scores on the BRS (mean 3.26 vs 3.88, $p < 0.05$), though scores on aMBI subscales did not differ by sex. Scores did not differ by year of training. Sixteen residents completed both the pre- and post-survey. Significant increases were detected in 4 of 9 self-efficacy statements. Seventy-one percent of residents were satisfied or extremely satisfied with the training.

Conclusions
Residents were satisfied with the curriculum and reported improved ability to identify and cope with work-related stress. Further study is needed to evaluate the influence of skills adoption and practice on resilience and burnout.

Glossary

aMBI = abbreviated Maslach Burnout Inventory; **BRS** = Brief Resilience Scale; **UCLA** = University of California, Los Angeles.

Burnout is associated with fewer work hours, decreased quality of care, relocation, depression, and suicide.[1–3] Physicians with high resilience report using self-reflection, effective boundary management, and cognitive coping skills.[4]

Resilience skills training for health care professionals developed at University of California, Los Angeles (UCLA) was adapted from an evidence-based program to teach military families a similar skillset.[5] The program underwent initial pilot testing with pediatric residents and was then adapted for a wider range of health care professionals.[5]

This is the first evaluation of the current curriculum. We expected our program would (1) be acceptable to residents, (2) improve residents' self-efficacy in coping with stress and patient-related grief and trauma, and (3) improve residents' beliefs about their supervisors' coping thoughts and experiences.

Methods

Study design and participants

Twenty-six UCLA adult and pediatric neurology residents completing adult neurology training were invited by the training director to participate in the course conducted over 11 weeks from January to April 2017. Five 1-hour-long skills-based modules were delivered during protected didactic times. Stigma was addressed using videotapes of supervisors sharing their personal struggles and coping at the beginning of each module. Residents were asked to complete optional and anonymous surveys to evaluate the course. Content included the following:

1. Reflective narrative: This module included an introduction of the concept of written and verbal reflective narrative practices (story-telling that assists the individual in integrating emotional and factual aspects of an experience) and related research findings. Residents created a visual narrative timeline of their educational experiences, with a comfort thermometer on the vertical axis and time along the horizontal axis. They identified themes on their timeline and compared them to their peers.

2. Emotion regulation: This module included research associated with the cognitive–behavioral strategies of attention control and cognitive reappraisal. Residents self-selected a recent challenge and completed worksheets on feel–think–do connections, cognitive distortions, the feeling thermometer, and thought swapping to better understand and respond to the situation. Residents were also introduced to outcomes associated with mindfulness practice and participated in a short mindfulness meditation.

3. Communication with distressed individuals: This module encouraged residents to evaluate their skills when interacting with a distressed individual, reviewed the meaning and causes of anger, taught self-calming techniques, active listening skills, and the elements of an effective apology, and facilitated a discussion about how to improve a situation that is triggering anger. Residents practiced these skills via role-playing.

4. Boundary management: This module provided a review of why boundary management is important, encouraged residents to discuss their related skills and challenges, and instructed residents on effective techniques, including management of patients who request nonstandard care. Residents practiced these skills.

5. Identification of depression and trauma: This module included a review of concerning signs and symptoms and reviewed evidence-based tools and resources for self-management, buffering, and support. Residents constructed their own resilience toolkit, including skills and resources that are personally effective and trigger reminders for practice and engagement.

Standard protocol approvals, registrations, and patient consents

Institutional Review Board approval was obtained for this evaluation, with informed consent procedures waived due to the anonymity of the survey and low risk to participants.

Measures

The abbreviated Maslach Burnout Inventory (aMBI) is a 9-item scale measuring emotional exhaustion, depersonalization, and personal accomplishment, included as a baseline measure. The Likert-type scale has response options ranging from 0 (never) to 6 (every day). Scores are calculated for each domain by summing across 3 domain-specific items.

The Brief Resilience Scale (BRS) is a 6-item, 5-point Likert-type scale included as a baseline measure. A total score is calculated by summing across all items after correcting for 3 items with reverse directionality.

Beliefs about attendings were assessed at baseline and after course completion with 2 independent items (reviewed by developers for face validity) using a 5-point Likert scale. Higher values indicate stronger agreement. Items assessed beliefs about the effect of patient deaths on their attending physicians and about how they would be judged by supervisors if they cried or asked for support after an adverse event. These are questions 3 and 4 in the table.

Knowledge and self-efficacy was assessed at baseline and after course completion with 7 independent questions using a 5-point Likert scale. Higher values indicate stronger agreement. These items relied upon face validity to assess beliefs about having learned helpful techniques and one's ability to recognize symptoms and effectively cope with stressors. These are questions 1, 2, and 5–9 in the table.

Training satisfaction and perception of change was measured at baseline and after course completion with three 5-point Likert scale questions: perceived importance of resilience training, satisfaction with training (including individual modules), and perception of how much the training will change their responses to patient-related grief and trauma. Open-ended comments were solicited to determine their favorite components and suggestions for improvement.

Statistical analysis

Descriptive statistics including frequencies, percentages, means, medians, SDs, and interquartile ranges were used to describe levels of burnout and resilience and to examine perceptions of the curriculum.

Statistical tests appropriate for small sample sizes were used. Wilcoxon 2-sample tests were conducted to identify sex or year of training differences in burnout and resilience at baseline. Wilcoxon signed rank tests were used to evaluate changes in level of agreement from pre to post intervention on items assessing beliefs, knowledge, and self-efficacy. Two-sided p values < 0.05 were assumed to indicate statistical significance.

Open-ended feedback was reviewed to further adapt the curriculum for future use.

Data availability

Carefully anonymized data are available by request from any qualified investigator.

Results

Twenty-two residents completed a pre-survey and 17 completed a post-survey. Sixteen completed both surveys, with 75% of these residents completing 4 or more modules (average number of modules completed 4.44, SD 1.26).

Pre-survey responders included 9 women and 13 men, 7 second-year residents, 9 third-year residents, and 6 fourth-year residents. Subscale aMBI scores revealed that 50% (n = 11) had moderate or high levels of emotional exhaustion, 41%

Table Change in knowledge, beliefs, and self-efficacy from pre to post for the sample of residents who completed both a pre and a post assessment for each item (post − pre)

		Pre		Post		Change		
	N	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	Mean (SD)	Median (IQR)	p Value[a]
1. I have been taught helpful techniques to use when I am being pressured to provide nonstandard medical care.	15	2.07 (1.10)	2.00 (2.00)	3.60 (0.83)	4.00 (1.00)	1.53 (1.36)	1.00 (3.00)	0.0020
2. I have been taught helpful techniques to use with a highly distressed or angry patient (or family member of a patient).	14	3.21 (0.97)	3.50 (1.00)	3.93 (0.83)	4.00 (0.00)	0.71 (1.20)	1.00 (1.00)	0.0737
3. My attendings would consider me overly sensitive or unprofessional if I asked them for emotional support after a difficult/adverse medical event.	16	2.44 (1.09)	2.50 (1.50)	2.44 (0.96)	2.00 (1.00)	0.00 (0.97)	0.00 (0.50)	1.0000
4. My attendings seem unaffected by the death of a patient.	16	2.19 (1.05)	2.00 (2.00)	2.31 (0.70)	2.00 (1.00)	0.13 (0.81)	0.00 (1.00)	0.7656
5. I know what I can do to help myself with my own grief after the loss of a patient.	16	3.75 (0.58)	4.00 (1.00)	3.88 (0.62)	4.00 (0.50)	0.13 (0.62)	0.00 (0.50)	0.6875
6. I know what helps me when I disagree with the medical decision-making of an attending or family of one of my patients.	15	2.73 (1.03)	3.00 (2.00)	3.80 (0.68)	4.00 (0.00)	1.07 (0.96)	1.00 (2.00)	0.0020
7. I know what helps me when I feel traumatized at work.	16	2.94 (1.06)	3.00 (2.00)	4.00 (0.63)	4.00 (0.00)	1.06 (1.06)	1.00 (2.00)	0.0034
8. I know how to recognize signs of stress or trauma in others.	16	3.75 (0.68)	4.00 (1.00)	4.06 (0.57)	4.00 (0.00)	0.31 (0.70)	0.00 (1.00)	0.1875
9. I know evidence-based approaches to assisting others with signs of stress or trauma in others.	16	2.25 (1.00)	2.00 (1.00)	3.81 (0.66)	4.00 (1.00)	1.56 (1.21)	1.50 (1.00)	0.0005

Abbreviation: IQR = interquartile range.
Higher scores indicate greater agreement: positive change suggests more agreement at post relative to pre.
[a] Wilcoxon signed rank test.

(n = 9) had moderate levels of depersonalization, and 36% (n = 8) had moderate or low levels of personal accomplishment. However, 77.3% reported high levels of career satisfaction. Female respondents had lower scores on the BRS relative to male respondents (median 3.33 vs 4.00, $p < 0.05$). Scores on aMBI subscales did not differ by sex. Scores on the BRS and aMBI did not differ by year of training.

Analyses of those who completed pre- and post-surveys showed improvements in 4 of 9 beliefs, knowledge, and self-efficacy statements (table).

Of those who completed the post-test, 82% indicated training on the topic of resiliency is important or very important for their jobs; 100% reported the training would change their response to work-related grief and trauma, and 1 person expressed dissatisfaction. Similarly, 1 of 18 residents (6%) rated the reflective narrative module as not helpful. The remaining modules were rated as helpful by all residents. Open-ended comments indicated their favorite parts of the curriculum were learning self-help skills, group discussions, and watching videos of attendings.

Discussion

The rates we detected of emotional exhaustion and depersonalization, those aspects of burnout related to poor job performance and turnover, are congruent with the available literature.[6] Consistent with existing heritability literature, male respondents reported higher levels of resilience than female respondents.[5,7] Men are more likely than women to derive resilience-related benefits from skills mastery.[8] Thus, genetic resilience likely intersects with psychological factors, such as gender roles and coping styles, to predict resilience.

Desired changes detected in residents' beliefs, knowledge, and self-efficacy are encouraging; however, research is needed to determine if residents adopted any skills and if changes in burnout or resilience were achieved.

In contrast to the previous curriculum for pediatric residents, we found no changes in perceptions about attendings.[5] Such changes are typically linked to the use of customized videos during each module. For this course, the quality of the videos was poor (audio and visual), the content was less emotionally provocative, and we had fewer participating attendings. Although uncertain this explains these results, we emphasize the importance of these aspects of video production. Changes were not detected in residents' ability to recognize signs of stress or trauma and related to coping with their own grief because they already had these skills. Therefore, they had little need for this education. Thus, tailoring the curriculum based on pre-test results may improve training efficiency.

Open-ended comments highlighted the value of the interactive aspect of this curriculum as well as the faculty videos.

We suspect a live version of the faculty narratives could be equally or even more valuable.[9]

Our conclusions are limited by our research design (no comparison group), a small sample size, and no long-term follow-up to examine changes in resiliency or burnout based on adoption of taught skills.

This pilot study demonstrated that resilience skills training is feasible and acceptable to neurology residents. Residents were generally satisfied with the curriculum and believed the topic to be important. Their knowledge, beliefs, and self-efficacy shifted in the desired direction, with several statistically significant improvements detected despite our small sample size.

Author contributions
B. Bursch contributed to curriculum development and delivery, research design, survey construction, analytic plan, and manuscript writing and editing. C. Mulligan (neurology resident) contributed to curriculum delivery and manuscript writing and editing. A. Keener (associate neurology resident training director) contributed to obtaining funding, curriculum delivery, and manuscript writing and editing. J. Lloyd contributed to curriculum development and manuscript editing. C. Mogil contributed to curriculum development and manuscript editing. M. Sinclair contributed to survey development, data management, and manuscript editing. W. Barrera contributed to data management, statistical analysis, and manuscript editing. H. Aralis contributed to data management, statistical analysis, and manuscript writing and editing. P. Lester contributed to curriculum development and manuscript editing.

Disclosure
The authors report no disclosures relevant to the manuscript. Go to Neurology.org/N for full disclosures.

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