

Original Research

The Impact of a 4-Domain Wellness-Initiative Curriculum on Internal Medicine Resident Physicians

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Abstract

Background

There is a trend toward fostering well-being, or the state of being happy and healthy, within the medical community. Historically, resident physicians have faced high rates of distress during training. A structured well-being curriculum in residency programs may shift residents' mindsets from survival and resilience to one centered on purpose, engagement, and joy.

Methods

An original well-being curriculum was administered to residents in person at a single institution every 5 weeks for approximately 10 well-being workshops, totaling around 20 hours of curriculum exposure during every academic year. The well-being curriculum was divided into 4 domains: cognitive distortions and problematic mindsets, mindfulness and meditation, creative outlets, and self-compassion.

Residents exposed to at least 1 year of the well-being curriculum were asked to answer an anonymous survey. Four questions were asked for each of the 4 domains. The first and second questions asked how familiar they were with the topic before and after the workshops on a scale of 1-5 of familiarity. The third and fourth questions asked how much the knowledge acquired influenced their professional and personal life on a scale of 1-5 of influence.

Results

Before curriculum exposure, the average for moderate or higher levels of knowledge across all domains was 22.7%, which improved to 77.3% after curriculum completion. Overall, 58.6% of participants felt the knowledge of the domains was moderately or extremely influential in their professional lives and 83.6% in their personal lives. There were no significant differences between post-graduate year 2 and post-graduate year 3 residents for any domains examined before and after the wellness workshops.

Conclusion

A 4-domain well-being curriculum practiced in a group setting positively impacted participating residents in their personal and professional lives. Further studies need to be performed on a larger scale to assess if the curriculum fits the needs of the broader medical community.

Keywords

wellness; internship and residency; medical residency; professional burnout; anxiety; psychological well-being; mental health; cognitive disorders; self-compassion; mindfulness; creative outlets; problematic mindsets; meditation

Background

Residency trains physicians to be capable and independent practitioners, but the odds of burnout prevalence are one of the highest

during this stage of education.¹ Given that physicians at every level in their training and practice have higher levels of depression, anxiety, and burnout when compared to their peers, equipping physicians with tools to mitigate

such negative states is becoming crucial.² In response to high rates of resident burnout and distress, the Accreditation Council for Graduate Medical Education (ACGME) has required programs to provide wellness initiatives for trainees.³ However, we have yet to discover what types of initiatives are most impactful and well-received by residents.

In this study, we present a wellness initiative curriculum for residents that focuses on teaching 4 major domains: cognitive distortions and problematic mindsets, mindfulness and meditation, creative outlets, and self-compassion. Cognitive distortions and problematic mindsets are negative biases in thinking that make individuals vulnerable to depression and anxiety.⁴ Part of the curriculum was dedicated to helping residents identify their own biases, allowing them to shift from thinking that an adverse event equals an outcome to a new thought where the combination of an adverse event plus one's emotional/cognitive reaction equals an outcome. Mindful awareness, the second domain, is essential in cultivating long-lasting purpose and joy. It is a broad field that ranges from formal to informal practices and is essential in cultivating long-lasting purpose and joy. Its main goal is to foster the practice of being in the present moment.⁵ Residents were taught about the topic and participated in the application of the principles via activities such as yoga and meditation. The third domain focused on creative outlets. Engagement in creative acts, such as the creation of art, has been associated with psychological well-being.⁶ The curriculum allocated dedicated time and provided supplies for residents to participate in art creation. The fourth domain in the curriculum is self-compassion, which refers to being supportive of oneself when faced with suffering and negative emotions due to personal inadequacies or external factors.⁷ Overall, the well-being curriculum is intended to shift residents' mindsets from focusing on mitigating perceived problems such as burnout to promoting the positive aspects of wellness, for example, changing the vernacular from "survival" to "thriving." Importantly, the definition of well-being may vary depending on the source, but it can mean a state of happiness and contentment with low levels of distress, overall good physical and mental health and outlook, or a good quality of life.⁸ Lack of well-being can

result in negative states such as burnout, but these occupational or situational difficulties should be differentiated from mental health disorders that have clear diagnostic criteria and are unlikely to be situational.⁹

The well-being curriculum for residents was designed by one of the internal medicine residency program's associate program directors, Dr Cynthia Rivera, who completed a contemplative medicine fellowship at the New York Zen Center. The well-being curriculum is built upon the knowledge that Dr Rivera acquired during this training and is also based on the teachings of Dr Kristin Neff, a pioneer in the study of well-being components such as self-compassion and mindfulness. Dr Rivera also works as an infectious disease specialist and is the program director for the hospital's infectious disease program. She dealt with burnout and moral injury, which intensified with the demands of the COVID-19 pandemic. As a result, she developed the well-being curriculum for residents to foster open spaces for vulnerability, acknowledgement of grief and trauma, connection, and re-imagining compassionate health care. The 4 domains surveyed were selected based on the focuses of the curriculum designed by Dr Rivera.

The lessons of the contemplative medicine fellowship at the New York Zen Center includes practicing greater intimacy and care in both intra and interpersonal relationships, teaching verbal and nonverbal communication skills, and practicing non-judgmental moment-by-moment awareness.¹⁰ It also instructs students in contemplative practices to support caring for others in the full spectrum of life, including those who are experiencing critical life transitions such as illness, dying, grief, and loss. Furthermore, the program emphasizes focus on one's well-being and boundaries while practicing health care work, thereby cultivating resilience through community support and exploring the role of one's meaning and purpose.

The contemplative medicine fellowship is a 12-month training program in contemplative medicine focused on teaching practices to cultivate well-being for physicians and advanced practice providers, and it was developed by the New York Zen Center for Contemplative Care. One study examined 34 clinicians who complet-

ed the contemplative medicine fellowship, and the curriculum demonstrated that there was significant improvement in all components of burnout, including emotional exhaustion, depersonalization, and sense of personal accomplishment, with the most significant improvement (P value $< .001$) in personal accomplishment.¹¹

Based on the information we gleaned from this fellowship, we developed a 4-domain, wellness-initiative curriculum. The educational outcome of the curriculum was assessed in post-graduate year 2 (PGY-2) and post-graduate year 3 (PGY-3) of internal medicine residents who completed at least 1 year of the curriculum. An anonymous survey was employed to determine the impact on the residents' knowledge and how it influenced their patient care as well as their personal lives.

Methods

Wellness Initiative Curriculum

The 4 domain-centered well-being curriculum is an original program developed by the internal medicine (IM) residency program leadership at Mount Sinai Medical Center in Miami Beach, Florida. The well-being curriculum is administered in a series of workshops to the IM residents every fifth week of their residency training. It occurs on the Friday of their internal medicine clinic week, a day when residents must be on campus for didactics and do not have other clinical duties. The curriculum can be grouped into the following 4 domains based on the content: cognitive disorders and problematic mindsets, mindfulness and meditation, creative outlets, and self-compassion.

Based on this interval program, residents attended approximately 10 well-being workshops every academic year and were exposed to a minimum of 20 hours of curriculum. Each well-being workshop lasted 2 hours. The first hour was compromised of didactics accompanied by an open discussion, which was led by program directors, associate program directors, and chief residents. Most of the sessions were hosted or organized by Dr Rivera, who was instrumental in the development of the well-being program. If she could not be present, lectures and curriculum that have been crafted by her were used. Attendance was recorded during the didactic sessions by the

chief residents. If residents missed a session, they were scheduled to make it up on another Friday within the 5 week block. The second hour was dedicated to developing a mindfulness and meditation practice and had 2 primary options: either a yoga or a sound meditation class. Well-being workshops were facilitated by program leadership and chief residents, and mindfulness and meditation practices were led by a licensed yoga teacher or a sound bath meditation expert.

The well-being curriculum began during the first few weeks of the academic year with a workshop on the topic of cognitive disorders and problematic mindsets, entities that make people vulnerable to negative emotions and prevent them from solving problems effectively. Examples of cognitive disorders include all-or-nothing thinking, overgeneralization, fortune-telling, mind-reading, and magnifying. Examples of problematic mindsets include maladaptive perfectionism, the imposter phenomenon, and the Stanford duck phenomenon. The central themes of cognitive distortions and problematic mindsets are catastrophizing, personalization, and self-blame. During the cognitive distortions and problematic mindsets workshop, faculty and chief residents held lectures to expose residents to the field. Residents are then encouraged to identify their own biases, and a group discussion was held where they shared their experiences. The goal of educating about this topic is to create a mindset shift. Instead of eliminating negative thoughts, residents are taught to notice them as they occur, which creates a conscious and positive state of being.

The second well-being workshop was held 5 weeks later on the topic of mindful awareness and meditation. Again, there were 1-hour lectures by program leadership to teach residents the background and basics followed by a group discussion. The didactic session focused on educating residents on mindfulness practices. Examples of these practices include yoga, sound bath therapy, and breathwork practice. In addition, guided meditations were incorporated, which have been shown to reduce anxiety and stress in health care students.¹²

The third well-being workshop dedicated time and provided supplies for residents to partic-

participate in art creation for approximately 1 hour. Activities such as painting, decorating ornaments for the winter holidays, and hosting social gatherings where participation in singing, dancing, and cooking were encouraged. The total didactic and discussion time was 1 hour.

The fourth and final workshop focused on self-compassion. Several components of self-compassion have been described, which include acts and words of kindness to oneself and humanity and recognizes that all humans encounter emotional turmoil.¹³ First, residents were introduced to the topic of self-compassion via faculty and chief-resident-guided lectures. They were also administered the self-compassion scale-short form (SCS-SF), which is a validated, standardized survey to assess the respondent's baseline scores in the 6 components of self-compassion: self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification.¹⁴ After finishing the baseline SCS-SF and lecture, a group discussion was held where participants shared their thoughts and experiences, and they were given resources to promote the positive aspects of self-compassion.

After the fourth workshop, the curriculum cycled and re-visited previous topics. The remaining workshops were dedicated to synthesizing the workshop material and discussing the impact of the curriculum. During the years that the well-being curriculum was implemented, the order of the workshops varied, but the topics remained similar. All well-being workshops followed a similar format. During each workshop, the total didactic and discussion time was 1 hour, which was followed by either a yoga session or a meditation practice led by a professional for 1 hour.

Survey

To participate in the study, residents must have completed at least 1 year of the wellness curriculum. Therefore, only PGY-2 and PGY-3 residents participated. The residents were asked to complete a questionnaire to determine the effectiveness of the program, and its impact on their lives. The survey was administered on an individual basis. Residents were allowed to complete the survey in person with a survey administrator or via self-administration with the internet-based program SurveyMonkey.

The survey was anonymous, and the answers were collected based on residents' self-assessments. The survey distribution occurred at the beginning of the new academic year during the summer, after residents were exposed to a full year of the wellbeing curriculum. All questions were administered to the residents at the same time.

Information collected in the survey from the residents included their current year of training, gender, ethnicity, race, age, marital status, and the medical school they attended. Four questions were asked for each of the 4 domains assessed: cognitive distortions and problematic mindsets, mindfulness and meditation, creative outlets, and self-compassion. For each of the domains, the first and second questions asked how familiar they were about the topic before and after the workshops on a scale of 1-5 of familiarity (1 – not at all familiar, 2 – slightly familiar, 3 – somewhat familiar, 4 – moderately familiar, 5 – extremely familiar). The third and fourth questions asked how much the knowledge acquired influenced their professional and personal life on a scale of 1-5 of influence (1 – not at all influential, 2 – slightly influential, 3 – somewhat influential, 4 – moderately influential, 5 – extremely influential).

Statistical Analysis

Mean and standard deviation were provided for normally distributed variables. Data for categorical variables were provided as absolute numbers, percentages, and/or medians and inter quartile range (IQR). The Wilcoxon matched-pairs signed rank test was used to test for differences between categorical paired data (ie, individual paired differences before and after the intervention). The Mann-Whitney U test was employed to test for differences between unpaired categorical variables (ie, differences between PGY2 and PGY3 residents). Associations between variables were initially assessed with the non-parametric Spearman correlation. Statistical significant *P* values were less than or equal to .05.

Results

Demographics

The survey completion rate was 94%, with 32/34 completed surveys (n=32) (**Table 1**). Only data for those who completed the survey are

Table 1. Demographic Characteristics of Survey Participants

Category	Subcategory	All participants (n=32)	PGY-2 (n =17)	PGY-3 (n=15)
Mean age in years		32.2 (\pm 3.2)	31.5 (\pm 3.8)	32.9 (\pm 5.5)
Gender	Males	12 (37.5)	8 (47%)	4 (26.6%)
	Females	20 (62.5%)	9 (53%)	11 (73.4%)
Ethnicity	Hispanic	17 (53.1%)	8 (47%)	9 (60%)
	Non-Hispanic	15 (46.9%)	9 (53%)	6 (40%)
Race	White	22 (68.8%)	12 (70.5%)	10 (66.6%)
	Black	1 (3.1%)	1 (5.9%)	0 (0%)
	Asian	9 (28.1%)	4 (23.5%)	5 (33.3%)
Marital status	Married	11 (34.4%)	6 (35.3%)	5 (33.3%)
	Non-married	21 (65.6%)	11 (64.7%)	10 (66.6%)
Native language(s) spoken in the region of medical school attendance	English	17(53.1%)	12 (70.5%)	5 (33.3%)
	Spanish	10 (31.3)	4 (23.5%)	6 (40%)
	Indian languages	3 (9.4%)	1 (5.9%)	2 (13.3)
	Filipino	1 (3.1%)	0 (0%)	1 (6.7%)
	Persian	1 (3.1%)	0 (0%)	1 (6.7%)

Abbreviation: PGY = post-graduate year

presented. The average age of the residents was 32.1 ± 4.9 years, and 21 (65.6%) of them identified as non-married. Of the residents, 20 identified as females (62.5%), 17 (53.1%) identified as Hispanic, 15 (46.9%) as non-Hispanic, 22 (68.8%) identified as white, 1 (3.1%) as black, and 9 (28.1%) as Asian. English was the native language spoken in 53.1% of the medical schools attended, followed by Spanish (31.3%), Indian languages, Filipino, and Persian (**Table 1**).

Seventeen residents were PGY-2, and 15 were PGY-3. A greater percentage of females and Hispanics was observed in the PGY-3 compared to the PGY-2 group of residents, and 70.3% of the PGY-2 attended universities where English was the language spoken compared to 33% of the PGY-3 residents ($P = .004$) (**Table 1**).

Intervention

Of the residents who participated, 40% to 55% were not familiar at all or slightly familiar with each of the 4 wellness domains. The percentage of residents having moderate to higher levels of knowledge at baseline was 6% for cognitive distortions and problematic mindsets, 21.8 % for self-compassion, 25% for creative outlets, and 37.5% for mindfulness and meditation. There was a significant im-

provement in the residents' reported knowledge after exposure to the curriculum across all domains, as seen in **Tables 2** and **3**. Domain 1 (cognitive distortions and problematic mindsets) and domain 4 (self-compassion) displayed the largest increased knowledge (**Table 3**). For each of the domains, the knowledge acquired influenced both the residents' personal life and their professional activities. However, a 24.6% greater percentage of residents said that personal activities were influenced more than their professional activities ($P < .001$) (**Tables 2** and **3**).

For domain 1, only 6% of the resident physicians expressed having moderate or higher levels of knowledge about the topic before the intervention, increasing to 84.3% of the residents after curriculum completion. The median (IQR) of the individual answers for domain 1, question 1 was 1.5 before the intervention and increased to 4 after completion of the curriculum ($P < .0001$) (**Tables 2** and **3**). Additionally, 59.3% and 87.5% of the residents said that the acquired knowledge was moderately or extremely influential in their patient care activities and their personal lives. The medians (IQR) of the individual responses on how acquired knowledge of cognitive distortions and problematic mindsets influenced their patient care and personal life were 4 (3-4.75) and 4 (4-5) (**Tables 2** and **3**).

Table 2. Median Response (IQR) for Each Question Asked for Each Domain

	Question 1 (IQR)**	Question 2 (IQR)**	Question 3 (IQR)**	Question 4 (IQR) ^{§§}
Domain 1*	1.5 (1-2.75)	4 (4-5)	4 (3-4.75)	4 (4-5)
Domain 2†	3 (2-4)	4 (4-5)	4 (3-4)	4 (4-4.75)
Domain 3‡	3 (1.25-3.7)	3 (2.25-4)	3 (2-4)	4 (3-4)
Domain 4[§]	3 (2-3)	4.5 (4-5)	4 (4-5)	5 (4-5)

*Knowledge of cognitive distortions and problematic mindsets

†Knowledge of mindfulness and meditation

‡Knowledge of creative outlets

§Knowledge of self-compassion

**How much did you know about domain X before the wellness workshops? On a scale of 1-5

**How much do you know about domain X after the wellness workshops? On a scale of 1-5

**How much does knowing about domain X help you in your professional life? On a scale of 1-5

§§How much does knowing about domain X help you in your personal life? On a scale of 1-5

For domain 2 (mindfulness and meditation), only 37.5% of the residents reported moderate or higher levels of knowledge about the topic at baseline, increasing to 87.5% of the residents after the curriculum. The median (IQR) for domain 2, question 1 was a 3 (2-4) and increased to 4 (4-5) after the intervention ($P < .0001$) (Tables 2 and 3). Of the resident participants, 56.2% and 90.6% said the acquired knowledge was moderately or extremely influential in their patient care activities and their personal life. The medians (IQR) of the individual responses for questions 3 and 4 were a 4 (3-4) and 4 (4-4.75) (Tables 2 and 3).

For domain 3 (creative outlets), only 25% of the residents reported moderate or higher levels of knowledge about the topic at baseline, which increased to 46.8% of the residents after completion of the curriculum. The median (IQR) for domain 3, question 1 was a 3 (1.25-3.7) and a 3

(2.25-4.0) after the intervention ($P = .0001$) (Tables 2 and 3). In addition, 40.6% (median IQR: 3 [2-4]) and 65.6% median IQR: 4 [3-4]) said the knowledge acquired was either moderately or extremely influential in their professional life and their personal life (Tables 2 and 3).

For domain 4, 53.1% of the residents expressed slight or no knowledge of aspects related to self-compassion at baseline. Only 21.8% of the residents expressed having a moderate or a higher degree of knowledge at baseline, which increased to 90.6% after the intervention ($P < .0001$). The median (IQR) for domain 4, question 1 was a 3 (2-3) and increased to a 4.5 (4-5) after the intervention (question 2) ($P < .0001$) (Tables 2 and 3). Following the intervention, 78.1% of the residents said their knowledge of self-compassion was either moderately or extremely influential in their professional lives, and 90.6% said the knowledge was either mod-

Table 3. Change in the Median Value of Knowledge of Well-being Domains Before and After the Workshops

	Change in median value (B** - A ^{††})	95% confidence interval	P value
Domain 1*	2	[2-3]	<.0001
Domain 2†	1	[1-2]	<.0001
Domain 3‡	0	[0-1]	.0001
Domain 4[§]	2	[1-2]	<.0001

*Knowledge of cognitive distortions and problematic mindsets

†Knowledge of mindfulness and meditation

‡Knowledge of creative outlets

§Knowledge of self-compassion

**Median score after well-being workshops

††Median score before well-being workshops

erately or extremely influential in their personal lives. Median values (IQR) for individual answers are shown in **Tables 2** and **3**.

Discussion

The practice of having a mandatory, in-person well-being curriculum has had a significant impact on participating residents. Several factors may be playing a role in the success of the curriculum, including the diversity of workshops and practices available, the commitment of the residency program to carve out time dedicated to well-being, and the opportunity to meet as a group to foster community and discussion. The significant influence could also be partly due to the practices being performed in a group setting with supervising experts, which mandates the participants to engage. Total commitment may only happen if the curriculum is mandatory or completed in collaboration.

A striking observation was the lack of background knowledge, with 40-55% of the residents being unfamiliar or slightly familiar with each of the 4 wellness domains. Sufficient familiarity with the domains was reported by only 6% for cognitive distortions and problematic mindsets, 21.8 % for self-compassion, 25% for creative outlets, and 37.5% for mindfulness and meditation. Such deficits may result from the need for wellness initiatives in medical school curricula and the need to implement wellness interventions early during graduate medical residency programs.

Expectedly, domain 1 (cognitive distortions and problematic mindsets) and domain 4 (self-compassion) displayed the most notable change in knowledge before and after the workshop, with a change in the median value of 2. This change demonstrates that these domains are less likely to be known by residents before exposure to the topic. For example, domain 1 showed a drastic improvement of moderate or higher knowledge from 6% at baseline to approximately 85% after curriculum completion. Domain 2 (mindfulness and meditation) and domain 3 (creative outlets) had less of a change in the median value of knowledge before and after the workshops, suggesting that residents have more understanding of these topics before exposure to the residency-facilitated well-being curriculum than in comparison to the other 2 domains.

All domains showed increased knowledge and the likelihood of improving professional and personal activities. Some domains were more impactful than others. For example, domain 4 (self-compassion) had the highest median score overall, with a median score of 5 (extremely influential) in how knowledge helps participants personally. There was also a trend of the domains having more of a positive impact on the participant's personal life than professional life, regardless of the domain. The median effect of knowledge of the domains was 3 (somewhat influential) or higher in professional life and 4 (moderately influential) or higher in personal life.

PGY-2 and PGY-3 residents were the same in knowledge of domains after curriculum exposure and in the impact of the work on their professional and personal lives. This outcome implies that an influential impact of the workshops could be achieved with 1 year of curriculum exposure and could be beneficial when introducing the curriculum to other health care professionals who may be under time constraints. Discussion-based workshops such as the ones in the study have been shown to help increase knowledge about well-being topics, with 1 study demonstrating success in increasing resident knowledge about imposter syndrome with just 1 session.¹⁵

Furthermore, there is sometimes a discrepancy between residents' and program leadership's perspectives on resident wellness.¹⁶ By involving the program leadership and faculty directly in the well-being curriculum, as in the institution in this study, there is more harmony when it comes to achieving goals and fostering understanding between the groups. The overall goal of the well-being curriculum was to equip residents with the tools to facilitate non-judgmental responses to hardships, which was clearly communicated by the program. Part of the curriculum is based on experiential learning, with the curriculum developing over the years and being molded based on the residents' ongoing feedback and comments. Dr Rivera started the program with roots in her training in contemplative medicine and adapted it for the IM residency program. As other programs develop their own well-being curriculum, having a toolbox of different well-being practices can be beneficial, especially when molded to fit the needs of the individual program.

Limitations

There were several limitations to this study. The survey was not standardized and, therefore, has yet to be validated for broad application. Administering standardized surveys, if available, before and after curriculum completion will yield more accurate results. For example, collection and interpretation of SCS-SF forms completed by the residents could serve as analysis of a standardized survey, and the program could incorporate these results into shaping the curriculum. Additionally, some of the questions were asked retrospectively, which could skew results regarding the accuracy of recollected material, especially about the initial perceived knowledge. Obtaining baseline knowledge at the beginning of the academic year and re-administering the survey at the end of the year could display more validity. Furthermore, the demographic data of the participants must be considered. For example, many participants identified as Hispanic, which may not correspond with other areas in the United States. Despite these limitations, the data provides meaningful results that the curriculum successfully builds knowledge about well-being topics and proves influence in participants' lives.

Further research needs to be performed to assess the success of the well-being curriculum when applied to residents in different specialties, attending physicians, and other health care professionals. The focus should be on domains that were not well known before workshop exposure but significantly impacted participants' personal and professional lives, such as self-compassion, which has been correlated with positive mental health.¹⁷ As the program develops, analysis with standardized surveys obtained before and after workshops, expansion to teaching other topics on well-being, and flexible participant-tailored curriculum should be considered.

Conclusion

An in-person well-being curriculum, practiced in a group setting that encompassed different wellness domains, was a successful method to impart a significant positive impact in participating residents' personal and professional lives. Training programs can foster joy, purpose,

and engagement by educating and equipping residents with tools to cultivate a well-being practice that suits them.

Conflicts of Interest

The authors declare no conflicts of interest.

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