



OPEN ACCESS

Improving resident well-being: a narrative review of wellness curricula

Erin R Ahart ,¹ Lisa Gilmer,² Kelsey Tenpenny,³ Kelli Krase¹

¹Department of Obstetrics and Gynecology, University of Kansas Medical Center, Kansas City, Kansas, USA

²Department of Pediatrics, University of Kansas Medical Center, Kansas City, Kansas, USA

³University of Kansas Medical Center, Kansas City, Kansas, USA

Correspondence to

Dr Erin R Ahart, Department of Obstetrics and Gynecology, University of Kansas Medical Center, Kansas City, USA; eahart@kumc.edu

Prior poster presentation at the Association of Professors of Gynecology and Obstetrics – Academic Scholars and Leaders Program.

Received 10 January 2022

Accepted 14 May 2022

ABSTRACT

Background To improve wellness among residents, many graduate medical education programs have implemented formal wellness curricula. Curricular development has recently shifted focus from drivers of burnout to promotion of wellness. The specific components of successful wellness curricula, however, are not yet well defined.

Objective To review the published literature assessing core components of wellness curricula in graduate medical education programs.

Methods Searches were conducted through June 2020 in PubMed, Education Resources Information Center, Google Scholar and Web of Science using the search terms wellness curricula, wellness programs, well-being and graduate medical education. Additional articles were identified from reference lists. Curricula from primarily undergraduate medical education, singular interventions, non-peer-reviewed studies and non-English language studies were excluded.

Results Eighteen articles were selected and reviewed by three authors. Critical drivers of success included support from program leadership and opportunities for resident involvement in the curriculum implementation. Most curricula included interventions related to both physical and mental health. Curricula including challenging components of professionalisation, such as critical conversations, medical errors and boundary setting, seemed to foster increased resident buy-in. The most frequently used curricular assessment tools were the Maslach Burnout Inventory and resident satisfaction surveys.

Conclusions Different specialties have different wellness needs. A resource or 'toolbox' that includes a variety of general as well as specialty-specific wellness components might allow institutions and programs to select interventions that best suit their individual needs. Assessment of wellness curricula is still in its infancy and is largely limited to single institution experiences.

INTRODUCTION

Physicians are at higher risk of burnout, depression and suicide than the general population.¹ It is estimated that 50% of physicians fall into one of these categories, a rate twice that of the general working population in the USA.² The cost of physician burn out is estimated at \$5 billion per year due to reduced productivity and increased job turnover.² The current COVID-19 pandemic places physician mental and emotional well-being under even greater pressure and vulnerability.³ Resident physicians have significantly higher rates of professional distress than comparable groups of medical

students or physicians in early practice.⁴ Residents face substantial and synergistic challenges to their physical and mental health, including high stress, social isolation, long hours, disrupted sleep cycles and lack of exercise opportunities.⁵

In 2017, the Accreditation Council for Graduate Medical Education (ACGME) included 'Well-Being' in the Common Program Requirements, recognising that resident well-being is 'critical in the development of the competent, caring and resilient physician'.⁶ A study by Carson *et al* found that while program leaders value their role in supporting the well-being of their residents, many feel unprepared to perform this critical task.⁷ Several case studies demonstrate the variability between residency programs with single wellness interventions to those with full curricula. These studies consistently conclude with a lack of evidence-based findings that provide generalisable guidance on the most effective and efficient programs.^{8–16} Several specialties, including obstetrics and gynaecology, have attempted to develop national programs to overcome this barrier. The Council on Resident Education in Obstetrics and Gynecology recently completed a pilot program involving 25 programs and released a wellness curriculum composed of six workshops focusing on a variety of wellness elements, such as resilience, time management and empathy. Residents who attended at least four sessions had significantly lower rates of burnout and higher rates of professional fulfilment.¹⁷ In this review, we use the term 'curriculum' to describe the group of interventions selected by the graduate medical education program to improve resident wellness.

The responsibility of fostering resident well-being and creating wellness curricula has fallen largely on individual residency programs due to limited availability of evidence-based curricular content on a large scale. In recent years, development and implementation of curricula to support resident well-being has been increasingly prioritised by graduate medical education programs.¹⁸ Initially driven by rising awareness of the negative impacts of resident burnout,² more recent initiatives have focused on physician well-being, resiliency and vitality.¹⁹ Though the need for wellness curricula has been established, specific interventions that improve resident well-being are not clearly defined.

The current lack of data demonstrating which wellness interventions improve overall resident well-being leaves program leaders unclear about potential strategies to produce positive change. Some residency programs have published individual or institutional experiences with and assessment



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Ahart ER, Gilmer L, Tenpenny K, *et al*. *Postgrad Med J* Epub ahead of print: [please include Day Month Year]. doi:10.1136/postgradmedj-2022-141541

of wellness strategies, but a centralised resource that offers a comprehensive review of these wellness interventions is lacking. Such a resource could provide literature-driven and evidence-based approaches to the development, implementation and assessment of wellness curricula for individuals, programs and institutions. The purpose of this study is to conduct a narrative literature review to identify recent updates to the core components of residency wellness curricula that have been shown to improve resident well-being or reduce resident burnout, as well as to answer specific questions surrounding levels of intervention, drivers of success, resident engagement, interventions and associated costs, and reliable, validated assessment tools.

METHODS

The authors conducted a literature search for peer-reviewed, English language articles using PubMed, Educational Resources Information Center, Google Scholar and Web of Science to identify articles describing the wellness curricula used by graduate medical education programs. The search terms *wellness curriculum*, *wellness program* and *graduate medical education* were used to locate relevant articles from inception through June of 2020. Additional studies were identified from reference lists of these articles. Our literature search yielded 72 articles. Two authors (KK and LG) reviewed each article for pertinence to the research question and quality of study design. Nineteen articles focused on undergraduate medical education, other health professions or faculty were excluded; 22 articles lacking an intervention including surveys, commentaries or perspective articles were excluded; 13 articles were not full length and excluded and articles that did not include any program assessment were also excluded. The 18 articles meeting inclusion criteria were reviewed by the four authors to discuss in the narrative review (table 1). Through iterative discussions of study articles, the authors identified six thematic questions. These six questions were formulated after reviewing the literature; they did not drive the literature search.

Given the variability in study design of wellness curricula in the literature as well as the paucity of programme assessment, the authors concluded that a narrative review could best describe the themes to answer the research questions.

FINDINGS AND THEMES

The 18 articles meeting inclusion criteria were reviewed by the four authors to discuss in the narrative review (table 1). Seventeen of these articles included observational studies; one included a randomised controlled trial. Six thematic questions were identified.

Which interventions are used in current wellness curricula?

Determining the individual components of a residency program's wellness curriculum is a challenging task, especially with limited information about which interventions are most effective. Most published wellness curricula include multiple, diverse elements. Mentorship is a key part of many curricula. Many programs incorporate wellness coaching by providing residents access to guidance from a trusted faculty member.^{8 11 13 20 21} Additionally, residents find value in mentorship and reflective activities among peers.^{9-12 20 22 23} Peer discussions about challenges during residency can help to normalise those experiences and create a greater sense of collegiality.¹⁰ Open discussions about challenges to well-being enable residents to develop learner-driven interventions.²⁴ 'Design thinking' is a strategy that can be employed

to evaluate these challenges and generate innovative solutions based on empathy and understanding of human dynamics.²⁴

Many wellness curricula include didactic components with wellness talks or workshops.^{8 9 11-16 22 23 25-29} These sessions focus on a wide range of topics, including resilience, physician suicide and self-care. Some wellness programs incorporate the expertise of trained mental health professionals to lead individual counselling sessions or group workshops.^{12-14 20 21 27} Sessions on practical job-related skills may also address program-specific competencies, such as delivering bad news, dealing with difficult people, debriefing after traumatic events and recovering from medical errors.^{9 23 25 29}

While much of the literature on wellness in graduate medical education focuses on resident mental and emotional health, attention to physical health is another important element of a comprehensive wellness curriculum. Examples of program support of resident fitness include discounted access to fitness centres or trainers,^{8 16} dedicated time for exercise¹⁵ and access to refrigerators and healthy foods.^{12 15 16 21 30} Programs that focus on physical well-being provide residents with increased time off for renewing activities such as sleep or social events outside of work.^{12 13 21 22 30}

At which level should interventions occur (individual, programme and/or institutional)?

Maintaining resident well-being is identified as a shared responsibility for individual residents, programs and the organisation for which they work.^{8 20} It appears that graduate medical education programs that incorporate wellness interventions at multiple levels are the most effective. An opportunity to promote this sort of collaborative culture change might be a discussion evaluating the program and institutional mission statements for inclusion of a commitment to providing resident protection and well-being.^{8 31} Examples of interventions at an individual, program and institutional level are depicted in table 2.³² Individual behaviour changes vary greatly and are important components of a successful curriculum. Self-directed interventions unique to each resident should be celebrated by their residency program and perhaps shared between residents to promote community.⁹ Examples of program-level changes include incorporating resident workshops that focus on wellness-related skills, such as strengthening coping mechanisms. Another strategy is simply providing a department representative with the time, resources and departmental support to develop a thoughtful wellness curriculum.²⁵ A notable institution-level intervention involved bringing together a group of trained volunteers from a variety of medical disciplines with hospital leadership to develop institution-wide strategies to optimise the clinical work environment.⁸

What are the primary drivers of success?

Two major components appear to drive a successful wellness curriculum: resident engagement and program leadership. First, engaging and empowering members of a group to participate in making decisions about their environment, a practice often used in the business world, also applies in graduate medical education.³¹ The resident perspective is critical during curricular development and should be incorporated throughout that process. For example, one residency program established resident-led action teams enabling residents to actively communicate feedback about their program and be involved in policy changes.¹² Second, the formation of a core group of faculty members committed to physician wellness is imperative in a

Table 1 Published wellness interventions used by various specialties

Wellness interventions used by residency programs							
Article title	Author	Date	Specialty	Location	# of participants	Intervention components	Assessment
A strategy for wellness in a pathology residency program: enhancing chances of success during an epidemic of burnout	Saint Martin <i>et al</i>	2018	Pathology	Chicago, IL	17	Wellness training for individual, programme and institution; wellness talks; resilience coaches; modify mentorship programme; mindfulness practices; volunteer opportunities; fitness centre discounts.	Satisfaction and utilisation survey
Anesthesia resident wellness program at University of Saskatchewan: concept and development; content and delivery	Chakravarti <i>et al</i>	2015	Anaesthesia	Canada	31	Modular curriculum with eight topics: wellness, resilience, professionalism, occupational wellness, emotional wellness, financial wellness & career management, team building, situational awareness. Peer support curriculum, self-directed learning activities, overall department wellness programme.	Survey and focus groups
Impact of family medicine resident wellness curriculum: a feasibility study	Runyan <i>et al</i>	2013	Family Medicine	Worcester, MA	36	1 month wellness curriculum for PGY-2 residents led by behaviour science faculty focusing on burnout, empathy, stress and self-compassion.	MBI, Self-Compassion Scale, Perceived Stress Scale, Jefferson Empathy Scale
Implementation of small group reflection rounds at an emergency medicine residency program	Wen <i>et al</i>	2011	Emergency Medicine	Boston, MA	9	Small group reflection rounds: 1 hour monthly sessions with faculty facilitators to discuss difficult ethical or interpersonal encounters.	Satisfaction survey
Current wellness practices among otolaryngology residencies	O'Brien <i>et al</i>	2017	ENT	Muli	107	Faculty mentoring, wellness lecture, no-cost mental health resources, seminars in mindfulness, financially supported social events, allowed time off for appointments.	Survey
Feasibility of comprehensive wellness and suicide prevention program: a decade of caring for physicians in training and practice	Ey <i>et al</i>	2011	Multi	Portland, OR	906	Individual counselling, psychiatric evaluation, wellness workshops.	Utilisation rates of services, satisfaction ratings
Perspectives from a residency training program following the implementation of a wellness initiative	Buchholz <i>et al</i>	2015	Neurosurgery	Charleston, SC	10	Wellness lectures, weekly 1 hour team exercise, healthy food choices at conferences, progressive exercise, sleep and dietary goal setting.	Satisfaction survey
Perceived value of a program to promote surgical resident well being	Salles <i>et al</i>	2012	Surgery	Stanford, CA	76	Balance in life programme with six components: refrigerator stocked with healthy food and drinks; after-hours guide; psychological counselling sessions; resident mentorship programme; class rep system; social events.	MBI, Dupuy Psychological Well Being Scale and Grit
Wellness program for anesthesiology residents: a randomized controlled trial	Saadat <i>et al</i>	2012	Anaesthesia	New Haven, CT	60	Three groups: wellness intervention (16 1.5 hour-sessions on coping with work and family stress); no treatment control with release time; no treatment control with routine duties.	Multiple instruments including National Survey on Drug Abuse
Does implementation of a corporate wellness initiative improve burnout?	Hart <i>et al</i>	2017	Emergency Medicine	Minneapolis, MN	46	Trial of wellness programmes (The Happiness Practice) originating from other industries.	MBI and reactions data
A program to prevent burnout, depression, anxiety in first-year pediatric residents	Slavin <i>et al</i>	2016	Paediatrics	St. Louis, MO	17	Three facet programme: stress reduction & finding meaning in medicine; ethics including approach to difficult patients or medical mistakes; organisational approach.	MBI, Center for Epidemiologic Studies Depression Scale, State-Trait Anxiety Inventory

Continued

Table 1 Continued

Wellness interventions used by residency programs							
Article title	Author	Date	Specialty	Location	# of participants	Intervention components	Assessment
Operation La Sierra: a novel wellness initiative for the neuro surgery residents	Fargen <i>et al</i>	2015	Neurosurgery	Charleston, SC	9	FitBits, wellness lectures, weekly exercise sessions with a trainer and healthy food choices at morning conferences.	Body composition testing, satisfaction survey
Evidence-based longitudinal curriculum for resident physician wellness: 2017 resident wellness consensus summit	Arnold <i>et al</i>	2017	Emergency Medicine	Multi	30	Foundational modules: Intro to Wellness; Self Care Series (Sleep to Financial Wellness); Physician Suicide & Self Help; Clinical Care Series; Wellness in the Workplace; Dealing with Medical Errors & Shame.	'Wellness Think Tank'
Resident physician wellness curriculum: a study of efficacy and satisfaction	Lefebvre <i>et al</i>	2019	Emergency Medicine	Canada	58	Two components: scheduled meetings with dedicated faculty wellness mentor; wellness lectures related to fitness, healthy food preparation and financial planning.	Brief Resident Wellness Profile and SF-8 Health Survey
Resident-led organisational initiatives to reduce burnout and improve wellness	Mari <i>et al</i>	2019	Psychiatry	Boston, MA	39	On-Call Task Force and Food Action Team to improve on-call experience, financially supported social events, designated 'wellness day', mindfulness didactics, recommended primary care providers.	Copenhagen Burnout Inventory
Evaluation of a formal wellness curriculum to reduce burnout in anaesthesia residents: a pilot study	Brainard <i>et al</i>	2019	Anaesthesia	Aurora, CO	39	Didactics, interactive sessions on mindfulness, peer-mentoring program, monthly wellness education articles, wellness reference card, confidential monitored wellness email address, quarterly resident group dinners.	MBI
A comprehensive residency wellness curriculum	Zradzinski <i>et al</i>	2020	Emergency Medicine	Atlanta, GA	106	Workshops on seven wellness domains: emotional, occupational, financial, physical, intellectual, social and spiritual.	MBI, satisfaction survey
Designing well-being: using design thinking to engage residents in developing well-being interventions	Thomas <i>et al</i>	2020	Internal Medicine	San Francisco, CA	18	Design thinking programme with four workshops to discuss and solve well-being problems. Themes included community and connection, space for reflection, peer support and availability of individualised wellness.	Post-intervention interviews

Separated by date of publication, specialty, location of residency programme, number of residents who participated in the intervention, description of the intervention components and method of assessment.
MBI, Maslach Burnout Inventory.

successful wellness program. These faculty take an active role in monitoring and advocating for the chosen wellness interventions. Faculty buy-in enables well-being to be prioritised and integrated into the residency's daily practices.^{20 25} Strong, sustained and cohesive support among residency program leadership may help to alleviate anxiety and overcome resistance from residents, faculty or staff during the cultural shift towards increased prioritisation of resident well-being.²⁵ As a starting point, a needs assessment survey or focus group can be useful in informing program-wide opportunities for improvement.^{26 31 33}

How can resident engagement be increased?

Certain curricular components appear to promote resident engagement more than others. Interventions that directly impact job performance are more likely to receive a positive resident response.²⁶ The sense of increasing mastery and improved confidence are associated with greater well-being, particularly when accompanied by increasing autonomy.³⁴ Residents seem to find these activities more valuable than passive interventions, such as wellness didactics.²⁶

Coaching in practical skills to alleviate the adverse impact of stressful or negative experiences is another important element of wellness curricula. Improved well-being has also been reported following resident skill-development in communication,³⁵ dealing with difficult people¹¹ and recovering after adverse events.⁹ Using wellness interventions that provide tools for resident performance enhancement is a powerful strategy that improves both patient care and provider well-being. This is especially important in fostering resident engagement.²⁶

What are the costs associated with implementation of wellness curricula?

Costs associated with implementing wellness curricula vary widely based on the interventions, number of participants, geographic region and institutions. Funding is primarily through the associated department or Graduate Medical Education budget.^{12 22 27} Curriculum designs that focus on small peer reflection groups and didactics require little to no funding.^{10 23} One curriculum noted that keeping refrigerators stocked with healthy

Table 2 Wellness curricula can be implemented in several levels, including individual, program and institutional level

Examples of levels of intervention		
Individual	Program	Institutional
Mindfulness	Wellness curriculum	Wellness curriculum
Exercise	Wellness curriculum director	Funding for wellness
Nutrition	Faculty to peer mentorship	Restricted work hours
Sleep	Social outings	Protected personal time
Self-compassion	Resident retreats	Access to healthy foods
Positive reframing	Reflective activities	Access to fitness centre
Design thinking	Dedicated exercise time	Access to individual counselling
Discussion with peers	Didactics	Improving EMR functionality
Involvement in wellness curricula	Resident workshops	Reduce physician administrative duties
Allowing dedicated time for curricular development		
Examples of each are provided. EMR, electronic medical record.		

food choices for 56 residents exceeded \$16 000 annually.²¹ Associated costs for curricula focusing on use of mental health professionals and confidential counselling can exceed \$200 000 annually²⁷ or up to \$12 000 salary for a trained psychologist.²¹ The expenditure for social events in one curriculum costs up to \$2000 per academic year.²¹ The cost for another curriculum that provided wellness didactics, a fitness tracker watch, baseline physical and laboratory testing, and psychological testing, exercise classes and healthy food options totaled \$500 annually per participant.¹⁶

What assessment tools are available to measure improved resident well-being or decreased burnout?

Many programs were not assessed with a validated assessment tool. The most frequently used assessment tools to measure the success of wellness programs are the Maslach Burnout Inventory (MBI), Copenhagen Burnout Inventory (CBI) and Brief Resident Wellness Profile (BRWP).

The MBI, considered the gold standard in measuring physician burnout, assesses three burnout categories: emotional exhaustion, depersonalisation and personal accomplishment.²⁵ While the MBI is most widely used and validated, there is an associated cost of \$15 per assessment, and it can have variable methods of interpretation.³² The CBI, a survey that aims to evaluate persona, work-related burnout and client-related burnout, has also been used.¹² This is a less commonly used tool compared with the MBI and was created to be useful in a variety of occupations, however, there is no associated cost and interpretation is straightforward, with higher scores indicating a higher degree of burnout.³² The BRWP is another validated tool that assesses

mood and sense of professional accomplishment using a series of questions as well as a 'faces' graphic to represent mood.³⁶ The BRWP appears reliable and can be completed and interpreted quickly, though its ability to detect patterns of change is less studied.³⁶ Inclusion of depression scales and anxiety inventories in assessing wellness curricula may also be considered.¹¹ These assessments are compared in table 3. Unfortunately, there are no known validated assessment tools to evaluate wellness curricula themselves. Therefore, the existing data rely on assessments of individual residents in evaluating the impact of the curriculum.

DISCUSSION AND RECOMMENDATIONS

This narrative review contributes a summary of common themes across various specialty-specific residency programs' wellness initiatives to the current body of literature on this topic. We identify that successful wellness curricula include: (1) changes at the individual, program and institutional levels, (2) engagement of residents and faculty during curricular development and implementation, (3) inclusion of practical job-related competencies, (4) incorporation of multiple interventions and (5) the use of validated assessment tools to track the success of the program. These themes provide a general framework that could be useful to residency program leadership in the development of successful wellness initiatives.

Our recommendation is to begin wellness curricular development with a needs assessment; this enables programs, institutions and organisations to develop tailored initiatives. Ongoing assessment to gauge progress and guide further interventions is also important. A key next step in furthering our understanding of wellness curricula is to create a framework for the standardised assessment of wellness programming. Existing assessment methods, such as the MBI, leave room for improvement in their ability to compare outcomes on a larger, more meaningful scale. Assessments of organisational culture or morale may help to accomplish this. It is difficult to measure the effectiveness of a wellness curriculum or to characterise its impact on goals such as decreased resident burnout or improved patient care. A tool that gives investigators the ability to conduct multi-institution, multispecialty analyses would be more informative, and could guide future interventions more accurately.

Our findings have limitations. One challenge in creating this framework is that assessment of the core components of wellness curricula remains generalised and thematic. The needs of individual residents, residency programs, institutions and the graduate medical education community vary widely, so recommendations for specific, single interventions are unlikely to impact change. A multi-level and adaptable wellness curriculum is in the best interest of residency programs, their residents and the patients they serve. Another challenge in describing the components of successful wellness curricula is the lack of outcome data. The published literature is largely observational data about individual residency program experiences. Randomised controlled trials for resident wellness curricula are uncommon. We hypothesise

Table 3 Several burnout assessment tools are compared on question number, completion time, cost per assessment and ease of interpretation^{34 35 37}

Burnout assessment tools				
Tool	Question number	Time to complete	Cost per assessment	Ease of interpretation
Maslach burnout inventory	22	10 min	\$15	Variable
Copenhagen burnout inventory	19	10 min	Free	Easy
Brief resident wellness profile	7	5 min	Free	Easy

Review

that this is largely due to ethical issues that arise with the use of a control group in such investigations, especially considering the rising rate of physician suicide.

No one-size-fits-all roadmap exists for developing, implementing or assessing resident wellness programs. We instead envision a wellness ‘toolbox’ of curricular elements from which programs can select to best serve their residents’ unique needs. We intend for this review of wellness interventions to be used

Key references

1. Grow HM, McPhillips HA, Batra M. Understanding physician burnout. *Curr Probl Pediatr Adolesc Health Care* 2019;49:10065.
2. Yates SW. Physician Stress and Burnout. *Am J Med* 2020;133:160–4.
3. Elbay RY, Kurtulmus A, Arpacioğlu S, Karadere E. Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. *Psychiatry Res* 2020;1-5. 290:113130.
4. Dyrbye LN, West CP, Satele D, *et al.* Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Acad Med* 2014;89:443–51.
5. Accreditation Council for Graduate Medical Education. Common Program Requirements (Residency), 2020. Available: <https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRResidency2020.pdf>. Accessed 8 Jun 2020.

Multiple choice questions

1. The ideal wellness curriculum for graduate medical education programs is:
 - a. A universal protocol that can be used at each institution
 - b. Developed by hospital administrators
 - c. Identical for all specialties within the same hospital system
 - d. Tailored to the unique needs of each program
2. When evaluating wellness curricula, residents prefer lessons that:
 - a. Discourage group discussion
 - b. Focus on abstract wellness strategies
 - c. Include mostly didactic sessions
 - d. Relate to real-life competencies and skills
3. The authors of a program’s wellness curriculum should include:
 - a. Faculty
 - b. Hospital leadership
 - c. Residents
 - d. All of the above
4. In developing a new wellness curriculum, a reasonable first step is to:
 - a. Assume areas for improvement and begin planning
 - b. Create a needs-based assessment
 - c. Develop a randomised controlled trial to investigate wellness interventions
 - d. Omit plans for assessing progress
5. All of the following are validated assessment tools to evaluate wellness and burnout EXCEPT:
 - a. Brief Resident Wellness Profile (BRWP)
 - b. Copenhagen Burnout Inventory (CBI)
 - c. Maslach Burnout Inventory (MBI)
 - d. Sicily Exhaustion Survey (SES)

Current research questions

- ⇒ What strategies for wellness curricula are currently in use by the various specialties within graduate medical education?
- ⇒ What are the critical drivers of success behind effective wellness curricula?
- ⇒ What costs are associated with development and implementation of wellness curricula?

as a starting point for individuals, program leaders, institutions and organisations looking to develop and implement wellness curricula. We also hope this data is useful to the ACGME in evaluating best practices, validating assessment measures and providing opportunities for institutions to work together in meeting common program requirements. A new ACGME well-being website includes a collection of general wellness resources as well as an invitation for individuals, programs and institutions to submit their own well-being strategies.³⁷ The ACGME is uniquely positioned to collect data on wellness interventions, connect leaders from all programs and enable them to share experiences across disciplines. This collaboration could provide additional insights to create a collection of wellness interventions that all specialties can use to better serve their residents. We hope the ACGME will take the lead in evaluating the effectiveness of these strategies, and work towards an evidence-based well-being curriculum.

CONCLUSIONS

Existing data on wellness curricula embrace several shared thematic components. Because different residency programs and institutions have different wellness needs, a resource including general as well as specialty-specific wellness components is needed. In this narrative review, we identify several recommendations: use of a needs assessment; implementation of change at the individual, program and institutional level; engagement of stakeholders; inclusion of practical job-related competencies; and use of standardised, validated assessment tools to evaluate the curriculum. We also offer an evaluation of costs associated with wellness interventions. Development of wellness curricula remains in its infancy; this review aims to inform future wellness initiatives in postgraduate medical education. Additional work is needed to capture other successful wellness strategies and outcome data.

Contributors KK planned the study. LG and KK performed the literature review. EA, KK, LG reviewed the themes. KT reviewed costs and edited the paper.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Erin R Ahart <http://orcid.org/0000-0002-0285-7273>

REFERENCES

- 1 Grow HM, McPhillips HA, Batra M. Understanding physician burnout. *Curr Probl Pediatr Adolesc Health Care* 2019;49:100656.
- 2 Yates SW. Physician stress and burnout. *Am J Med* 2020;133:160–4.
- 3 Elbay RY, Kurtuluş A, Arpacioğlu S, et al. Depression, anxiety, stress levels of physicians and associated factors in Covid-19 pandemics. *Psychiatry Res* 2020;290:113130.
- 4 Dyrbye LN, West CP, Satele D, et al. Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Acad Med* 2014;89:443–51.
- 5 Spiotta AM, Fargen KM, Patel S, et al. Impact of a residency-integrated wellness program on resident mental health, sleepiness, and quality of life. *Neurosurgery* 2019;84:341–6.
- 6 Accreditation Council for Graduate Medical Education. Common program requirements (residency), 2022. Available: https://www.acgme.org/globalassets/pfassets/programrequirements/cprresidency_2022v3.pdf [Accessed 18 July 2022].
- 7 Carson SL, Perkins K, Reilly MR, et al. Pediatric Program Leadership's Contribution Toward Resident Wellness. *Acad Pediatr* 2018;18:550–5.
- 8 Saint Martin MC, DeChristopher PJ, Sweeney RP. A strategy for wellness in a pathology residency program: enhancing chances of success during an epidemic of burnout. *Acad Pathol* 2019;6:2374289519851233.
- 9 Chakravarti A, Raazi M, O'Brien J, et al. Anesthesiology resident wellness program at the University of Saskatchewan: curriculum content and delivery. *Can J Anaesth* 2017;64:199–210.
- 10 Wen LS, Baca JT, O'Malley P, et al. Implementation of small-group reflection rounds at an emergency medicine residency program. *CJEM* 2013;15:175–8.
- 11 Slavin S, Shoss M, Broom MA. A program to prevent burnout, depression, and anxiety in first-year pediatric residents. *Acad Pediatr* 2017;17:456–8.
- 12 Mari S, Meyen R, Kim B. Resident-led organizational initiatives to reduce burnout and improve wellness. *BMC Med Educ* 2019;19:1–10.
- 13 O'Brien DC, Carr MM. Current wellness practices among otolaryngology residencies. *Otolaryngol Head Neck Surg* 2018;159:258–65.
- 14 Runyan C, Savageau JA, Potts S, et al. Impact of a family medicine resident wellness curriculum: a feasibility study. *Med Educ Online* 2016;21:30648.
- 15 Buchholz AL, Henderson F, Lowe S, et al. Perspectives from a residency training program following the implementation of a wellness initiative. *World Neurosurg* 2018;119:e947–55.
- 16 Fargen KM, Spiotta AM, Turner RD, et al. Operation La Sierra: a novel wellness initiative for neurological surgery residents. *J Grad Med Educ* 2016;8:457–8.
- 17 Winkel AF, Tristan SB, Dow M, et al. A national curriculum to address professional fulfillment and burnout in OB-GYN residents. *J Grad Med Educ* 2020;12:461–8.
- 18 Accreditation Council for Graduate Medical Education. Improving physician well-being, restoring meaning in medicine. Available: <https://www.acgme.org/What-We-Do/Initiatives/Physician-Well-Being> [Accessed 18 Sep 2020].
- 19 Jennings ML, Slavin SJ. Resident wellness matters: optimizing resident education and wellness through the learning environment. *Acad Med* 2015;90:1246–50.
- 20 Penwell-Waines L, Runyan C, Kolobova I, et al. Making sense of family medicine resident wellness curricula: a Delphi study of content experts. *Fam Med* 2019;51:670–6.
- 21 Salles A, Liebert CA, Esquivel M, et al. Perceived value of a program to promote surgical resident well-being. *J Surg Educ* 2017;74:921–7.
- 22 Brainard AJ, Ziniel SI, Zuk J, et al. Evaluation of a formal wellness curriculum to reduce burnout in anesthesia residents: a pilot study. *J Educ Perioper Med* 2019;21:1–5.
- 23 Zdradzinski MJ, O'Shea J, Moran TP. A comprehensive residency wellness curriculum. *J Well* 2019;2:1–6.
- 24 Thomas LR, Nguyen R, Teherani A, et al. Designing well-being: using design thinking to engage residents in developing well-being interventions. *Acad Med* 2020;95:1038–42.
- 25 Eckleberry-Hunt J, Van Dyke A, Lick D, et al. Changing the conversation from burnout to wellness: physician well-being in residency training programs. *J Grad Med Educ* 2009;1:225–30.
- 26 Hart D, Paetow G, Zarzar R. Does implementation of a corporate wellness initiative improve burnout? *West J Emerg Med* 2019;20:138–44.
- 27 Ey S, Moffitt M, Kinzie JM, et al. Feasibility of a comprehensive wellness and suicide prevention program: a decade of caring for physicians in training and practice. *J Grad Med Educ* 2016;8:747–53.
- 28 Saadat H, Snow DL, Ottenheimer S, et al. Wellness program for anesthesiology residents: a randomized, controlled trial. *Acta Anaesthesiol Scand* 2012;56:1130–8.
- 29 Arnold J, Tango J, Walker I, et al. An evidence-based, longitudinal curriculum for resident physician wellness: the 2017 resident wellness consensus Summit. *West J Emerg Med* 2018;19:337–41.
- 30 Lefebvre D, Dong KA, Dance E, et al. Resident physician wellness curriculum: a study of efficacy and satisfaction. *Cureus* 2019;11:1–9.
- 31 Sharp M, Burkart KM. Trainee wellness: why it matters, and how to promote it. *Ann Am Thorac Soc* 2017;14:505–12.
- 32 Parsons M, Bailitz J, Chung AS, et al. Evidence-Based interventions that promote resident wellness from the Council of emergency residency directors. *West J Emerg Med* 2020;21:412–22.
- 33 Zaver F, Battaglioli N, Denq W, et al. Identifying gaps and launching resident wellness initiatives: the 2017 resident wellness consensus Summit. *West J Emerg Med* 2018;19:342–5.
- 34 Raj KS. Well-Being in residency: a systematic review. *J Grad Med Educ* 2016;8:674–84.
- 35 West CP, Dyrbye LN, Erwin PJ, et al. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *Lancet* 2016;388:2272–81.
- 36 Keim SM, Mays MZ, Williams JM, et al. Measuring wellness among resident physicians. *Med Teach* 2006;28:370–4.
- 37 Learn at ACGME. Wellbeing, 2022. Available: <https://dl.acgme.org/pages/well-being-tools-resources> [Accessed 15 Mar 2022].