Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Design and Evaluation of a Self-Paced Online Well-being Course for Graduate Medical Trainees: A PERMA-H Framework Approach

Dima Abdelmannan

dima.abdelmannan@dubaihealth.ae

Mohammed Bin Rashid University of Medicine and Health Sciences

Rasha Buhumaid

Mohammed Bin Rashid University of Medicine and Health Sciences

Hira Salman

Mohammed Bin Rashid University of Medicine and Health Sciences

Shaista Salman

Mohammed Bin Rashid University of Medicine and Health Sciences

Research Article

Keywords: Well-being, graduate medical education, burnout, program evaluation, PERMA

Posted Date: November 12th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-11366465/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

Burnout among graduate medical trainees is prevalent and associated with diminished empathy, medical errors, and career dissatisfaction. Existing well-being interventions are predominantly short, synchronous, and single-construct, with limited applicability in culturally diverse, non-Western training environments. No formally evaluated, multidimensional, self-paced well-being curriculum has been published in the Gulf Cooperation Council (GCC) region.

Objective

To describe the design and implementation of a self-paced, online well-being course for graduate medical trainees at Mohammed Bin Rashid University of Medicine and Health Sciences (MBRU) and Dubai Health, and to evaluate its impact on trainee well-being using a validated multidimensional instrument.

Methods

Between 2022 and 2023, a multidisciplinary team developed an eight-module, self-paced online course grounded in the PERMA-H framework (Positive Emotion, Engagement, Relationships, Meaning, Accomplishment, Negative Emotion, Health). Of 513 eligible trainees, 318 (62%) completed the course. All 318 completers responded to a five-item satisfaction survey (100% response rate). A subset of 64 trainees (20%) additionally opted into a voluntary pre/post well-being evaluation using the validated 23-item PERMA-Profiler (T1 pre-course; T2 post-course), constituting the matched cohort for quantitative analysis.

Results

All 318 completers responded to the satisfaction survey. Of these, 64 (20%) additionally completed both T1 and T2 PERMA-Profiler assessments as part of the voluntary evaluation component. Statistically significant improvements were observed across all ten PERMA-Profiler indicators, including all five core domains, overall well-being (+ 1.22, $p < 0.001$), and reductions in Negative Emotion (− 0.60, $p = 0.010$) and Loneliness (− 0.78, $p = 0.026$). Effect sizes were moderate to large (Positive Emotion $d = 0.65$; Engagement $d = 0.70$). On the satisfaction survey, 92% reported improved accessibility and 88% reported feeling better prepared to manage stress.

Conclusions

A structured, self-paced, culturally adapted well-being course produced significant improvements across multiple PERMA-H domains among GME trainees in a multicultural setting. This course offers a feasible, scalable, and replicable model for embedding trainee well-being into GME curricula, particularly in settings where synchronous participation is limited. Feasibility, acceptability, and attitudinal impact are established; longitudinal evaluation at higher Kirkpatrick levels is the next priority.

Introduction

Medicine has long been organized around an ethic of service to others. Altruism, responsiveness to patients' needs, and the willingness to place professional obligations above self-interest remain deeply embedded within conceptions of medical professionalism (1, 2). The Physician Charter, for example, places the primacy of patient welfare at the centre of professional responsibility and identifies altruism as fundamental to the physician - patient relationship (3). Yet the same professional inheritance can create tension between caring for others and caring for oneself (4). Traditional constructions of professionalism have frequently valorized endurance and self-sacrifice, while contemporary accounts increasingly argue that physician well-being is not antithetical to professionalism but necessary for its sustainable enactment (5). The Charter on Physician Well-being similarly positions physician well-being as a shared responsibility of individual physicians, organizations, health systems, and the profession, rather than an individual concern alone (6).

This repositioning is particularly visible within graduate medical education (GME), where well-being is increasingly being incorporated into expectations of professional development and the clinical learning environment (7). Calls for action within GME have similarly moved responsibility beyond the individual trainee, locating well-being across individual, programmatic, institutional, and wider regulatory levels (7). The Accreditation Council for Graduate Medical Education (ACGME) identifies psychological, emotional, and physical well-being as important to the development of competent and caring physicians and describes self-care as an aspect of professionalism that must be learned, modelled, and nurtured during residency (8). Importantly, these responsibilities are not assigned to trainees alone: programs and sponsoring institutions are expected to address scheduling, work intensity, opportunities for personal health care, professional relationships, meaning in work, and other features of the learning environment (8). This reframing moves well-being beyond remediation of distress and positions it as something that can legitimately be recognized, discussed, and supported within postgraduate medical education.

Nevertheless, bringing well-being into the formal curriculum does not ensure that its messages will be reproduced in clinical practice. Meeks and colleagues (9) describe this as the “mixed messaging” of residency training: trainees may encounter formal wellness initiatives while simultaneously working in environments in which self-sacrifice is rewarded, time for self-care is constrained, and attending to personal needs can appear inconsistent with professional commitment. Existing well-being interventions in graduate medical education (GME) therefore operate within a much larger ecology of work, learning, professional norms, relationships, and personal life. Systematic reviews of resident well-being (10–12) identify associations with autonomy, competence, social relatedness, sleep, and time away from work,

while reviews of resident wellness curricula show considerable heterogeneity in intervention content and evaluation and conclude that the evidence for specific curricular approaches remains limited. This tension is intensified when the educational needs of residents compete with their contribution to the clinical workforce, prompting calls for residency systems to prioritize education and well-being rather than allowing service requirements to dominate training (13). Education may therefore form part of a response to resident well-being, but it cannot substitute for organizational conditions that enable the behaviours and values being taught.

This challenge assumes additional significance within academic health systems, where clinical care, education, and research coexist as interconnected but sometimes competing missions. Research examining academic health centres (14) describes persistent difficulties in aligning these tripartite missions and the economic, organizational, and cultural pressures that can pull them apart. For developing academic health systems, however, institutional formation also creates an opportunity: priorities can be made explicit while educational structures, practices, and expectations are still evolving (13). Incorporating well-being into GME (8) can therefore serve an educational purpose while also signalling that attention to trainee well-being belongs within, rather than outside, the professional and institutional architecture of training. Such curricular signalling should not be mistaken for structural change (15), but it can establish a legitimate space in which well-being can be named, understood, and discussed. Contemporary systems approaches to GME well-being reinforce this distinction, cautioning against locating responsibility principally within individual resilience and instead situating trainee well-being within interacting organizational, operational, policy, and wider health-system conditions (15).

How well-being is conceptualized within such education consequently matters. Resident wellness interventions have frequently focused on coping, stress management, resilience, mindfulness, physical and mental health, while evaluations have commonly employed burnout measures and participant satisfaction (11, 12). Yet well-being is broader than the absence of burnout or distress. Raj's systematic review of resident well-being (10), for example, identified autonomy, competence, social relatedness, sleep, and time away from work as relevant to resident well-being, illustrating the multidimensional nature of the construct. More recent systems-oriented conceptualizations similarly caution against treating burnout or psychological distress as sufficient proxies for well-being, emphasizing its multidimensional and contextually embedded nature (15). Longitudinal, multimodal, asynchronous programs that address the full spectrum of well-being remain sparse, and reviews continue to call for clearer conceptualization of well-being and more rigorous evaluation of interventions intended to promote it (10–12).

Positive psychology provides one framework through which this broader construct can be made educationally and empirically tractable. Seligman's PERMA model (16) conceptualizes flourishing through five interrelated domains: Positive Emotion, Engagement, Relationships, Meaning, and Accomplishment. Butler and Kern (17) subsequently developed the PERMA-Profiler, a validated multidimensional measure assessing these five domains alongside negative emotion, loneliness, physical health, and overall well-being. Rather than defining wellness principally through the reduction of

pathology, PERMA therefore provides a structured vocabulary for attending to positive as well as negative dimensions of functioning. This may be particularly relevant in medical training, where flourishing has increasingly been examined as distinct from merely avoiding burnout and where recent work has used PERMA to understand physician and resident well-being within clinical learning environments (18).

The educational value of such a framework may extend beyond measurement. Well-being is an expansive and potentially abstract construct; organizing it into recognizable domains can provide trainees with a cognitive scaffold and shared vocabulary through which different dimensions of their own well-being can be recognized and discussed (8, 10). Education alone cannot establish whether such language translates into changed attitudes or behaviours, nor can it overcome working conditions that contradict the messages being taught (9). It can, however, make well-being an explicit object of learning rather than leaving trainees to infer its meaning and professional legitimacy from the informal curriculum. In this sense, curricular inclusion may provide a vocabulary for well-being and signal its legitimacy without assuming that knowledge itself is sufficient to produce sustained change. This distinction is important in GME, where formal teaching continually interacts with role modelling, workplace expectations, supervisory relationships, schedules, workload, and institutional policy (8). Sustaining what is introduced educationally therefore requires congruence between what trainees are taught and what their clinical environments subsequently model, enable, and support (9, 15).

Against this background, we developed a self-paced, asynchronous well-being course grounded in Seligman's PERMA model, using a multidimensional approach encompassing positive emotion, engagement, relationships, meaning, accomplishment, negative emotion, and health. This study describes the course design, implementation, and initial evaluation, examining changes in trainee well-being using the validated PERMA-Profiler. Rather than testing whether education can resolve the wider determinants of resident well-being, the study evaluates the feasibility, acceptability, and pre/post well-being outcomes of embedding structured well-being education within GME in a developing academic health system.

Methods

Setting and Participants

The course was developed and implemented at MBRU and Dubai Health - a developing academic health system spanning multiple specialties across primary, secondary, and tertiary settings in Dubai - between 2022 and 2023. All GME trainees (n = 513) registered during the cohort period were eligible. Trainees were notified via an official GME office invitation email with a direct enrollment link; reminder emails were sent throughout the two-month participation window.

Course Design and Development

A multidisciplinary development committee, chaired by the Director of Mental Health at Dubai Health and including experts in psychiatry, psychology, nutrition, physical therapy, and medical education, led an 18-month iterative development process (2022–2023). Development included: a desk-based evidence synthesis[2,9,10,11]; focus groups with interns, residents, fellows, and faculty to identify stressors and learning format preferences; benchmarking against established GME wellness programs[3,9,10,11]; and expert consultation with multiple revision cycles before pilot testing with 15 trainees (multiple disciplines, PGY-1 through PGY-3, diverse nationalities).

Course content was structured using Knowles, Holton, and Swanson's[12] principles of adult education and systematically aligned to the PERMA-H domains (Supplementary Appendix C, Table S1). Cultural adaptation - essential given the UAE's multicultural trainee population - was deliberate: modules addressed both collectivist frameworks (communal belonging, family relationships) and individualist frameworks (personal autonomy, self-development), with UAE-specific clinical scenarios and inclusive reflective exercises.[5,6]

The finalized course - titled *Compassionate and Resilient Trainee: Strategies for Thriving in GME Programs* - comprised eight thematic modules (approximately 814 minutes; Table 1), delivered through the institutional learning management system (MBRU Learn) as a fully self-paced, asynchronous program over two months. Each module included video lectures, audio podcasts, reflective exercises, interactive activities, and a knowledge-check quiz (quiz completion = module completion criterion). Two optional live checkpoint sessions were offered at weeks 4 and 8. A certificate was issued upon completion of all eight modules.

Table 1
Course Module Overview

Module	Title	Duration	Primary PERMA-H Domains
1	Mindful Practices and Resilience	~ 2 hrs	P, N
2	Health and Wellness	~ 2 hrs	H, N
3	Emotional Intelligence and Professional Development	~ 1 hr	P, E, A
4	Managing Life's Challenges	~ 1 hr	N, M
5	Interpersonal Skills and Effective Relationships	~ 4 hrs	R, P, M
6	Community Engagement and Social Responsibility	~ 1 hr	M, R
7	Managing Stress and Preventing Burnout	~ 1.5 hrs	N, P, A, E
8	Digital Distractions and Cyberbullying	~ 1.5 hrs	N, E, P

P=Positive Emotion; E=Engagement; R=Relationships; M=Meaning; A=Accomplishment; N=Negative Emotion; H=Health

Outcomes Measured

The primary outcome was well-being assessed using the PERMA-Profiler[8], a validated 23-item self-report instrument measuring seven domains on an 11-point Likert scale (0 = never/not at all to 10 = always/completely), with demonstrated internal consistency (Cronbach's α = 0.70–0.93) and validity across healthcare and educational populations.[8,13] Trainees who consented were prompted to complete the PERMA-Profiler before accessing course content (T1) and after completion of Module 8 and the satisfaction survey (T2). To enable paired matching while preserving anonymity, participants used their institutional email address as a linking identifier; a researcher independent of the study team then generated anonymous numeric codes and replaced all identifying information before transferring the dataset for analysis.

A secondary five-item satisfaction survey (5-point Likert: 1 = strongly disagree to 5 = strongly agree; open-ended comment field) assessed course accessibility, relevance, and practical utility. This was administered electronically to all 318 course completers upon completion.

Analysis

Paired t-tests examined pre/post PERMA-Profiler changes. Effect sizes were calculated using Cohen's d. Pearson correlation coefficients were computed between T1 and T2 scores. Satisfaction survey open-ended responses were summarized descriptively. All analyses used SPSS; $p < 0.05$ was considered significant.

Ethical Considerations

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Dubai Health Institutional Review Board (Dubai Health IRB; Approval Number: 2023-75). Independent review board approval was sought because the study involved graduate medical trainees across multiple Dubai Health facilities, requiring centralized ethical oversight. Participation in the evaluation was voluntary. Electronic informed consent was obtained prior to T1 completion. Participants were informed that withdrawal at any stage would not affect their training. All responses were de-identified prior to analysis.

Participants

Following institutional invitation, 318 of 513 eligible trainees (62%) completed the course within the two-month window. All 318 completers responded to the satisfaction survey (100% response rate). Of these,

64 (20%) additionally opted into the voluntary pre/post well-being evaluation, completing both T1 and T2 PERMA-Profiler assessments and constituting the matched cohort for quantitative analysis. Within the matched cohort, most participants were female (71.9%) and aged 23–30 years (78.1%); training roles included residents (53.1%), interns (32.8%), with the remainder comprising fellows and faculty. The participation flow is presented in Fig. 1.

PERMA-Profiler Outcomes (n=64)

Statistically significant improvements were observed across all ten PERMA-Profiler indicators (Table 2). Baseline overall well-being was 6.85 (SD=1.26), rising to 8.07 post-course (+1.22, 95% CI 0.91–1.53, p<0.001). The largest domain gains were Positive Emotion (+1.42, p<0.001), Relationships (+1.38, p<0.001), and Meaning (+1.34, p<0.001). Effect sizes were moderate to large across all domains, with Engagement (d=0.70) and Positive Emotion (d=0.65) showing the greatest magnitude. Reductions in Negative Emotion (−0.60, p=0.010) and Loneliness (−0.78, p=0.026) were also significant. Pearson correlations between T1 and T2 scores were low to moderate (r=0.07–0.38), suggesting improvements were not primarily attributable to pre-existing individual differences in well-being.

Table 2. Pre- and Post-course PERMA-Profiler Scores (n=64)

Domain	Pre Mean (SD)	Post Mean (SD)	Difference (SD)	95% CI	p	d
Happiness	6.81 (2.10)	8.00 (1.27)	1.19 (2.37)	0.60–1.78	<.001	0.57
Positive Emotion	6.43 (1.74)	7.85 (1.05)	1.42 (1.93)	0.93–1.90	<.001	0.65
Engagement	6.94 (1.13)	7.82 (1.04)	0.88 (1.38)	0.53–1.22	<.001	0.70
Relationships	6.67 (1.88)	8.05 (1.15)	1.38 (1.79)	0.94–1.83	<.001	0.77
Meaning	7.16 (1.49)	8.50 (1.03)	1.34 (1.68)	0.91–1.75	<.001	0.80
Accomplishment	7.08 (1.21)	8.17 (0.93)	1.09 (1.29)	0.76–1.41	<.001	0.85
Overall PERMA	6.85 (1.26)	8.07 (0.85)	1.22 (1.25)	0.91–1.53	<.001	0.98
Negative Emotion	5.59 (1.57)	4.99 (1.16)	-0.60 (1.82)	-1.06–-0.15	0.010	0.33
Health	6.37 (2.18)	7.71 (1.56)	1.34 (1.88)	0.63–2.07	<.001	0.71
Loneliness	4.84 (2.72)	4.06 (1.95)	-0.78 (2.73)	-1.46–-0.10	0.026	0.29

Satisfaction Survey (n=318)

Most trainees (92%) reported that the self-paced format improved accessibility; 88% reported feeling better prepared to manage stress. Open-ended responses highlighted flexibility, practicality, and cultural

relevance. Suggestions included more interactive features and additional real-time engagement opportunities.

Discussion

This study demonstrates that well-being can be deliberately brought into GME as structured educational content and delivered within a demanding GME environment of residency training. Of 513 eligible trainees, 318 (62%) completed an approximately 13.5-hour self-paced course over two months; 92% of completers reported that the asynchronous format improved accessibility and 88% felt better prepared to manage stress. Resident wellness curricula are not new, but the field remains heterogeneous. Eskander and colleagues' systematic review (11) identified interventions ranging from stress management and meditation to resilience training, mentorship and formal curricula, yet 13 of 18 studies were rated as low or very low quality and only six interventions were explicitly linked to an educational theory. Ahart and colleagues (12) similarly identified 18 GME wellness curricula incorporating physical and mental health components and emphasized the importance of leadership support and resident involvement. Against this landscape, the contribution of our study lies not in “introducing” wellness into residency, but in making a broad and potentially translating a broad construct into structured educational content through a structured, multidimensional and accessible curriculum within a developing academic health system.

What shifted following the course was not simply distress but the broader landscape of flourishing that PERMA was designed to make visible. Among the 64 trainees with matched pre/post data, overall well-being increased from 6.85 to 8.07, with statistically significant improvement across every measured indicator. The largest absolute increases occurred in Positive Emotion (+ 1.42), Relationships (+ 1.38), Meaning (+ 1.34) and Health (+ 1.34), while Engagement and Accomplishment also improved significantly. This multidimensionality highlights an important measurement paradox within the resident wellness literature: studies seeking to improve “well-being” have frequently operationalized success through reduction of its negative correlates, particularly burnout, rather than through direct measurement of well-being itself. In Eskander et al.'s review (11), 27 different instruments were used across 18 studies, with the Maslach Burnout Inventory (MBI) used in 11 (61%). The authors explicitly noted that the MBI does not provide a complete representation of resident well-being. Ahart et al. (12) subsequently found that the MBI and resident satisfaction surveys remained the most frequently used evaluation approaches. Thus, while the field increasingly speaks the language of wellness, its measurement has often remained anchored in burnout.

Our study separates these constructs by measuring well-being directly through the PERMA-Profiler: positive emotion, engagement, relationships, meaning and accomplishment alongside negative emotion, loneliness, physical health and overall well-being (17). Direct comparison with PERMA-based GME interventions remains difficult because such studies are relatively uncommon. Previous multisite work has used PERMA alongside the MBI to distinguish positive well-being from burnout among internal medicine residents, and PERMA has subsequently been used as an outcome in resident coaching and,

more recently, to examine flourishing within surgical learning environments (18, 19). A systematic review of positive-psychology interventions (19) among physicians, residents and fellows found that almost none were prospectively guided by an explicit conceptual framework and none used PERMA prospectively as their conceptual model, although several interventions retrospectively mapped onto PERMA domains. This distinction is important: PERMA offers a vocabulary through which a diffuse construct can be organized into recognizable domains. Our quantitative study did not, however, measure whether trainees acquired this vocabulary or whether their attitudes toward self-care changed; these remain plausible educational functions rather than demonstrated mechanisms of the observed changes.

Contextual benchmarking provides some perspective but should be interpreted cautiously. Butler and Kern's (17) PERMA-Profiler validation provides population reference data against which the pre-course overall well-being score of 6.85 can be viewed, while Vakhariya and Patil (20) reported broadly comparable PERMA + and health scores among undergraduate medical students in India. Differences in population, educational stage and context preclude interpreting our cohort as definitively “below normal” at baseline or the post-course score of 8.07 as “above normal.” The more defensible finding is internal to this study: among trainees providing matched data, multidimensional well-being scores were higher following the intervention.

What education can and cannot do

The pattern of findings also cautions against expecting too much from education alone. Negative Emotion (− 0.60; d = 0.33) and Loneliness (− 0.78; d = 0.29) improved significantly, but their effect sizes were smaller than those observed for several positive PERMA dimensions. These differences cannot establish why particular domains were more or less responsive, nor demonstrate that negative emotion or loneliness are intrinsically more structural constructs. They do, however, connect with a broader problem in GME. Meeks and colleagues (9) describe the “mixed messages” of residency, whereby programs may formally promote wellness while clinical cultures continue to reward self-sacrifice and constrain opportunities for self-care. The hidden curriculum similarly reminds us that professional attitudes and behaviours are shaped through role modelling, workplace practices, institutional priorities, and what clinical environments reward or tolerate (21–23). Bringing well-being into the formal curriculum can therefore make an implicit issue explicit and signal that it constitutes legitimate professional knowledge; it cannot, by itself, overcome contradictory workplace practices or demonstrate attitudinal transformation.

The longitudinal, modular design of the present course may nevertheless be relevant. Rather than encountering well-being through a single workshop, trainees returned to related concepts across eight modules over two months, with optional live checkpoint sessions providing additional opportunities for engagement. This repeated exposure distinguishes the course from an isolated wellness event, although the present design cannot establish whether repetition strengthened learning, changed attitudes, or countered the hidden curriculum.

More fundamentally, knowledge about well-being should not be equated with well-being itself. Published literature (10, 15) has associated resident well-being with autonomy, competence, social relatedness, sleep and time away from work, while contemporary systems-oriented approaches locate GME well-being within interacting influences of workload, schedules, staffing, administrative demands, organizational culture and policy. Work hours have also been associated with depressive symptoms among first-year physicians (24), while organization-directed interventions addressing schedules, workflows, teamwork and administrative processes demonstrate the importance of changing the environment alongside the individual (25). A curriculum may therefore introduce concepts and language, while role modelling, reflective conversations, psychologically safe supervision, accessible support services, workable schedules, supportive policies and attention to the clinical learning environment may help reinforce these messages in practice. Locating the solution exclusively within what residents know or how resiliently they respond risks individualizing a problem that is simultaneously personal, organizational, social and systemic (15).

From curriculum to system

The value of this intervention may therefore lie partly in what its curricular presence signals. By placing well-being inside the educational architecture of GME rather than positioning it as extracurricular self-help, an institution communicates that attention to one's own functioning belongs within professional development. This is consistent with contemporary GME standards and calls for action that position programs, sponsoring institutions and health systems as sharing responsibility for resident well-being (7, 8). Curricular legitimization, however, is a beginning rather than an endpoint. Formal teaching can name well-being, provide a multidimensional framework through which it can be recognized, and create opportunities to discuss it; whether these ideas become sustained professional practices depends on alignment with role models, supervisory relationships, working conditions, policies and institutional structures.

This distinction is particularly relevant within a developing academic health system, where clinical service, education and research are being assembled as interconnected institutional missions (14). Incorporating well-being within the educational architecture offers one opportunity to make it visible as these systems and practices evolve. The present course represents one curricular component rather than a comprehensive well-being strategy; its findings suggest feasibility while recognizing that responsibility for trainee well-being necessarily extends beyond the curriculum.

The present findings therefore support a deliberately modest conclusion: trainees engaged with the well-being curriculum, and those providing matched data demonstrated multidimensional improvements following it. They do not establish that the course changed professional attitudes, overcame the hidden curriculum, or produced durable behavioural or organizational change. These remain questions for longitudinal evaluation rather than conclusions from the present study.

Limitations

These findings should be interpreted within the limitations of a single-group pre/post evaluation. Although 318 trainees completed the course, only 64 (20% of completers) provided matched T1 and T2 PERMA-Profiler data. This voluntary analytic cohort may therefore represent trainees who were more motivated, more engaged with well-being, or more willing to complete repeated assessments, introducing selection and response bias and limiting generalizability to the wider trainee population. The absence of a concurrent comparison group is particularly important. One-group pre/post designs cannot distinguish intervention-associated change from alternative explanations including history, maturation, repeated-testing effects and regression to the mean; consequently, the observed improvements should not be interpreted as causal effects of the course.

Participation itself may also have generated reactivity or a Hawthorne-type effect where trainees knew they were participating in a well-being initiative and completing repeated well-being measurements, which may have heightened attention to their own well-being or influenced subsequent self-report independently of specific course content. Outcomes were measured using a self-report instrument administered before and immediately after the intervention, creating additional potential for response expectancy, social desirability and common-method effects. The study did not measure behavioral change, use of support services, changes in clinical working conditions, professional attitudes, role-modelling or organizational culture; nor can it determine whether the observed score changes were sustained beyond the immediate post-course period. Accordingly, interpretations concerning attitudinal change, well-being literacy, institutional signalling or interaction with the hidden curriculum should be regarded as theoretically informed implications rather than measured outcomes. Controlled longitudinal studies incorporating later follow-up points, broader participation, objective or behavioural indicators and measures of the clinical learning environment are required to establish durability, mechanisms and the contribution of educational versus organizational factors.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the principles of the Declaration of Helsinki. Ethical approval was obtained from the Dubai Health Institutional Review Board (Dubai Health IRB; Approval Number: 2023-75). Independent review board approval was sought because the study involved graduate medical trainees across multiple Dubai Health facilities, requiring centralized ethical oversight. Participation was voluntary and electronic informed consent was obtained from all participants prior to data collection. Participants were informed that withdrawal at any stage would not affect their training.

Consent for publication

Not applicable.

Availability of data and materials

The datasets generated and analyzed during the current study are not publicly available due to participant confidentiality obligations under the Dubai Health Institutional Review Board approval (Approval Number: 2023-75), but are available from the corresponding author upon reasonable request.

Competing interests

The authors declare no competing interests.

Funding

The authors report this research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' contributions

D.A. was responsible for conceptualization, methodology, investigation, formal analysis, writing the original draft, supervision, and project administration. S.S. contributed to writing, review, and editing, and provided critical revision of the manuscript for important intellectual content. H.S. contributed to writing, review, and editing, and data curation. R.B. contributed to writing, review, and editing, and investigation. All authors reviewed and approved the final manuscript.

Acknowledgements

The authors wish to thank Dr. Marwan Zidan for statistical analysis support.

Declaration of generative AI use

Artificial intelligence tools (Claude, Anthropic) were used to assist with drafting and structural editing of this manuscript. All content was reviewed, verified, and approved by the authors. AI tools were not used in the collection, analysis, or interpretation of data, nor in the generation of figures or statistical outputs.

References

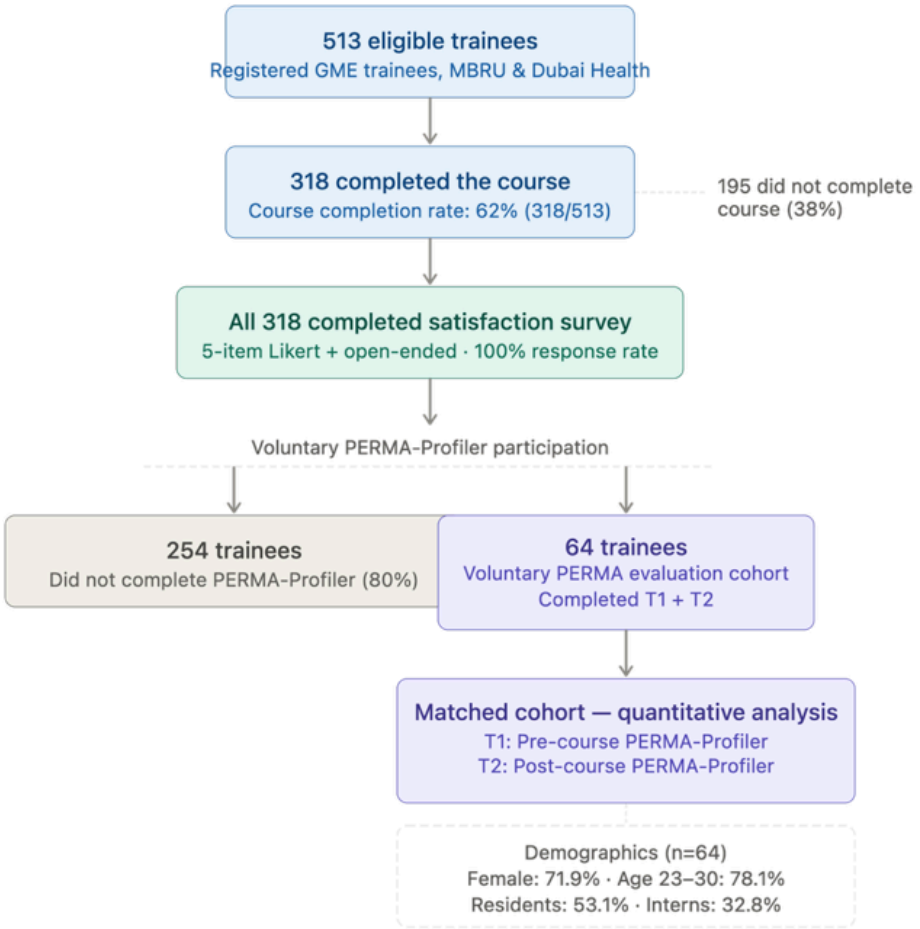
1. Downie R. Supererogation and altruism: a comment. Journal of Medical Ethics. 2002;28(2):75-6.
2. Bishop JP, Rees CE. Hero or has-been: is there a future for altruism in medical education? Advances in Health Sciences Education. 2007;12(3):391-9.
3. Foundation A, Foundation A-A. Medical professionalism in the new millennium: A physician charter. Obstetrics and gynecology. 2002;100(1):170-2.
4. Lancet T. Medical professionalism and physician wellbeing. Lancet (London, England). 2021;398(10303):817.
5. Council GM. The New Doctor: Recommendations on General Clinical Training Made Under Section 5 of the Medical Act 1983: General Medical Council; 1997.
6. Thomas LR, Ripp JA, West CP. Charter on physician well-being. Jama. 2018;319(15):1541-2.

7. Ripp JA, Privitera MR, West CP, Leiter R, Logio L, Shapiro J, et al. Well-being in graduate medical education: a call for action. Academic Medicine. 2017;92(7):914-7.
8. Education ACfGM. Summary of Proposed Changes to ACGME Common Program Requirements: Section VI. ACGME https://www. acgme. org/programs-and-institutions/programs/common …; 2025.
9. Meeks LM, Ramsey J, Lyons M, Spencer AL, Lee WW. Wellness and work: mixed messages in residency training. Journal of general internal medicine. 2019;34(7):1352-5.
10. Raj KS. Well-being in residency: a systematic review. Journal of graduate medical education. 2016;8(5):674-84.
11. Eskander J, Rajaguru PP, Greenberg PB. Evaluating wellness interventions for resident physicians: a systematic review. Journal of graduate medical education. 2021;13(1):58-69.
12. Ahart ER, Gilmer L, Tenpenny K, Krase K. Improving resident well-being: a narrative review of wellness curricula. Postgraduate medical journal. 2023;99(1173):679-86.
13. Wolpaw JT. It is time to prioritize education and well-being over workforce needs in residency training. Academic Medicine. 2019;94(11):1640-2.
14. Gonzalo JD, Dekhtyar M, Caverzagie KJ, Grant BK, Herrine SK, Nussbaum AM, et al. The triple helix of clinical, research, and education missions in academic health centers: A qualitative study of diverse stakeholder perspectives. Learning Health Systems. 2021;5(4):e10250.
15. Adibe B, Brown L, Goulder A, Lee E, Owen L, Roberts W, et al. A systems approach to improving well-being in graduate medical education. Academic Medicine. 2025;100(8):884-90.
16. Seligman M, Flourish P. A visionary new understanding of happiness and well-being. New York. 2011;2025(25):119.
17. Butler J, Kern ML. The PERMA-Profiler: A brief multidimensional measure of flourishing. International journal of wellbeing. 2016;6(3).
18. Stanulis RN, Pestenariu J, Zhou G, Day E, Kavuturu S. Resident flourishing in the surgical learning environment: a mixed methods study. Journal of Surgical Research. 2025;313:363-71.
19. Bazargan-Hejazi S, Shirazi A, Wang A, Shlobin NA, Karunungan K, Shulman J, et al. Contribution of a positive psychology-based conceptual framework in reducing physician burnout and improving well-being: a systematic review. BMC medical education. 2021;21(1):593.
20. Vakhariya MR, Patil SS. Assessment of wellbeing of undergraduate students using PERMA+ model: A brief report from Western Maharashtra, India. Journal of Education and Health Promotion. 2025;14:131.
21. Parra Larrotta S, Hernández Rincón EH, Niño Correa D, Jaimes Peñuela CL, Romero Tapia AE. Effects of the hidden curriculum in medical education: scoping review. JMIR medical education. 2025;11:e68481.
22. Ong EK, Govindasamy R, Sim WS, Krishna LKR. The influence of the hidden curriculum on the risk of burnout in junior doctors in a palliative medicine rotation–a qualitative exploratory study. BMC

Palliative Care. 2025;24(1):40.

23. Do V, Lewis M, Li H. Wellbeing vs competency? Debunking the false dichotomy in medical education. Academic Medicine. 2026;101(4):370-4.
24. Fang Y, Lodi S, Hughes TM, Frank E, Sen S, Bohnert AS. Work hours and depression in US first-year physicians. New England Journal of Medicine. 2022;387(16):1522-4.
25. DeChant MPF, Acs MA, Rhee MKB, Boulanger MTS, Snowdon PJL, Tutty PMA, et al. Effect of organization-directed workplace interventions on physician burnout: a systematic review. Mayo Clinic Proceedings: Innovations, Quality & Outcomes. 2019;3(4):384-408.

Figures



MA-Profiler participation voluntary. GME=graduate medical education; MBRU=Mohammed Bin Rashid University of Medicine and Health Sciences.

Figure 1

Trainee Participation and Evaluation Flow. Participant flow from 513 eligible trainees through course enrollment and completion (n=318; 62%), satisfaction survey completion (n=318; 100% response rate), and voluntary PERMA-Profiler matched cohort (n=64; 20% of completers). GME=graduate medical education; MBRU=Mohammed Bin Rashid University of Medicine and Health Sciences; PERMA-

H=Positive Emotion, Engagement, Relationships, Meaning, Accomplishment, Negative Emotion, Health; T1=pre-course assessment; T2=post-course assessment.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- BMCSupplementaryMaterial.docx