Additional file 1 – Data extraction table

First Author	Year	Country	Participants	Research Aim, Question, or Objective	Study Design (Intervention)	Description of the Intervention:	Type of Intervention	Duration of Intervention	Outcome (Significant Well-being Findings)	Conclusions	Key Insights
Riley et al., [5]	2024	USA	Junior Faculty Development Program (JFDP) participants across 3 cohorts (fall n = 84; spring n = 75; eligible n = 88).	Quantify change in burnout during JFDP and explore sources of well-being/burnout.	Sequential explanatory mixed methods: pre–post surveys (CBI; QoL [Quality of Life]; job satisfaction; work–home conflict) + semi-structured interviews.	9-month Junior Faculty Development Program (weekly 2–3 h sessions, September–May) including training on research, teaching, professional identity, resilience, career planning, and leadership. Mentorship provided by senior faculty outside participant's department. Deliverables included scholarly projects, poster presentation, and oral presentation. Two dedicated well-being workshops were held annually (fall, spring).	Multilevel (individual skills + peer/mentorship + institutional supports).	~9 months (Sep–May)	Burnout increased (especially in client/learner domain), and QoL decreased. Other domains (job satisfaction, WHC) remained largely unchanged. Despite these challenges, participants also reported professional growth, networking benefits, and institutional support.	The JFDP, although fostering skill building and networking, was paradoxically associated with increased burnout and decreased QoL. Faculty development programs should integrate well-being considerations into their design and workload expectations.	Faculty development can paradoxically increase stress if workload is not balanced with protected time. Networking, mentorship, and skill building are valued but often insufficient to offset increased demands. COVID-19 exacerbated workload and burnout among faculty members. Structural program adjustments such as later start times, extended project timelines, mentor training, and hybrid options were implemented to mitigate these effects.
Bhat et al., [18]	2024	USA	Academic acute care surgeons/fellows (n = 15) (3 cohorts).	To evaluate the feasibility and effectiveness of a Positive Intelligence (PQ) mental fitness training program for academic surgeons, assessing impacts on PQ scores, wellness, sleep, and teaching evaluations.	Prospective single-institution mixed-methods pilot (nonrandomized); pre–post surveys + post-program focus group.	Participants completed a 6-week mental fitness curriculum on the basis of the Positive Intelligence (PQ) framework. It included: weekly group meetings with a certified PQ coach, app-based daily mental fitness exercises and journaling, access to online resources (videos, guided practices).	Peer/group-based (coach-facilitated pods) with individual app practice.	6 weeks	PQ scores significantly increased (59 → 65, p = 0.004). No statistically significant improvements in wellness, sleep, or teaching evaluations were found. High-engagement users reported more perceived benefits than low users.	Although a structured mental-fitness program improved mental fitness (PQ) and created shared language/connectedness, it did not produce measurable changes in sleep, overall well-being, or teaching scores in this small pilot.	PQ-based mental fitness interventions may enhance resilience and perceived coping in high-stress academic surgery environments. Integrating digital tools and peer-supported coaching may offer scalable strategies for faculty well-being programs. Larger, controlled studies are warranted to evaluate broader and sustained impacts.
Loiselle et al., [19]	2023	USA	Academic physicians (n = 40) (15 specialties, medical school + VA hospital).	To evaluate the effectiveness of the Transcendental Meditation (TM) technique in reducing burnout, depression stress, insomnia, and resilience among academic physicians.	Mixed-methods randomized controlled trial (RCT), with both quantitative (validated scales) and qualitative (semi-structured interviews) data collection.	Transcendental Meditation (TM) training 5 instructional sessions (60 min each) + daily TM practice (20 min, twice a day). Four follow-up group sessions over 4 months.	Individual-level intervention. Mindfulness-based intervention (Transcendental Meditation).	4 months	TM led to significant reductions in burnout (notably emotional exhaustion ↓ and personal accomplishment ↑) and depression scores. Stress, resilience, and insomnia showed no between-group significance but trends of within-group improvement in the TM arm. Qualitative findings highlighted improved calmness, sleep, interpersonal relationships, and energy.	TM practice is a promising intervention for academic physicians experiencing burnout and depression. It supports emotional well-being and resilience, although larger studies are warranted for broader generalization.	TM was well accepted by academic physicians and integrated into their routines. Participants reported improved mental clarity, emotional balance, and resilience. Even once-daily practice yielded benefits, although twice-daily practice was ideal. Qualitative narratives strongly enriched understanding of quantitative gains.

Gold et al., [20]	2023	USA	Health care workers in a Family Medicine dept (admin staff, clinical staff, faculty/trainees; 87% female) (n = 223).	To assess whether a digital gratitude-based intervention ("Three Good Things") improves well-being (positive affect, depression, gratitude, and life satisfaction).	RCT with delayed-intervention control; online surveys at baseline, 1, 3 mos (control also at 4 & 6 mos)	Conducted over three weeks, participants received text message prompts three times per week (Monday, Wednesday, Friday) to reflect on and record three positive events from the day and their role in those events. Participants used a Qualtrics link to submit their reflections. The study compared an immediate intervention group vs. a delayed intervention control group.	Individual-level, digitally delivered positive psychology intervention focused on gratitude.	3 weeks	Significant well-being Findings): Only positive affect showed a statistically significant short-term improvement (p = .03) in the intervention group. No long-term effects were detected at 3 months. Depression scores improved modestly but not significantly.	The 3GT intervention created small, short-term boosts in positive affect. No sustained improvements in well-being were observed at 3 months. Despite these limitations, the intervention was well accepted, had high retention, and is low cost and scalable.	"Dose matters" for gratitude PPIs; 3×/week may be insufficient. Older age among the participants was associated with slightly better affect/gratitude and lower depression. Clinical staff reported lower gratitude/affect, whereas faculty/trainees reported having the lowest life satisfaction. These interventions are low cost and scalable but are unlikely to reduce burnout on their own without accompanying structural changes.
Ip. et al., [21]	2023	USA	Academic radiologists from 11 divisions within a tertiary academic medical center In 2017, a total of 153 (74%) of 206 radiology faculty completed the survey. In 2019, the response rate was 65% (120/185).	To assess the impact of departmental wellness and efficiency initiatives on burnout and professional well-being among academic radiologists.	Prospective pre–post study using the validated Stanford Physician Wellness Survey	A suite of departmental initiatives was implemented over 2 years to address burnout and well-being: Electronic Medical Record (EMR) efficiency training, shortening of work hours, initiatives to improve departmental culture and team bonding. Promotion of personal wellness (mental health resources dissemination, nutritional presentation, sleep presentation). Interventions were designed on the basis of wellness literature and internal consultation but were limited to the department level.	Organizational-level intervention	2 years (2017–2019)	Despite multiple well-intended interventions, several aspects of burnout worsened significantly. Areas most negatively affected were professional fulfillment and organizational value alignment. The intervention failed to reduce emotional exhaustion or improve interpersonal or supervisory dynamics. Some domains showed statistically significant negative changes over time.	Departmental initiatives alone may not be sufficient to reduce burnout. Effective physician wellness requires institutional-level cultural change, rather than solely department-level solutions. Wellness must be embedded into the broader organizational structure, including leadership values, institutional policy, and cultural norms.	Even extensive interventions may fail without broader cultural or systemic support. Burnout is complex and multifactorial; addressing symptoms without tackling root causes (e.g., misalignment of values, leadership issues) may be ineffective. Measuring wellness requires multi-domain assessment, as some domains may worsen even when others improve.
Spilg et al., [22]	2022	Canada	40 academic physicians (Dept. of Medicine, tertiary hospital). Randomized 1:1 to SMART vs control; data at 3 and 6 months (Active n = 19→16; Control n = 17→16).	To evaluate the impact of the SMART (Stress Management and Resilience Training) program on academic physicians' resilience, subjective happiness, stress, and anxiety during a major system-wide change (HIS implementation).	Randomized controlled trial (RCT) A randomized controlled trial (RCT) compared the intervention group with a waitlist control group. Outcomes were assessed at baseline, 3 months, and 6 months.	One mandatory in-person 2-h workshop (delivered by certified instructors). Optional 24-week online self-directed follow-up program. Content included: mindfulness practices, gratitude, cognitive reframing, and purpose-based stress management. Materials were adapted from the original SMART	Individual-level intervention	2-h workshop + optional 24-week online support; outcomes at 3 and 6 months (during/after Epic go-live).	No statistically significant differences were observed between intervention and control at 3 or 6 months. Nevertheless, the intervention group showed clinically meaningful trends: resilience increased, and stress and anxiety decreased. Control group showed little to no improvement. Engagement with optional online content varied.	The SMART intervention may offer modest benefits in supporting physician well-being during institutional changes. Findings highlight the need for larger, more rigorous trials. The program was feasible and well received, despite the lack of significant statistical findings.	Even brief, partially self-directed interventions such as SMART may offer psychological buffering during major workplace stressors. Combining resilience building with stress-reduction tools shows promise, particularly for proactive well-being support in clinical faculty. The effectiveness of wellness interventions depends on timing and the institutional context in which they are deployed.

						program developed at Mayo Clinic.			No impact on happiness as measured by SHS. No statistically significant differences, but outcomes suggest positive trends.		
Jones et al., [23]	2022	USA	8 acute care surgery faculty members, 10 close friends/family members as observers Completion rate: 92% (faculty), 80% (family/friends)	To evaluate whether a redesigned faculty schedule (eliminating 24-h call, adding protected academic time) reduces burnout without reducing productivity.	Prospective, pre–post intervention design with baseline, 6-month, and 12-month follow-ups.	Replaced 24-h floating calls with structured 12-h day/night weekly call blocks. Eliminated concurrent clinical duties during calls. Provided a full week of protected academic time (reallocated from post-call days). Created “flex” coverage position to maintain service continuity.	Organizational-level intervention (schedule and workload redesign)	12 months (baseline to final follow-up)	Significant improvements in burnout domains (emotional exhaustion, depersonalization, personal accomplishment) Improvements validated both by faculty and observer reports. No decrease in productivity (↑ RVUs, ↓ chart delinquency, ↑ IRB submissions) was observed.	Simple schedule changes can reduce multiple burnout risk factors without requiring additional resources. Improvements were observed both subjectively by participants and externally by evaluators.	Addressing specific workflow stressors (e.g., long shifts, lack of protected time) can significantly reduce burnout. Simple, low-cost interventions at the departmental level can have measurable psychological benefits. Including family/friend ratings provides a broader view of behavioral change.
Nutting et al., [24]	2021	USA	12/24 (50%) family medicine faculty at a Midwestern US residency; mix of career stages; diverse but predominantly White.	To explore whether small-group origin-storytelling sessions could reduce professional isolation and promote collegiality among faculty, thereby supporting well-being.	Pilot mixed-methods study Quantitative: Pre–post using Mini-Z Burnout Survey Qualitative: Semi-structured interviews with phenomenological analysis. Follow-up at 1-year post-intervention	Conducted over 8 weeks with three sessions of storytelling. Each week, 1–2 faculty shared their “origin story” about their journey into medicine. Written stories were read aloud, followed by reflective group discussion. Post-intervention evaluation included individual interviews and optional follow-up emails at 1 year. Delivered virtually due to COVID-19.	Peer-based, group reflection and narrative sharing focused on identity, connection, and shared meaning.	8 weeks (weekly sessions), follow-up emails at 1 year	No measurable decrease in burnout was observed, but participants reported a strong perceived impact on relational well-being. The intervention enhanced collegiality, connection, and emotional safety among faculty. Participants felt the intervention helped bridge misconceptions and foster compassion.	Origin storytelling was well received and led to lasting improvements in collegiality and team dynamics. Although quantitative burnout measures did not change, the intervention was emotionally meaningful and feasible. Highlights the potential for narrative-based interventions in broader faculty wellness strategies.	Peer storytelling can foster interpersonal safety, compassion, and professional reflection. Such interventions may enhance workplace culture even if improvements are not reflected in traditional burnout metrics. Provides a low-cost, culturally aligned model for family medicine faculty development. Encourages better adoption of narrative-based approaches to complement traditional wellness programs.

Locke et al., [25]	2020	USA	University of Utah, Division of Family Medicine faculty & APCs (2016 n = 29; 2017 n = 24; response 100%→92%)	To evaluate whether an anonymous, closed-loop feedback survey run by Wellness Champions improves faculty well-being (burnout, stress, workload control).	Pre–post intervention with repeated anonymous surveys over one year	Quarterly anonymous feedback survey administered to all faculty and providers. The survey addressed multiple domains: administration, clinic, personnel, teaching, wellness, and so on. Wellness Champions collected and summarized thematic responses. Results discussed with division leadership; actions were implemented in response. Results were reported back to faculty to complete a feedback loop. Burnout, workload control, and stress were tracked with the AMA's Mini-Z survey tool	Organizational (structured feedback and leadership response system)	~1 year (four quarterly survey cycles + annual Mini-Z comparison).	Statistically significant improvement in workload control Moderate but not statistically significant decrease in burnout Meaningful reduction in job-related stress (clinically significant)	A low-cost, participatory feedback mechanism can support faculty well-being by improving organizational communication and fostering leadership accountability.	A low-cost, scalable approach that turns faculty voice into leadership action, producing visible change. Enhancing faculty control over workload appears pivotal for reducing burnout. Effects were achieved without additional funded time. Although the small single-division sample and nonpaired data limit causal inference, it provides a pragmatic playbook other departments can adopt.
Pipas et al., [12]	2020	USA	10 first-year students + 10 faculty enrolled (all students and 4 faculty completed; 11 paired pre/post respondents).	To implement and evaluate an 8-week wellness curriculum aimed at improving QoL, mindfulness, reducing stress, and burnout among medical students and faculty.	pilot, pre-and post-test design (within-subject comparison) No control group	Delivered as 60-min sessions once per week over 8 weeks. Each session included: mindfulness practice; case study discussion; reflective writing and sharing; and action planning on the basis of wellness principles.	Multilevel (individual, peer, organizational)	8 weeks One session per week (60 min/session)	Statistically significant improvements were observed in QOL and stress. Completers experienced a substantial reduction in burnout. Moderate increase in mindfulness.	The curriculum is feasible and beneficial for faculty, demonstrating positive outcomes even with a small sample size. Institutional support and protected time were crucial for engagement and success. The authors recommend replication and broader implementation.	Even brief wellness curricula can meaningfully improve faculty stress, burnout, and QoL. Providing protected space for discussion and mindfulness may be a key contributor to these benefits. Greater institutional integration and larger studies are warranted to confirm and extend these findings.
Lee et al., [26]	2019	USA	42 full-time primary care faculty physicians in a General Internal Medicine (GIM) division. Survey response rates were 76% at baseline (n = 32) and 71% at follow-up (approx. n = 30).	To evaluate the effect of system-level interventions (targeting workflow and workload) on burnout, stress, and working conditions in a large academic GIM practice.	Pre–post interventional study using Mini-Z survey over a two-year period	Following a 2015 burnout survey and qualitative focus groups, faculty-identified stressors were addressed through: Interventions included: (1) hiring nurse practitioners for inbox management and coverage; (2) decompressed clinic schedules with 2 administrative slots/day; (3) reduced wRVU expectations; (4) blended compensation model (empanelment + wRVU).	Organizational/ workflow reform	24 months (2015–2017)	Statistically significant reduction in burnout and stress. Significant improvements in perceived control over workload. Non-significant improvements in documentation time and after-hours work.	Reforms targeting EHR burden, scheduling, and compensation significantly improved burnout, stress, and sense of control among academic GIM faculty.	Structural/system-level changes (staffing, scheduling, compensation) can yield measurable improvements in faculty well-being. Aligning workload expectations with sustainable practice and institutional support is critical for meaningful impact.