Occupational Characteristics Associated With Professional Fulfillment and Burnout Among US Physiatrists

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Introduction: Multiple national studies suggest that among physicians, physiatrists are at increased risk for occupational burnout.

Objective: The aim of the study is to identify characteristics of the work environment associated with professional fulfillment and burnout among US physiatrists.

Design: Between May and December 2021, a mixed qualitative and quantitative approach was used to identify factors contributing to professional fulfillment and burnout in physiatrists.

Setting: Online interviews, focus groups, and survey were conducted.

Participants: The participants are physiatrists in the American Academy of Physical Medicine and Rehabilitation Membership Masterfile.

Main Outcome Measures: Burnout and professional fulfillment were assessed using the Stanford Professional Fulfillment Index.

Results: Individual interviews with 21 physiatrists were conducted to identify domains that contributed to professional fulfillment followed by focus groups for further definition. Based on themes identified, scales were identified or developed to evaluate: control over schedule (6 items, Cronbach $\alpha = 0.86$); integration of physiatry into patient care (3 items, Cronbach $\alpha = 0.71$); personal-organizational values alignment (3 items, Cronbach $\alpha = 0.90$); meaningfulness of physiatrist clinical work (6 items, Cronbach $\alpha = 0.90$); teamwork and collaboration (3 items, Cronbach $\alpha = 0.89$). Of 5760 physiatrists contacted in the subsequent national survey, 882 (15.4%) returned surveys (median age, 52 yrs; 46.1% women). Overall, 42.6% (336 of 788) experienced burnout and 30.6% (244 of 798) had high levels of professional fulfillment. In multivariable analysis, each one-point improvement in control over schedule (odds ratio = 1.96; 95% confidence interval = 1.45–2.69), integration of physiatry into patient care (odds ratio = 1.77; 95% confidence interval = 1.32–2.38), personal-organizational values alignment (odds ratio = 1.92; 95% confidence interval = 1.48–2.52), meaningfulness of physiatrist clinical work (odds ratio = 2.79; 95% confidence interval = 1.71–4.71), and teamwork and collaboration score (odds ratio = 2.11; 95% confidence interval = 1.48–3.03) was independently associated with higher likelihood of professional fulfillment.

Conclusions: Control over schedule, optimal integration of physiatry into clinical care, personal-organizational values alignment, teamwork, and meaningfulness of physiatrist clinical work are strong and independent drivers of occupational well-being in US physiatrists. Variation in these domains by practice setting and subspecialty suggests that tailored approaches are needed to promote professional fulfillment and reduce burnout among US physiatrists.

Key Words: Physician Well-being, Burnout, Professional Fulfillment, Physiatrist Well-being

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These are challenging times for US physicians. Over the last decade, multiple national studies have demonstrated occupational burnout and struggles with work-life integration were markedly more common for physicians relative to US workers in other fields.[1–4] These studies have consistently found that 40%–50% of US physicians have at least one symptom of occupational burnout. Burnout is defined by the World Health Organization as an occupational syndrome characterized by emotional exhaustion, depersonalization, and a low sense of self-efficacy.[5] A wide array of changes in the healthcare delivery system are believed to contribute to this problem including the following: increased administrative burden,[6–8] greater emphasis on productivity requirements, a relative value unit–based

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compensation system that is often misaligned with the patient-centered values of the profession,[9,10] and challenges with electronic health records usability.[11–13] In addition, a majority of physicians are now employed by large healthcare organizations,[14] where personal-organizational values misalignment, suboptimal teamwork, and lack of control over work also seem to contribute to occupational distress.[10,15–20]

Physical medicine and rehabilitation (PM&R) physicians (i.e., physiatrists) practice a unique and diverse specialty across an array of practice settings (e.g., acute hospital-based care, subacute facility-based care, office-based work, inpatient rehabilitation facility care) and subspecialty disciplines (e.g., musculoskeletal and pain medicine, general/medically complex rehabilitation, neurologic/neuromuscular rehabilitation, and pediatric rehabilitation). Their work involves caring for a wide range of individuals including those with severe conditions that profoundly and permanently alter function and quality of life, as well as individuals at the other end of the spectrum, such as high-performing athletes.

Evidence indicates that, among physicians, physiatrists are at increased risk for occupational burnout. National studies of physiatrists found that of 24 specialties, PM&R physicians had the 10th highest burnout prevalence in 2011.[1] At the time of a follow-up study in 2014, PM&R physicians had risen to third of 24 specialties.[2] Follow-up studies in 2017 and 2020 found physiatrists fifth and seventh of 24 specialties in burnout prevalence.[3,4] A focused study of all 8825 American Board of Physical Medicine and Rehabilitation diplomates with active email addresses was conducted by Sliwa and colleagues in 2019.[21] Among the 1536 responders, 50.5% were found to have at least one symptom of burnout on the Mini-Z Burnout assessment instrument. Notably, there was no significant association between burnout and sex, practice type (academic vs. private), years in practice, practice setting (outpatient, inpatient, equal mix, nonclinical), or subspecialty (musculoskeletal or pain, central nervous system rehabilitation, general physical medicine and rehabilitation, pediatric rehabilitation, medical rehabilitation, electromyography or neuromuscular). In that study, physiatrists also ranked their top three sources of burnout from day-to-day work, choosing from a menu of 10 potential items. Subjectively, the three factors believed to contribute most to physiatrist burnout were as follows: increased regulatory demands, workload and job demands, and practice inefficiency or lack of resources. The importance of these items was ranked similarly by both physiatrists with and without burnout symptoms. Other studies suggest educational debt, feeling undervalued at work, and devoting time to work not core to mission are associated with PM&R physician burnout.[22] Previous qualitative research supported by the American Academy of Physical Medicine and Rehabilitation (AAPM&R) also indicates that physiatrist expertise is often not integrated into clinical care at the optimal time which decreases benefit to patients and is an additional source of physiatrist stress.

The present study used a mixed qualitative and quantitative approach to identify factors that contribute to both professional fulfillment as well as burnout in PM&R physicians and to evaluate variability in the experience of professional fulfillment and burnout in different PM&R subspecialties. The study was conducted as a collaborative effort by the AAPM&R, American Board of Physical Medicine and Rehabilitation, and Association of Academic Physiatrists.

METHODS

Identifying Domains of Relevance to Physiatrists Professional Fulfillment and Development of New Scales

We used a multistep qualitative process to identify and evaluate specific dimensions related to professional fulfillment and burnout of specific importance to physiatrists. The study was commissioned by the AAPM&R, American Board of Physical Medicine and Rehabilitation, and Association of Academic Physiatrists. This study was approved by the Stanford University Institutional Review Board. First, we conducted a series of 21 individual interviews with physiatrists to identify the domains they believed most contributed to professional fulfillment and burnout in their work. The themes that emerged in one-on-one interviews were further explored to identify specific dimensions related to these themes through a series of 3 focus groups and a steering committee meeting collectively involving 15 physiatrists. Scales were subsequently identified or developed to evaluate these five domains identified (details in methods and results sections).

National Survey to Evaluate Domains Identified in Qualitative Analysis

After completion of the qualitative phase and scale development, we conducted a national survey of US physiatrists. All 5760 physiatrists in the AAPM&R Membership Masterfile were sent an email inviting them to participate in an electronic survey. The email stated the purpose of the study (e.g., to better understand factors contributing to career satisfaction among US physiatrists), along with an invitation to participate and a link to an electronic survey. The survey was open from October 21 to December 6, 2021. Five reminder requests were sent to nonresponders over the ensuing 6 wks. Among the 5760 surveys mailed, 32 were returned as undeliverable resulting in a sample of 5728 individuals. Participation was voluntary and responses were anonymous. In this study, we report data from a total 882 surveys that had at least one response.

Survey Measures

Participating physiatrists provided demographic information including information on age, sex, relationship status, whether they had children (and age of youngest child), and amount of educational debt. Physician professional characteristics were ascertained by asking physicians about their practice (e.g., years in practice, hours worked per week, percent of work hours devoted to providing clinical care, nights on call per week). Additional items evaluated primary practice setting, primary area of clinical practice, and whether they were affiliated with an academic institution (directly employed, affiliated but not employed, neither employed nor affiliated).

Personal-Organizational Values Alignment and Control Over Schedule

Values alignment was assessed the using the Stanford Values Alignment measure.[23] Specifically, physiatrists indicated the extent to which they believed their personal values aligned

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with the values of their institution in the following three domains: (1) My input, as a physiatrist, is valued in important administrative decisions (for the purpose of this study, we added the term "as a physiatrist" to this question.), (2) Our organization goals and values fit well with my goals and values, and (3) Administration values my clinical work. As previously described,[23] each item is scored on a 5-point Likert scale with options ranging "not at all true" (score = 0) to "completely true" (score = 4).

Control over schedule was assessed the using the five-item Stanford Control Over Schedule measure with the additional of a sixth question based on the qualitative interviews with physiatrists (discussed subsequently). Specifically, physiatrists indicated the extent to which they have control over their schedules in the following six domains: (1) the number of hours I work, (2) the schedule of hours I work, (3) work interruptions (e.g., telephone calls, unscheduled patients), (4) the volume of my patient load or panel size, (5) last-minute schedule changes for unexpected personal needs (for family or self), and (6) timing of admissions (additional question added to the standard five-item version; individuals who do not admit patients were instructed to leave blank). Each item is scored on a 5-point Likert scale with options ranging "no control" (score = 0) to "complete control" (score = 4). Aggregate scores are determined by summing the 0–4 score for each of the individual items and dividing by the number of items answered.

Evaluation of Professional Fulfillment and Burnout

Professional fulfillment and burnout were assessed using the Stanford Professional Fulfillment Index. The Stanford Professional Fulfillment Index is a well-validated tool used by organizations across the United States and around the world.[24–26] The professional fulfillment domain includes six items while the burnout domain includes 10 items (4 items assessing work exhaustion and 6 items assessing interpersonal disengagement). All items in the Stanford Professional Fulfillment Index are scored on a 5-point Likert scale with options ranging from "not at all" to "extremely" for the burnout items and "not at all true" to "completely true" for items related to professional fulfillment. The professional fulfillment measure assesses the degree of intrinsic positive reward derived from work, including happiness, meaningfulness, contribution, self-worth, satisfaction, and feeling in control when dealing with difficult problems at work.[24] The burnout measure assesses symptoms of work-related physical and emotional exhaustion, and attenuation of empathy and connectedness with patients and colleagues.[24] As such, burnout and professional fulfillment are two separate constructs (rather than 2 ends of a continuum) and their mean scores were determined using the published approach with normalizing of scores to a 0–10 scale (higher professional fulfillment scores favorable; higher burnout scores unfavorable).[23,24] Per the established scoring criteria, overall burnout, work exhaustion, and interpersonal disengagement are defined as a score ≥3.325 on the scale of 0–10, and professional fulfillment is defined as a score ≥7.5 on the scale of 0–10.[24]

Statistical Analysis

Standard descriptive statistics were used to characterize responding physiatrists. Associations between variables were evaluated using the independent sample *t* test or one-way analysis of variance as appropriate. For multivariable analysis, demographic and professional characteristics associated with the dependent outcomes were identified by logistic regression with stepwise model selection by Akaike information criterion and previous related studies.[1–4] We adjusted for demographics and professional characteristics including age, sex, relationship status, years of practice, practice setting, subspecialty/area clinical practice, and hours worked per week in the final multivariable models. Associations between variables were evaluated using the independent sample *t* test, Kruskal Wallis test, or one-way analysis of variance as appropriate. All tests were two-sided with type I error rates of 0.05. All analyses were done using R version 4.1.2 (R Core Team (2021). R Foundation for Statistical Computing, Vienna, Austria).

RESULTS

Through individual interviews ($N = 21$) exploring factors contributing to professional fulfillment and burnout of specific importance to physiatrists, the themes that emerged were control over schedule, teamwork and collaboration, personal-organizational values alignment, and meaningfulness of physiatrist clinical work. These themes were subsequently explored more deeply through a series of three focus groups and a steering committee meeting to identify specific dimensions of each theme. An additional theme, integration of physiatry into patient care, was also prioritized for further evaluation based on a previous ethnographic study by the AAPM&R in 2018.

Survey scales were subsequently identified or developed to evaluate these five domains. Standard survey scales were subsequently identified to evaluate control over schedule and personal-organizational values alignment (see Methods). Although standard teamwork scales were considered, they did not evaluate the specific dimensions of teamwork physiatrists identified in the qualitative phase. Accordingly, three of the authors (MM, MT, TDS) with expertise in survey design developed items to evaluate the remaining three domains (teamwork and collaboration, meaningfulness of physiatrist clinical work, integration of physiatry into patient care) and subsequently obtained face and content validity feedback from all other authors, which included nine physiatrists and physiatry leaders. After additional input and iterative feedback, new scales were finalized for inclusion in the national survey. Additional details regarding the qualitative process are provided in Appendix A (Supplemental Digital Content 1, http://links.lww.com/PHM/B984) and in Supplemental Figure 1 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). For the quantitative survey, in addition to evaluating the distribution of scores for the individual items in each new scale, aggregate scores for each scale were also calculated by determining the mean 0–4 score across the individual items (higher scores favorable).

After completion of the qualitative phase and scale development, we conducted a national survey of US physiatrists to explore the relationship of these domains with professional fulfillment and burnout in a large sample of physiatrists. Of the 5728 physiatrists who were invited to participate, 882 (15.4%) responded to the survey. The personal and professional characteristics of responders are shown in Table 1. The demographic characteristics of survey respondents relative to

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TABLE 1. Personal and professional characteristics of participants

	All Participants ($N = 882$), n (%)
Sex	
Woman	357 (46.1)
Men	402 (51.9)
Other[a]	15 (2)
Missing	108
Age, yr	
<40	160 (22.2)
40–49	199 (27.6)
50–59	210 (29.2)
≥60	151 (21.0)
Missing	162
Race	
African American or Black	21 (2.8)
Asian	145 (19.3)
White (European, Middle Eastern, other)	548 (72.9)
Other[b]	38 (5.0)
Missing	130
Ethnicity	
Hispanic/Latino	38 (6.0)
Not Hispanic/Latino	595 (94.0)
Missing	249
Relationship status	
Single	98 (12.7)
Married	643 (83.3)
Partnered	30 (3.9)
Widowed/widower	1 (0.1)
Missing	110
Children	
No	204 (26.4)
Yes	569 (73.6)
Missing	109
Age youngest child (of those with children)	
<5 yrs	110 (19.4)
5–12 yrs	136 (23.9)
13–18 yrs	105 (18.5)
19–22 yrs	84 (14.8)
≥23 yrs	133 (23.4)
Missing	1
Medical school location	
United States	677 (88.6)
International	87 (11.4)
Missing	118
Amount of educational debt	
None	524 (67.8)
$1–49,999	37 (4.8)
$50,000–99,999	61 (7.9)
$100,000–149,999	27 (3.5)
$150,000–224,999	38 (4.9)
$225,000–299,999	29 (3.8)
$300,000–374,999	22 (2.8)
$375,000–449,999	20 (2.6)
≥$450,000	15 (2.0)
Missing	109

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TABLE 1. *(Continued)*

	All Participants (*N* = 882), *n* (%)
Have disability	
No	698 (90.4)
Yes	50 (6.5)
Prefer not to disclose	24 (3.1)
Missing	110
Visibility of disability	
Visible	11 (22.4)
Invisible	38 (77.6)
Missing (out of 50 with disability)	1
Years in practice	
≤5	182 (20.9)
6–10	143 (16.4)
11–15	115 (13.2)
16–20	97 (11.1)
21–25	120 (13.8)
26–30	124 (14.2)
>30	90 (10.3)
Missing	11
Hours worked per week	
Median (IQR)	35 (20–45)
<40	456 (55.7)
40–49.9	218 (26.6)
50–59.9	109 (13.3)
≥60	36 (4.4)
Missing	63
% Clinical	
None	19 (2.2)
1%–20%	26 (3.0)
21%–40%	48 (5.5)
41%–60%	68 (7.8)
61%–80%	169 (19.4)
81%–100%	539 (62.0)
Missing	13
Nights on call per week	
0	480 (59.3)
1–2	115 (14.2)
3–4	36 (4.4)
5–6	35 (4.3)
7	143 (17.7)
Missing	73
Affiliated with academic institution	
Yes, directly employed	331 (37.6)
Affiliated but not employed	189 (21.5)
No	361 (41.0)
Missing	1
Primary practice setting	
Acute care hospital rehabilitation unit	213 (24.2)
Outpatient	494 (56.1)
Subacute care rehabilitation unit (SNF and others)	31 (3.5)
VA or military hospitals	47 (5.3)
Other	96 (10.9)
Missing	1
Primary area of clinical practice	
General rehabilitation[c]	390 (44.3)

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TABLE 1. *(Continued)*

	All Participants (N = 882), n (%)
Brain injury	53 (6.0)
Musculoskeletal and sports medicine[d]	197 (22.4)
Pain medicine	96 (10.9)
Pediatric rehabilitation	67 (7.6)
Other	77 (8.8)
Missing	2

[a] Includes "prefer to self-describe" and "prefer not to say."

[b] Includes "American Indian or Alaska Native," "multirace," and "prefer to self-describe."

[c] General rehabilitation includes "general rehabilitation," "geriatric," "limb deficiency or amputee care," "neuromuscular medicine/neurological rehabilitation," "spinal cord injury," "spine medicine," and "stroke."

[d] Musculoskeletal and sports medicine includes "musculoskeletal medicine" and "sports medicine."

IQR, interquartile range.

all invited physiatrists were similar with respect to age and years in practice, although participants were slightly more likely to be women (46.1% of the participants vs. 37.5% of the invited sample).

Among participants without missing data, 357 (46.1%) were women, 402 (51.9%) were men, and 569 (73.6%) had children. With respect to years in practice, 325 (37.3%) had been in practice fewer than 10 yrs, 212 (24.3%) had been in practice 11 to 20 yrs, and 334 (38.3%) had been in practice 21 yrs or more. Participants spent a majority of their time on clinical care with 539 (62%) reporting 80% or more of their work hours were devoted to clinical care and an additional 169 (19.4%) reporting they devoted 61 to 80% of their time to clinical care. Overall, 331 participants (37.6%) were directly employed by an academic institution, 189 (21.5%) were affiliated with an academic institution but not directly employed, and the remaining 361 (41%) reported they had no academic affiliation. Regarding practice setting, 494 (56.1%) reported that their primary practice setting was outpatient and 213 (24.2%) reported that their primary practice setting was an acute care hospital rehabilitation unit. Additional information on personal characteristics (race, ethnicity, amount of educational debt, personal disability) and professional characteristics (work hours, nights on call per week, primary area of clinical practice) are provided in Table 1.

Responses to the items evaluating values alignment, control over schedule, integration of physiatry into patient care, teamwork and collaboration, and perceived meaningfulness of physiatrist clinical work were then analyzed. The responses to the individual items evaluating each of these domains are shown in Supplemental Figure 1 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). Cronbach α for the survey measures are as follows: control over schedule (6 items): 0.86; integration of physiatry into patient care (3 items): 0.71; personal-organizational values alignment (3 items): 0.90, meaningfulness of physiatrist clinical work (6 items): 0.90; teamwork and collaboration (3 items): 0.89. Aggregate scores for each of these five domains on the 0–4 scale (higher scores favorable) were most favorable for perceived meaningfulness of physiatrist clinical work (mean score = 2.74) and least favorable for integration of physiatry into patient care (mean score = 1.53). Aggregate scores for teamwork and collaboration (mean score = 2.43), personal-organizational values alignment (mean score = 1.98), and control over schedule (mean score = 1.86) were in between these values.

Univariate associations between burnout and professional fulfillment, and five occupational well-being measures among physiatrists are presented in Supplemental Table 1 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). Variability in the scores for control over schedule and integration of physiatry into clinical care by personal and professional characteristics is shown in Supplemental Table 2 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). Control over schedule scores were higher for men as well as with advancing age and years in practice and lower as the percent of work devoted to clinical care increased. Control over schedule scores were also higher for physiatrists who practiced in a subacute care rehabilitation unit. Integration of physiatry into clinical care scores was higher for men, as well as physiatrists in a subacute care rehabilitation unit.

Variation in personal-organizational values alignment, teamwork, and perceived meaningfulness of physiatrist clinical work scores by personal and professional characteristics is shown in Supplemental Table 3 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). Personal-organizational values alignment scores were higher for men and were also higher with advancing age and years in practice. Values alignment scores were lower as hours worked per week increased and as the percent of work devoted to clinical care increased. With respect to practice setting, values alignment scores were higher among physiatrists primarily practicing in outpatient settings. Teamwork scores were higher among physiatrists whose practice setting was acute care hospital rehabilitation unit. Perceived meaningfulness of physiatrist clinical work scores were higher among physiatrists whose practice setting was an acute care hospital rehabilitation unit.

Scores in these five domains also varied by subspecialty and academic affiliation. Control over schedule was higher for physiatrists practicing musculoskeletal/sports medicine and pain medicine. Integration of physiatry into clinical care scores was higher for those working in brain injury and musculoskeletal/sports medicine. Personal-organizational values alignment scores were higher for physiatrists practicing musculoskeletal/sports medicine or "other" as subspecialty. Meaningfulness of physiatrist clinical work scores were higher for physiatrists who specialized in brain injury and musculoskeletal/

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TABLE 2. Burnout and professional fulfillment

	***N* = 882**
Burnout	
Work Exhaustion, mean (SD)[a]	4.04 (2.39)
% Experiencing work exhaustion	55.2% (441 of 799)
Missing	83
Interpersonal disengagement, mean (SD)[a]	2.58 (2.10)
% Experiencing interpersonal disengagement	35.5 (279 of 787)
Missing	95
Burnout, mean (SD)[a]	3.16 (2.06)
% Experiencing burnout	42.6% (336 of 788)
Missing	94
Professional fulfillment	
Professional fulfillment, mean (SD)[b]	5.83 (2.34)
% Experiencing professional fulfillment	30.6% (244 of 798)
Missing	84

[a] Range 0–10, higher scores unfavorable.
[b] Range 0–10, higher scores favorable.

sports medicine. Teamwork scores were higher for those working in brain injury or pediatric rehabilitation. With respect to academic affiliation, control over schedule scores were higher for physiatrists who were not employed by or affiliated with an academic center, while meaningfulness of physiatrist clinical work scores were higher among physiatrists directly employed by or affiliated with an academic center relative to those who were not.

Mean work exhaustion, interpersonal disengagement, overall burnout, and professional fulfillment scores are shown in Table 2 and Supplemental Figure 2 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). Overall, 55.2% physiatrists experienced work exhaustion, 35.5% experienced interpersonal disengagement, and 42.6% experienced overall burnout. At the positive end of the spectrum, 30.6% (244 of 798) reported high levels of professional fulfillment. Means of overall burnout and professional fulfillment by quartiles of each of the five new domains are presented Figures 1 and 2. Variability in burnout and professional fulfillment scores by personal and professional characteristics are shown in Supplemental Table 4 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984). On multivariable analysis adjusting for personal and professional characteristics, nights on call per week and having a subspecialty in pain medicine (reference subspecialty category general rehabilitation) were independently associated with increased risk of burnout. On multivariable analysis adjusting for personal and professional characteristics, being a woman was associated with decreased likelihood of professional fulfillment.

Table 3 presents data from multivariable analyses adjusting for age, sex, relationship status, medical school education location,

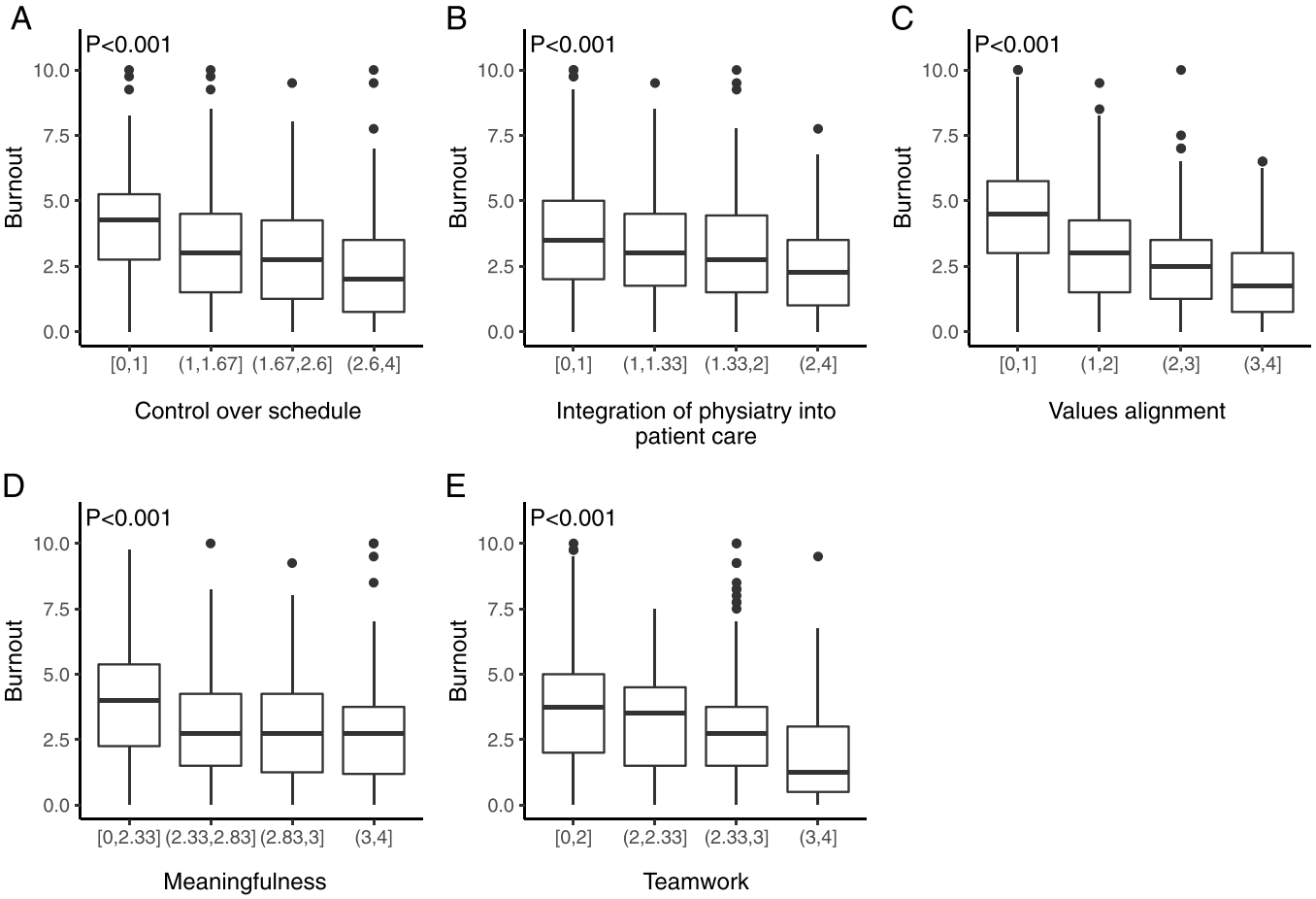

FIGURE 1. Boxplots showing the distribution of burnout scores by quartiles of the five occupational well-being measures among US physiatrists.

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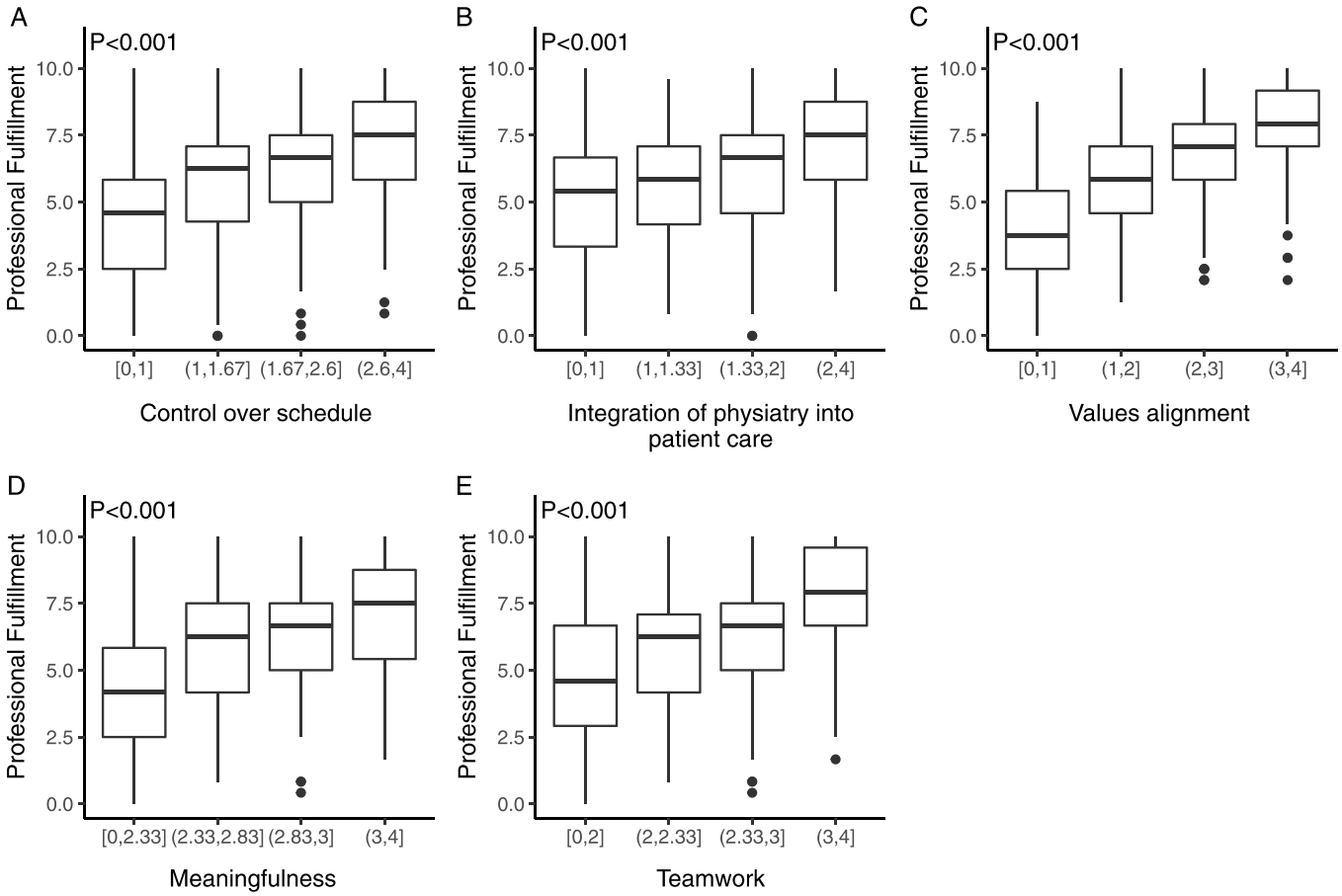

FIGURE 2. Boxplots showing the distribution of professional fulfillment scores by quartiles of the five occupational well-being measures among US physiatrists.

years in practice, practice setting and subspecialty area, academic affiliation, and hours worked per week. These models also included the scores for the following: personal-organizational values alignment, control over schedule, integration of physiatry into clinical care, teamwork and collaboration, and perceived meaningfulness of physiatrist clinical work scores. Each one-point improvement in control over schedule (odds ratio [OR] = 0.74; 95% confidence interval [CI] = 0.58–0.96), personal-organizational values alignment (OR = 0.60; 95% CI = 0.49–0.75), and teamwork and collaboration (OR = 0.62;

TABLE 3. Multivariable analyses demonstrating the associations between burnout and professional fulfillment, with five occupational well-being measures among physiatrists after adjusting for select demographic factors

Outcome	Predictor[a]	OR (95% CI)	*P*
Burnout[b] (*n* = 635)	Control over schedule score (range 0–4)	0.74 (0.58–0.96)	0.02
	Integration of physiatry into patient care score (range 0–4)	0.89 (0.7–1.14)	0.36
	Values alignment score (range 0–4)	0.60 (0.49–0.75)	<0.001
	Meaningfulness score (range 0–4)	0.75 (0.51–1.11)	0.15
	Teamwork score (range 0–4)	0.62 (0.46–0.83)	<0.01
Professional fulfillment[b] (*n* = 634)	Control over schedule score (range 0–4)	1.96 (1.45–2.69)	<0.001
	Integration of physiatry into patient care score (range 0–4)	1.77 (1.32–2.38)	<0.001
	Values alignment score (range 0–4)	1.92 (1.48–2.52)	<0.001
	Meaningfulness score (range 0–4)	2.79 (1.71–4.71)	<0.001
	Teamwork score (range 0–4)	2.11 (1.48–3.03)	<0001

[a] Only well-being measures are reported here. The complete table including demographic variables can be found in Supplemental Table 5 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984).

[b] Final model included the following variables: age (<40 yrs referent category), sex (men referent), relationship status (single referent), affiliation with academic institution (yes, directly employed referent), years of practice, practice setting (outpatient referent), subspecialty/area clinical practice (general rehabilitation referent), hours worked per week, control over schedule score, integration of physiatry into patient care score, values alignment score, meaningfulness score, and teamwork score.

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95% CI = 0.46–0.83) was independently associated with lower likelihood of burnout after adjusting for the other variables. With respect to professional fulfillment, control over schedule (OR = 1.96; 95% CI = 1.45–2.69), integration of physiatry into patient care (OR = 1.77; 95% CI: 1.32–2.38), personal-organizational values alignment (OR = 1.92; 95% CI = 1.48–2.52), meaningfulness of physiatrist clinical work (OR = 2.79; 95% CI = 1.71–4.71), and teamwork and collaboration scores (OR = 2.11; 95% CI = 1.48–3.03) were all independently associated with higher likelihood of professional fulfillment (Table 3). Full model results are presented in Supplemental Table 5 (Supplemental Digital Content 1, http://links.lww.com/PHM/B984).

DISCUSSION

The present study used a mixed methods approach to identify factors that contribute to professional fulfillment and occupational burnout in US physiatrists. The results build from previous studies demonstrating high rates of burnout in physiatrists[1–4] and efforts to identify key driver dimensions.[21,22] The uniqueness of this research study was the reliance on individual interviews and focus groups in the qualitative phase to identify and evaluate potential domains of highest relevance to physiatrists: control over schedule, personal-organizational values alignment, teamwork and collaboration, and meaningfulness of physiatrist clinical work. We also assessed how well physiatry was integrated into clinical care based on the results of the 2018 AAPM&R qualitative study. The relationship of these five domains with professional fulfillment and burnout was subsequently probed quantitatively in a national survey of physiatrists. All five domains were independently associated with professional fulfillment in a robust multivariable analysis. The effect size was large with each one-point more favorable score (range, 0–4) in each domain scale associated with 80%–180% increased odds of professional fulfillment. In addition, three of the five domains (control over schedule, personal-organizational values alignment, and teamwork and collaboration) were strongly correlated with burnout. The effect size of these associations was also relatively large with each one-point more favorable score (range, 0–4) associated with a 20%–40% decreased odds of burnout.

Notably, substantial variation in scores in these five domains was observed by practice setting, subspecialty area, and academic affiliation. Specifically, control over schedule and optimal integration of physiatry into clinical care were rated most favorably by those practicing in subacute care rehabilitation facilities; personal-organizational values alignment was rated most favorably by those in outpatient settings; teamwork and collaboration as well as meaning in work was rated most favorably by those in an acute care hospital or rehabilitation unit. Substantial variation of the five domains was also observed by subspecialty. Pain medicine, pediatric rehabilitation, brain injury, or "other" subspecialty each had the most favorable score for at least one of the five dimensions. Scores were above the sample average in four of five domains for individuals practicing musculoskeletal and sports medicine although they did not have the highest score in any of the five domains. Although general rehabilitation physicians did not have the highest score in any specific individual dimension, they tended to score in the middle in most categories relative to other subspecialty areas. Finally, physicians employed by or affiliated with an academic medical center had more favorable meaning in work scores while those who were not employed or affiliated with an academic center reported greater control over schedule.

These observations have important implications for efforts to reduce burnout and promote professional fulfillment among physiatrists. They suggest each practice setting and subspecialty as well as whether there is an academic affiliation confers a profile with potential strengths and weaknesses. There is no "one size fits all" solution and efforts to simply import effective interventions from one organization or practice setting to others have a high risk of failure. Understanding such nuances may allow organizations and specialty groups to both draw on strengths as well as identify high opportunity dimensions for intervention. An intentional approach is required to translate these observations into improvement efforts in each organization. Approaches to pursue such local design efforts have been proposed and involve seeking input from the physicians in the practice, identifying opportunities for improvement, prioritizing these opportunities, designing and piloting new approaches, and evaluating impact.[27–30]

It is noteworthy that few individual demographic characteristics or professional characteristics had a statistically significant association with burnout in the multivariable analysis after adjusting for the five dimensions above. Specifically, age, sex, subspecialty area, years in practice, and work hours were not significant in the multivariable models for either burnout or professional fulfillment after adjusting for these five dimensions. This observation affirms the framework that occupational burnout is primarily driven by characteristics of the work environment rather than the demographic characteristics of the individual[28] and is consistent with the previous study by Sliwa and colleagues,[21] which found no association between burnout and sex or years in practice. The results also suggest efforts to improve control over schedule, personal-organizational values alignment, meaningfulness of physiatrist clinical work, teamwork and collaboration, and optimal integration of physiatry into clinical care have substantial potential to mitigate work-related distress and cultivate professional fulfillment.

Our study is subject to number of important limitations. First, the participation rate among physiatrist surveyed was only 15%. Although consistent with a number of previous national studies of physicians,[1–4] the low participation raises questions as to whether participants were representative of US physiatrists. Furthermore, because survey email invitations were only sent to AAPM&R membership, the responses may not be representative of all US physiatrists. It may be hypothesized that individuals who are experiencing occupational distress may be apathetic and less likely to participate in surveys. Alternatively, these individuals may have greater interest in the topic and maybe more likely to participate for that reason. Previous studies using robust secondary surveys and nonresponder analysis suggest that participants in these surveys are generally similar to the overall sample with respect to occupational distress in that there is not clear bias in either direction.[3,4] Second, although we found strong associations between the five dimensions identified in qualitative analysis with occupational well-being (burnout and professional fulfillment), our study is cross-sectional and cannot determine cause and effect or the potential direction of effect. Lastly, we did not explore the potential effect of nonclinical pursuits (e.g., research, teaching, administration, and leadership) on

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burnout and fulfillment, and it is also challenging in a survey to capture all nuances of practice setting and work schedule.

Our study also has a number of important strengths. It was conducted as a collaborative endeavor by physician wellness experts, physiatry leaders with deep knowledge of the specialty, and multiple physiatry professional societies. A multistep, qualitative approach involving individual interviews followed by focus groups was used to identify domains of particular relevance to burnout and professional fulfillment in US physiatrists. The physicians sampled were drawn from a broad group of US physiatrists, and the demographic characteristics of survey responders were similar to the overall invited sample with respect to age and years in practice. The primary focus of our study was to evaluate the relationship between the five dimensions identified in the qualitative phase and occupational well-being. Although it is unknown whether the mean scores and point prevalence of burnout and professional fulfillment in participants are representative of US physiatrists, it is unlikely that the associations between the five driver dimensions explored and with burnout and professional fulfillment is unique to study participants.

CONCLUSIONS

Control over schedule, optimal integration of physiatry into clinical care, personal-organizational values alignment, teamwork and collaboration, and meaningfulness of physiatrist clinical work seem to be strong drivers of occupational well-being in US physiatrists. Continuous scores in these domains, rather than individual demographic and professional characteristics, were the factors most strongly associated with professional fulfillment and burnout in multivariable analysis. Scores in these five domains also demonstrated substantial variability by practice setting, subspecialty, and whether individuals were affiliated with academic medical centers. Organizations, practices, and specialty groups should deploy established processes to seek input from physiatrists on which of these dimensions they would prioritize for improvement, solicit their ideas for local opportunities to improve, and implement and evaluate pilot studies evaluating alternative ways of working. Such system, organization, and practice level improvement work should form the foundation of efforts to decrease burnout and promote professional fulfillment in physiatrists across the US.

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