

[ORIGINAL ARTICLE]

Factors Associated with Well-being and Burnout Among Japanese Internal Medicine Physicians

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Abstract:

Objective Physician burnout threatens healthcare quality, safety, and sustainability. Identifying individual (e.g., lifestyle) and organizational (e.g., work environment, leadership) factors is critical for developing effective interventions. This study aimed to examine the factors associated with burnout among board-certified internists in Japan.

Methods A nationwide cross-sectional survey was conducted from November 15 to December 31, 2024, among 3,320 internists on the Japanese Society of Internal Medicine mailing list; 353 responded (10.6%). Burnout was assessed using the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), which covers emotional exhaustion, depersonalization, and reduced personal accomplishment. The survey also captured professional, community, and personal factors.

Results Among 316 complete responses, 17.1% (n=54) met the criteria for extreme burnout (high-risk thresholds in all domains), and 64.6% (n=204) met high-risk thresholds for emotional exhaustion and/or depersonalization. The risk factors included a high workload (OR 2.16, 95% CI 1.36-3.41), electronic health record burden (OR 1.42, 95% CI 1.11-1.83), and preoccupation with the past or future (OR 2.43, 95% CI 1.84-3.21). Protective factors included in-person social interaction (OR 0.58, 95% CI 0.39-0.87), supportive/respectful leadership from supervisors (OR 0.52, 95% CI 0.38-0.69), and perceived support from senior leadership (OR 0.60, 95% CI 0.47-0.78) and co-workers (OR 0.63, 95% CI 0.49-0.81).

Conclusion Workload, psychological stress, and leadership quality strongly influence burnout among Japanese internists. Structural interventions that promote a supportive culture and relational well-being may help mitigate burnout.

Key words: physician burnout, physician well-being, Japan, cross-sectional survey

(Intern Med Advance Publication)

(DOI: 10.2169/internalmedicine.6917-25)

Introduction

Physician well-being is not only essential to individual health and job satisfaction, but it also impacts healthcare

quality, patient safety, and the effectiveness of healthcare organizations (1). Burnout, a work-related phenomenon characterized by emotional exhaustion, cynicism or depersonalization, and a reduced sense of personal accomplishment, has been linked to a wide range of adverse outcomes, in-

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Received: December 8, 2025; Accepted: April 5, 2026; Advance Publication by J-STAGE: May 30, 2026

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cluding depression, suicide, family disruption, medical errors, interpersonal conflict at work, and increased physician turnover (2-4). Structural challenges within healthcare organizations and systems, such as excessive workload, inefficient workflows, increasing administrative tasks, poor work-life integration, insufficient institutional support, and deficient leadership culture, are commonly identified as key contributors to burnout (5-9). Addressing systemic factors requires structural rather than solely individual level interventions (4, 6, 10).

To our knowledge, no prior nationwide study has comprehensively evaluated both personal and organizational contributors to burnout among board-certified internal medicine physicians in Japan. Although the Japanese Ministry of Health, Labor, and Welfare prioritizes the promotion of mental health in the workplace (11), factors influencing burnout among Japanese internists remain unclear. To address this gap, we conducted a survey study modeled after research conducted at the University of Michigan (12). Clarifying these factors is critical for developing data-informed strategies to enhance physician well-being and bolster sustainable healthcare in Japan.

Materials and Methods

Study design and data collection

We conducted a nationwide cross-sectional survey to assess the prevalence and factors associated with burnout among board-certified internal medicine physicians in Japan. Given their routine engagement in complex and high-stakes clinical responsibilities, internists-particularly those working in general internal medicine, family medicine, and emergency medicine-have been identified in prior studies as being at an elevated risk for burnout (13). Therefore, we selected this population as our study target.

From November 15 to December 31, 2023, we distributed an online survey via email to all 3,320 members on the mailing list of the Japanese Society of Internal Medicine (JSIM). Reminder emails were sent on November 30, December 15, and December 30. The survey instrument was adapted from an English-language questionnaire used by the University of Michigan (Appendix 1). It was translated into Japanese by a bilingual researcher (TW) and finalized through iterative review by three native Japanese researchers (RS, KS, and TW). Data were collected using SurveyMonkey (Momentive Inc.).

Study measures

To comprehensively evaluate burnout-related factors, we used a structured questionnaire based on a theoretical framework with three categories of factors: occupational environmental, community, and personal (14). The original English-language instrument was translated into Japanese and adapted as necessary for cultural differences.

Occupational environmental factors involved variables re-

lated to physicians' clinical workload and practice conditions. These included perceived workload in daily practice, degree of autonomy over clinical tasks, burden associated with the use of electronic health records, experiences of (or concerns about) medical litigation, perceived lack of recognition by patients, or presence of discriminatory treatment from patients or people within the organization.

Community factors in the survey assessed the perceived availability and quality of support from various sources in professional and personal contexts. Specifically, this included support from immediate supervisors, senior organizational leaders, colleagues, family members, friends, and mentors.

In the category of personal factors, we examined physicians ability to concentrate on work, attentional focus on the present (as opposed to preoccupation with the past or future), engagement in meditation practices, exercise habits, participation in in-person social events, and the extent to which work affects personal life.

In addition to these three categories, the survey collected demographic and professional background data, including sex, marital status, parental status, years of clinical experience, and the type and size of the facility in which the respondent was employed.

Burnout assessment

Burnout was assessed using the Maslach Burnout Inventory-Human Services Survey (MBI-HSS), a widely validated and internationally recognized instrument for evaluating burnout (15, 16). The MBI-HSS consists of 22 items designed for professionals in human services occupations. Each item is rated on a seven-point Likert scale ranging from 0 (never) to 6 (every day). This instrument measures three independent dimensions of burnout: emotional exhaustion, depersonalization, and reduced personal accomplishment (17). Emotional exhaustion, which reflects the depletion of emotional energy and psychological fatigue, comprises nine items (score range: 0-54). Depersonalization, indicating a tendency to adopt impersonal or cynical attitudes toward patients or others, was assessed using five items (score range: 0-30). Reduced personal accomplishment, representing a diminished sense of competence and achievement at work, was measured using eight items (score range: 0-48). The scores for each subscale were calculated separately.

Statistical analysis

Categorical variables were summarized as frequencies (n) and percentages (%), while continuous variables were reported as means and standard deviations (SD). Participants were not required to answer all items; the number of responses varied by item.

The MBI-HSS was scored according to the standard algorithm. Due to the absence of an accepted consensus on the operational definition of burnout (18), our primary outcome of "extreme" burnout was defined as meeting thresholds in

Table 1. Characteristics of Internal Medicine Physician Study Participants.

Characteristic	No. (%)
<i>Having children under age 18 years</i>	
No	184 (59.5%)
Yes	125 (40.5%)
<i>Marital status</i>	
Married or living as if married	261 (84.5%)
Single, never married	30 (9.7%)
Divorced	6 (1.9%)
Separated	2 (0.6%)
Widowed	3 (1.0%)
Prefer not to answer	7 (2.3%)
<i>Sex</i>	
Male	234 (75.7%)
Female	66 (21.4%)
Other/Prefer not to answer	9 (2.9%)
<i>Time in clinical practice</i>	
Mean time spent in practice, years (SD)	28.1 (9.1)
Mean time spent working per week, hours (SD)	57.8 (19.0)
<i>Type of facility for majority of clinical work</i>	
City hospital	172 (55.5%)
Clinic	61 (19.7%)
University hospital	70 (22.6%)
Other	7 (2.3%)

all three burnout domains: emotional exhaustion ≥ 27 , depersonalization ≥ 10 , and personal accomplishment ≤ 33 . This was analyzed as a binary outcome variable. We also report on the prevalence of burnout using a commonly used sensitive definition of burnout: emotional exhaustion ≥ 27 and/or depersonalization ≥ 10 (19).

Multivariable logistic regression analyses were performed to evaluate the association between extreme burnout and each set of factors (occupational environment, community, and personal). In all models, years of clinical experience and sex were included as covariates. A two-sided *p*-value of < 0.05 was considered statistically significant. All statistical analyses were performed using SAS version 9.4 (SAS Institute Inc., Cary, NC, USA).

Ethical considerations

All data were fully anonymized, and no personally identifiable information was collected from respondents. This study was conducted in accordance with the Declaration of Helsinki. The study protocol was approved by the Institutional Review Board of Shimane University (Approval No. 20230720-4).

Results

The survey was distributed to 3,320 physicians registered on the JSIM mailing list. A total of 353 physicians responded (response rate: 10.6%).

Respondents' demographic and professional characteristics are summarized in Table 1. The mean number of years

in clinical practice was 28.1 (SD 9.1), and the mean weekly working hours were 57.8 (SD 19.0). Among all respondents, 75.7% (234/309) were male, 84.5% (261/309) were married or in a domestic partnership, and 40.5% (125/309) had children under 18 years of age. Regarding clinical duties, 48.7% (151/310) spent the majority of their time working in outpatient care only, 19.7% (61/310) in inpatient care only, and 18.4% (57/310) in both. A total of 29.1% (92/316) reported having professional mentor(s). Respondents reported working in city hospitals (55.5%), university hospitals (22.6%), and clinics (19.7%).

Complete MBI-HSS responses were provided by 316 of the 353 participants. The mean score for emotional exhaustion was 17.6 (SD 10.9), with 23.1% (73/316) of participants exceeding the pre-set threshold (≥ 27). The mean depersonalization score was 14.0 (SD 9.0), with 64.2% (203/316) classified as high risk (≥ 10). The mean score for low personal accomplishment was 26.8 (SD 10.5), with 72.5% (229/316) of participants scoring below the threshold (≤ 33). Overall, 17.1% (54/316) of participants met the criteria for our primary outcome of extreme burnout. Prevalence of extreme burnout did not differ among physicians working in clinics (10/61, 16.4%), city hospitals (26/172, 15.1%), or university hospitals (13/70, 18.6%) ($p=0.80$). A total of 64.6% (204/316) met the high-risk threshold in the emotional exhaustion and/or depersonalization domains.

Multivariable logistic regression analysis was conducted to identify the factors associated with our primary outcome of extreme burnout among physicians. Several variables related to occupational environment, community, and personal characteristics were found to be associated with extreme burnout. The results are shown in Table 2.

Among occupational environmental factors, we noted several statistically significant associations with increased odds of extreme burnout, including high workload (OR: 2.16, 95% CI: 1.36-3.41; $p=0.001$), using the electronic health record (OR: 1.42, 95% CI: 1.11-1.83; $p=0.006$), working hours in a typical week (hours) (OR: 1.02, 95% CI: 1.00-1.04; $p=0.02$), not having sufficient support staff and/or services (OR: 1.69, 95% CI: 1.25-2.29; $p<0.001$), and a history of medical malpractice litigation (OR: 2.80, 95% CI: 1.06-7.36; $p=0.04$). Furthermore, those who reported that litigation concerns had led them to consider leaving medicine carried even greater odds of extreme burnout (OR: 4.19, 95% CI: 2.08-8.45; $p<0.001$).

In the category of community factors, our data showed a statistically significant association between feeling empowered by immediate supervisors and lower odds of extreme burnout (OR: 0.47, 95% CI: 0.35-0.64; $p<0.001$). Similarly, the perception that their supervisor treated the physician with dignity and respect was associated with reduced extreme burnout odds (OR: 0.52, 95% CI: 0.38-0.69; $p<0.001$). Support from organizational leadership (OR: 0.60, 95% CI: 0.47-0.78; $p<0.001$), coworkers (OR: 0.63, 95% CI: 0.49-0.81; $p<0.001$), and friends (OR: 0.75, 95% CI: 0.58-0.97; $p=0.03$) were significantly associated with re-

Table 2. Multivariable Regression Results Adjusted for Years of Practice and Sex.

Factors	Extreme Burnout	
	OR (95% CI)	p
Professional Environment		
<i>Contributors to Physician Burnout (1=Not at all ... 5=A great deal)</i>		
Considered quitting medicine due to malpractice concerns	4.19 (2.08–8.45)	<0.001*
Lacked adequate support (e.g., staff, services)	1.69 (1.25–2.29)	<0.001*
Workload too high (e.g., census is too high)	2.16 (1.36–3.41)	0.001*
Electronic health record	1.42 (1.11–1.83)	0.006*
Working hours in a typical week (hours)	1.02 (1.00–1.04)	0.02*
Personally sued for medical malpractice (yes)	2.80 (1.06–7.36)	0.04*
Friend or close colleague sued for medical malpractice (yes)	1.75 (0.91–3.38)	0.09
Personal stressors (e.g., childcare)	1.18 (0.92–1.52)	0.18
Not working at top of license	1.16 (0.93–1.45)	0.18
Time dealing with health insurance companies	1.17 (0.92–1.50)	0.20
Inadequate autonomy over workload	1.17 (0.91–1.50)	0.23
Malpractice/legal concerns	1.14 (0.88–1.47)	0.33
Employer discrimination	1.11 (0.90–1.36)	0.33
Patient discrimination	1.11 (0.89–1.38)	0.34
Feeling undervalued by organization	1.12 (0.89–1.41)	0.35
Feeling undervalued by patients	1.11 (0.88–1.41)	0.38
Financial stressors	1.10 (0.87–1.39)	0.43
Community		
<i>Levels of Support (Poor [1] ... Excellent [5])</i>		
Co-workers	0.63 (0.49–0.81)	<0.001*
Organizational senior leadership	0.60 (0.47–0.78)	<0.001*
Friends	0.75 (0.58–0.97)	0.03*
Mentor (s)	0.58 (0.32–1.07)	0.08
Family	0.82 (0.64–1.03)	0.09
<i>Supervisor Support (Strongly disagree [1] ... Strongly agree [5])</i>		
Empowers me to do my job	0.47 (0.35–0.64)	<0.001*
Treats me with respect and dignity	0.52 (0.38–0.69)	<0.001*
<i>Mentorship (Yes vs. No)</i>		
Have any professional mentors (vs. none)	0.61 (0.29–1.29)	0.20
Personal		
<i>Activities in Past 30 Days (1=Never ... 5=More than 5 times)</i>		
Attended/participated in in-person social event	0.58 (0.39–0.87)	0.008*
Attended/participated in any other personal hobby	0.85 (0.67–1.08)	0.19
Participated in individual relaxing event (e.g., read, spa, play music)	0.89 (0.68–1.17)	0.42
Did volunteer work	0.92 (0.46–1.83)	0.81
Attended/participated in a virtual social event	0.95 (0.61–1.49)	0.83
<i>Individual Actions (1=Almost never ... 6=Almost always)</i>		
I rush through activities without being really attentive to them	2.66 (1.93–3.65)	<0.001*
I find myself doing things without paying attention	2.52 (1.84–3.46)	<0.001*
I find myself preoccupied with the future or the past	2.43 (1.84–3.21)	<0.001*
I “run on automatic,” without much awareness of what I’m doing	1.93 (1.49–2.51)	<0.001*
<i>Work Interferes with Life (1=Not at all ... 10=All the time)</i>		
How much does work interfere with social activities/hobbies?	1.32 (1.16–1.51)	<0.001*

* Statistically significant (p<0.05)

duced odds of extreme burnout.

With respect to individual factors, those with a tendency to “run on automatic” were more likely to experience extreme burnout (OR: 1.93, 95% CI: 1.49–2.51; p<0.001), as were those who reported rushing through activities without being attentive to them (OR: 2.66, 95% CI: 1.93–3.65; p<0.001). Lack of mindful awareness (OR: 2.52, 95% CI:

1.84–3.46; p<0.001) and preoccupation with the past or future (OR: 2.43, 95% CI: 1.84–3.21; p<0.001) were also significantly associated with extreme burnout. Finally, our results identified statistically significant reduced odds of extreme burnout risk among those with increased frequency of participation in face-to-face social events (OR: 0.58, 95% CI: 0.39–0.87, p=0.008).

Discussion

This nationwide cross-sectional study identified factors positively and negatively associated with burnout among board-certified internists in Japan. These findings are consistent with prior research in the United States, demonstrating that physicians experience higher rates of burnout compared with workers in other professions (13). Previous studies from the University of Michigan have also shown that heavy workload, limited autonomy, and lack of feeling valued by patients are key determinants of burnout, whereas personal and professional purposes, supportive leadership, and degree of spirituality are associated with lower burnout (14, 20). Our findings indicated that high workload, decreased mindful awareness, and concerns about medical litigation are factors that are significantly associated with extreme burnout. Prior studies in Japan have reported varying burnout rates across specialties, including 8.9% severe burnout among emergency physicians (21) and 26.2% burnout symptoms among internal medicine physicians using the Mini-Z 2.0 survey (22). These differences may reflect variations in specialty structure, measurement tools, or timing of assessment. Conversely, factors associated with reduced burnout included participation in face-to-face social interactions and receiving support and respect from supervisors and organizational leadership. Notably, we did not detect significant differences in extreme burnout among physicians working in different sizes and types of facilities. Although our study did not account for geographic variation (urban vs. rural settings), similar findings have been previously reported, suggesting that institutional size and location may not independently predict burnout (14).

Previous research has consistently reported that an excessive workload is a substantial risk factor for increased burnout (18). Organizational interventions targeting workload reduction have been shown to help prevent physician attrition, enhance productivity, and improve quality of care (23). Effective institutional responses that demonstrate successful reduction of burnout include implementing specialty-specific work schedule adjustments (24), task delegation to other healthcare professionals, and job crafting (customizing job responsibilities for better personal fit) (25). The negative impacts of medical litigation and/or malpractice appear to span geography and culture, as statistically significant associations with increased burnout were also seen in a US study (12). Organizational litigation support systems for individuals who are being or have been personally sued seem critical to mitigating these strongly deleterious effects.

Our data highlights the critical role supervisors play, with perceived support and respectful treatment by them being among the strongest factors associated with reduced burnout. These findings align with prior literature indicating that a lack of supervisor support is a major contributor to physician burnout (14, 26, 27). This underscores the importance of relational leadership in promoting job satisfaction and of-

fers actionable insights for healthcare management and institutional leadership development. These findings may be particularly salient in Japan, where cultural norms have traditionally valued implicit understanding over direct, verbal communication. Consequently, proactive and explicit engagement from leaders, a style often encouraged in Western management, may be less common. Our data suggests that fostering a leadership culture that actively provides support and respect could be a powerful, culturally adapted intervention. Therefore, increasing direct interaction between leaders and frontline staff is essential for fostering mutual understanding. Moreover, rather than focusing on identifying areas for improvement based on the assumption that competent performance is expected, leaders' provision of positive feedback and expressions of appreciation may play a critical role in enhancing psychological safety and motivation.

At the individual level, our data indicate that functioning "on autopilot" (i.e., with reduced mindful awareness) was significantly associated with increased burnout, consistent with prior psychological research linking a lack of mindfulness to occupational distress (28). Our findings highlight the importance of ensuring that workplaces encourage mindful practice and foster present-moment awareness and self-care practices among physicians. Engaging in meaningful interpersonal experiences, such as face-to-face social events, was associated with reduced odds of burnout. These experiences may enhance emotional connections, provide a sense of purpose, and strengthen psychological resilience (29, 30). The findings suggest that the quality and meaning of clinical work, rather than workload alone, may influence physician well-being (6, 31, 32).

In Japan, the prevalence of burnout and its predictors vary substantially across clinical specialties. A nationwide cross-sectional study of Japanese internists and primary care physicians reported that approximately one-quarter of respondents experienced burnout, with resilience and teamwork being inversely associated with burnout severity (22). Furthermore, work-related psychological traits, such as tolerance for ambiguity, have been shown to modulate burnout across physician groups, indicating that intrinsic and contextual factors differ among specialist roles (33). Although this study focused on internists, the structural and relational factors identified here may operate differently in other fields of medicine. Comparative research could clarify these differences and inform more tailored organizational strategies to enhance physician well-being.

This study has several limitations. First, although our response rate of 10% may not be fully representative of all practicing internists in Japan, low-to-moderate response rates from other survey-based studies of physicians in Japan have been reported (34-36). Despite the response rate, our findings provide novel and informative data on the prevalence and contributing factors of burnout among Japanese internists. Only two respondents had fewer than 10 years of clinical experience, and over 80% of respondents had over 20 years of experience. Because board certification in inter-

nal medicine in Japan typically requires 5-6 years of post-graduate training, early-career physicians may have been relatively underrepresented in this study. Second, this study focused exclusively on board-certified internists in Japan; thus, its findings may not be generalizable to physicians in other specialties, non-physician healthcare professionals, or physicians in other geographic regions and cultural contexts. Third, while this study utilized the internationally validated MBI-HSS, other culturally adapted instruments, such as the Maslach Burnout Inventory-General Survey (MBI-GS) or Japan-specific burnout scales, also exist. Although prior studies have shown moderate to strong correlations between these instruments (37), the dimension of personal accomplishment may be particularly sensitive to cultural or organizational contexts (38), warranting careful interpretation. Finally, this was a voluntary online survey, and selection or social desirability bias may have influenced the results of this study. Physicians with greater awareness of burnout may have been more likely to respond, potentially affecting prevalence rates. Because the survey was distributed electronically via email, physicians who were less comfortable with digital platforms may have been underrepresented. Additionally, those experiencing severe time constraints or acute burnout may have been less likely to participate, potentially leading to an underestimation of burnout prevalence. Therefore, some selection bias cannot be excluded from this study.

Given the complexity of healthcare systems, interventions to prevent burnout must extend beyond individual support and include comprehensive and ongoing organizational strategies with input from frontline physicians. This study supports the growing consensus that burnout is not merely an individual issue but reflects structural and cultural dimensions of healthcare organizations (6, 39, 40). Addressing physician burnout requires a multidimensional approach that includes structural changes, such as meaningfully reducing non-value-added workload levels, implementing supportive leadership training, and establishing resilient, judgment-free workplace support systems (5, 37). Burnout is a systemic issue embedded in institutional culture and interpersonal environments. Effective interventions will require multilayered, organization-wide strategies that address both structural barriers and relational support. These findings are particularly relevant in the context of Japan's 14th National Occupational Accident Prevention Plan (2023-2028), which prioritizes the promotion of mental health in the workplace (11). Although national policy initiatives emphasize that available data suggest that their effects in reducing suicide hazards have been statistically significant, they are modest. Our findings indicate that structural and relational interventions may be necessary to meaningfully reduce burnout among physicians.

Author Contribution: All authors contributed to the development of this manuscript and approved its submission.

Contributors: None.

Data Availability: The analysis is available from the corresponding author upon reasonable request.

Funding Source: This work was supported by the University of Michigan/Veterans Affairs Patient Safety Enhancement Program.

Prior Presentations: None.

The authors state that they have no Conflict of Interest (COI).

Artificial Intelligence Declaration: Artificial intelligence tools were employed to assist in the preparation of this manuscript, specifically for translating the original draft from Japanese to English. The authors reviewed and edited the translated text to ensure accuracy and clarity and took full responsibility for the manuscript's content.

References

1. Shanafelt TD, West CP, Dyrbye LN, et al. Changes in burnout and satisfaction with work-life integration in physicians during the first 2 years of the COVID-19 pandemic. *Mayo Clin Proc* **97**: 2248-2258, 2022.
2. Lacy BE, Chan JL. Physician burnout: The hidden health care crisis. *Clin Gastroenterol Hepatol* **16**: 311-317, 2018.
3. Chakr VCBG. Stress management in medicine. *Rev Assoc Med Bras* **67**: 349-352, 2021.
4. Ruzyski SM, Lemaire JB. Physician burnout. *Can Med Assoc J* **190**: E53, 2018.
5. Panagioti M, Panagopoulou E, Bower P, et al. Controlled interventions to reduce burnout in physicians. *JAMA Intern Med* **177**: 195, 2017.
6. West CP, Dyrbye LN, Shanafelt TD. Physician burnout: Contributors, consequences and solutions. *J Intern Med* **283**: 516-529, 2018.
7. Zhou AY, Panagioti M, Esmail A, Agius R, Van Tongeren M, Bower P. Factors associated with burnout and stress in trainee physicians. *JAMA Netw Open* **3**: e2013761, 2020.
8. The Stanford model of occupational wellbeing: Stanford Medicine; 2016 [Internet]. [cited 2026 Mar 24]. Available from: <https://wellmind.stanford.edu/wellbeing-toolkit/model.html>
9. Shanafelt TD, Dyrbye LN, West CP. Addressing physician burnout. *JAMA* **317**: 901, 2017.
10. Patel RS, Bachu R, Adikey A, Malik M, Shah M. Factors related to physician burnout and its consequences: A review. *Behav Sci (Basel)* **8**: 98, 2018.
11. Promoting mental health in the workplace. Guidelines for maintaining and promoting the mental health of workers: Japanese Ministry of Health, Labor and Welfare; 2023 [Internet]. [cited 2026 Mar 24]. Available from: https://www.mhlw.go.jp/stf/seisakunitsu/bunya/0000055195_00002.html
12. Houchens N, Greene MT, Sen S, et al. Factors associated with well-being and burnout among US internal medicine physicians: A cross-sectional survey. *BMJ Qual Saf*: Published Online First: 27 September, 2025.
13. Shanafelt TD, West CP, Sinsky C, et al. Changes in burnout and satisfaction with work-life integration in physicians and the general US working population between 2011 and 2023. *Mayo Clin Proc* **100**: 1142-1158, 2025.
14. Houchens N, Greene MT, Sen S, et al. Burnout prevalence among U.S. Internal medicine physicians: A cross-sectional study. *Ann Intern Med* **178**: 1207-1208, 2025.
15. Forné C, Yuguero O. Factor structure of the Maslach burnout in-

- ventory human services survey in Spanish urgency healthcare personnel: A cross-sectional study. *BMC Med Educ* **22**: 615, 2022.
16. Higashiguchi K, Morikawa Y, Miura K, et al. The development of the Japanese version of the Maslach burnout inventory and the examination of the factor structure. *Nippon Eiseigaku Zasshi (Japanese Journal of Hygiene)* **53**: 447-455, 1998 (in Japanese).
 17. Maslach C, Jackson SE. The measurement of experienced burnout. *J Organ Behav* **2**: 99-113, 1981.
 18. Guille C, Sen S. Burnout, depression, and diminished well-being among physicians. *N Engl J Med* **391**: 1519-1527, 2024.
 19. Rotenstein LS, Torre M, Ramos MA, et al. Prevalence of burnout among physicians. *JAMA* **320**: 1131, 2018.
 20. Ameling J, Houchens N, Greene MT, et al. Sacred moment experiences among internal medicine physicians. *JAMA Netw Open* **8**: e2513159, 2025.
 21. Morikawa M, Uechi T, Hanaki N, et al. Burnout among Japanese emergency medicine physicians: A multicentric questionnaire study. *Acute Med Surg* **10**: e848, 2023.
 22. Shikino K, Kuriyama A, Nishimura Y, et al. Burnout in Japanese internists and primary care physicians in 2024: The prevalence and risk factors using structural equation modeling. *Intern Med* **64**: 3349-3353, 2025.
 23. Hodkinson A, Zhou A, Johnson J, et al. Associations of physician burnout with career engagement and quality of patient care: Systematic review and meta-analysis. *BMJ* **378**: e070442, 2022.
 24. De Simone S, Vargas M, Servillo G. Organizational strategies to reduce physician burnout: A systematic review and meta-analysis. *Aging Clin Exp Res* **33**: 883-894, 2019.
 25. Cohen C, Pignata S, Bezak E, Tie M, Childs J. Workplace interventions to improve well-being and reduce burnout for nurses, physicians and allied healthcare professionals: A systematic review. *BMJ Open* **13**: e071203, 2023.
 26. Hämmig O. Health and well-being at work: The key role of supervisor support. *SSM Popul Health* **3**: 393-402, 2017.
 27. Shoker D, Desmet L, Ledoux N, Héron A. Effects of standardized mindfulness programs on burnout: A systematic review and original analysis from randomized controlled trials. *Front Public Health* **12**: 1381373, 2024.
 28. Huang F, Lei J, Zhang C, Li X. The relationship between mindfulness and burnout in physicians. *BMC Med Educ* **25**: 330, 2025.
 29. Saint K, Ehrlinger R, Gilliland J, et al. A qualitative exploration of sacred moments in radiation oncology. *Adv Radiat Oncol* **9**: 101617, 2024.
 30. Shanafelt TD, West CP, Sloan JA, et al. Career fit and burnout among academic faculty. *Arch Intern Med* **169**: 990, 2009.
 31. Rushton CH, Batcheller J, Schroeder K, Donohue P. Burnout and resilience among nurses practicing in high-intensity settings. *Am J Crit Care* **24**: 412-420, 2015.
 32. Sibeoni J, Bellon-Champel L, Verneuil L, Siaugues C, Revah-Levy A, Farges O. Workplace environment around physicians' burnout: A qualitative study in french hospitals. *Scand J Work Environ Health* **47**: 521-530, 2021.
 33. Fujikawa H, Aoki T, Ando T, Haruta J. Associations of clinical context-specific ambiguity tolerance with burnout and work engagement among Japanese physicians: A nationwide cross-sectional study. *BMC Med Educ* **24**: 660, 2024.
 34. Hirata R, Tago M, Takahashi H, et al. A questionnaire study of leadership in general medicine: General physicians in Japan are facing challenges in education and research. *Int J Gen Med Volume* **17**: 5465-5470, 2024.
 35. Nonaka S, Makiishi T, Nishimura Y, et al. Prevalence of burnout among internal medicine and primary care physicians before and during the COVID-19 pandemic in Japan. *Intern Med* **61**: 647-651, 2022.
 36. Yasuda M, Saito A, Goto T, et al. Challenges hindering emergency physicians; involvement in multicenter collaborative studies in Japan: A nationwide survey analysis. *Acute Med Surg* **10**: e906, 2023.
 37. Kitaoka-Higashiguchi K, Ogino K, Masuda S. Validation of Japanese research version of Maslach burnout inventory-general survey. *Shinrigaku Kenkyu (The Japanese Journal of Psychology)* **75**: 415-419, 2004 (in Japanese).
 38. Igawa J, Nakanishi D. The difference between the Maslach burnout inventory-human services survey (MBI-HSS) and the Japanese burnout scale (JBS). *Shinrigaku Kenkyu (The Japanese Journal of Psychology)* **90**: 484-492, 2019 (in Japanese).
 39. Committee on Systems Approaches to Improve Patient Care by Supporting Physician Well-Being. Taking action against clinician burnout: National Academies Press; 2019 [Internet]. [cited 2026 Mar 24]. Available from: <http://dx.doi.org/10.17226/25521>
 40. West CP, Dyrbye LN, Erwin PJ, Shanafelt TD. Interventions to prevent and reduce physician burnout: A systematic review and meta-analysis. *Lancet* **388**: 2272-2281, 2016.

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