Journal of Affective Disorders Reports 23 (2026) 101018

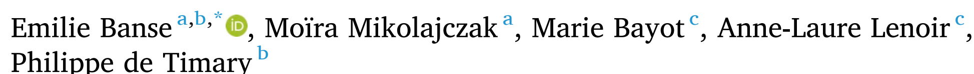
Contents lists available at ScienceDirect

Journal of Affective Disorders Reports

journal homepage: www.sciencedirect.com/journal/journal-of-affective-disorders-reports

Short communication

Medical culture and its association with health outcomes in physicians: A cross-sectional study



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ARTICLE INFO

Keywords:
Physician health
Health behaviors
Self-care
Physicians
Physician culture
Medical education

ABSTRACT

Background: Physician well-being is a critical issue, given the high prevalence of burnout, depression, and maladaptive health behaviors among doctors, as well as the broader implications for patient care quality and public health. Medical culture - defined by shared professional values and norms - may contribute significantly to physician distress. However, its relationship with physician mental health and self-care behaviors remains underexplored.

Objective: To investigate the associations between harmful dimensions of medical culture and health-related outcomes in physicians, including burnout, depression, presenteeism, help-seeking behavior, self-diagnosis, self-treatment, and psychoactive medication use.

Methods: A cross-sectional survey of 1002 physicians assessed depression (PHQ-9), burnout (BAT-12), and health behaviors. The Harmful Dimensions of Medical Culture (HDMC) scale measured Professional Commitment, the Myth of the Invulnerable Physician, and Stigma Towards Burnout. Correlation and multivariate regression analyses examined associations between medical culture and health outcomes, adjusting for personal and professional factors.

Results: All three HDMC scores significantly associated with most health-related outcomes. Professional Commitment and the Myth of the Invulnerable Physician were strongly linked to burnout and depression, but showed moderate to weak associations with health behaviors. Stigma Towards Burnout was strongly associated with depression and showed weak associations with burnout and health behaviors. Multivariable analyses confirmed the independent association between the HDMC and health outcomes after adjusting for personal and professional factors.

Conclusion: Findings underscore the role of medical culture in shaping physicians' mental health and health-related behaviors. Addressing harmful cultural norms through targeted interventions could enhance physician well-being and support a more sustainable healthcare workforce.

1. Introduction

Physicians face a unique set of challenges that make their profession highly demanding, often at the expense of their well-being (Shanafelt, 2021). Burnout and depression are alarmingly prevalent among physicians (Guille and Sen, 2024). In relation to this, physicians often report engagement in maladaptive health behaviors (Bazargan et al., 2009) such as psychoactive medication use and abuse (Dumitrascu et al., 2014), presenteeism (Giæver et al., 2016), self-diagnosis and treatment (Montgomery et al., 2011), and delays in seeking professional help for health concerns (Thompson et al., 2001). These patterns of health behaviors highlight a pervasive struggle within the medical profession to

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https://doi.org/10.1016/j.jadr.2025.101018
Received 8 April 2025; Received in revised form 7 October 2025; Accepted 29 December 2025
Available online 30 December 2025
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conciliate self-care with professionalism.

The high prevalence of poor well-being in the medical profession and the challenges physicians encounter to engage in self-care undermine their health, threaten the sustainability of the medical workforce, and, by extension, the quality of care delivered to patients (Wallace et al., 2009). While extensive studies have investigated the personal, work-related, and organizational contributors to physician distress, and how multilevel factors interact to exacerbate barriers to self-care in physicians (e.g., licensure-related concerns about disclosing mental illness in medicine; Dyrbye et al., 2017), emerging evidence suggests that some of these challenges may be rooted in medical culture (Shanafelt et al., 2019).

Medical culture, defined as the shared set of beliefs, norms, and values that shape professional behavior, is both a source of strength and a potential driver of harm (Shanafelt et al., 2019). Although many cultural elements such as commitment to excellence and patient-centered care are positive and fundamental to the profession, others, such as the valorization of belief in invulnerability or stigmatization of distress in the profession, may perpetuate harmful health practices among physicians (Walsh et al., 2019).

A recent study (Banse et al., 2025) empirically identified three harmful dimensions of medical culture (HDMC) that significantly predicted physician burnout in a large sample of physicians: Professional Commitment, reflecting the centrality of the medical profession in the identity of the physician, and the related work-life imbalance, which has also been shown to negatively impact personal relationships (Trockel et al., 2024); The Myth of the Invulnerable Physician, emphasizing the perceived incompatibility between illness and the physician role and the moral obligation towards patients and colleagues; and Stigma towards Burnout, encompassing internalized and perceived stigmatizing attitudes about burnout among peers. Together, these dimensions explained up to 30 % of the variance in physician burnout, after controlling for sociodemographic and professional factors (Banse et al., 2025).

Building on these findings, the present study investigates whether the HDMC are associated to other health-related outcomes among physicians. Specifically, we examined whether the HDMC are associated with depression, use of psychoactive medications (tranquilizers, antidepressants, sleep aids), alcohol consumption, delay in help-seeking, presenteeism, and self-diagnosis and treatment.

2. Methods

This cross-sectional study, part of a broader research project on medical culture and physician well-being, was approved by the Institutional Review Board prior to data collection (2023/07MAI/219).

2.1. Population

French-speaking physicians (mainly from Belgium, France, Switzerland), including general practitioners, specialists, and residents, were recruited through professional networks, medical organizations, universities, and hospitals. Participation was voluntary, anonymous, and without financial incentive. A total of 1002 physicians completed the survey. A description of the sample is presented in Supplementary Online Material (SOM).

2.2. Survey instrument

We collected the data via an anonymized online survey. Participants provided written consent and reported personal and professional characteristics (e.g., age, specialty, working hours). The survey included the previously validated Harmful Dimensions of Medical Culture (HDMC) scale (Banse et al., 2025), which assesses three interdependent dimensions of medical culture: Professional Commitment, The Myth of the Invulnerable Physician, and Stigma towards Burnout (the composite score is referred to as the HDMC Global Score). The full HDMC measure is provided in SOM. Measures of health-related outcomes in physicians included burnout (BAT-12, French version (Schaufeli et al., 2020)), depression (PHQ-9, French version (Carballeira et al., 2007)), alcohol consumption (AUDIT-C, French version (Bush et al., 1998)) and single-item 5 level Likert or frequency scales for the propensity to seek help (from totally disagree to totally agree), presenteeism – defined as the act of attending one's job despite ill-health (Aronsson, 2000) - (item from never to several days a week), self-diagnosis and self-treatment (from never to almost always), and frequency of use of tranquillizers, antidepressants, and sleeping pills (from never to every day). Descriptive statistics and internal consistencies (ranging from acceptable to very good) of the scales are provided in SOM.

2.3. Statistical analyses

The health-related outcomes of the physicians were the dependent variables, and HDMC scores were the independent variables. We computed descriptive statistics for all variables, and handled missing data via listwise deletion. We first computed one-tailed Spearman correlations (adjusted significance level: $p < .001$) to explore associations between the HDMC and health-related outcomes, and next undertook multivariate regression analyses (enter method), adjusting for potential confounders, namely gender, relationship status, parental status, physician status (resident vs. attending), specialty (generalist vs. specialist), years in practice, and weekly work hours. Multivariate linear regressions were used for continuous outcomes (e.g., burnout, depression, help-seeking, presenteeism, self-diagnosis and self-treatment), and multivariate logistic regressions were used for frequency of psychoactive medication use (tranquilizers, antidepressants, sleeping pills; recoded into binary scores: User vs. non-user) and for alcohol consumption (recoded into binary scores: Problematic vs. non-problematic use). Finally, a multivariate general linear model (GLM) examined whether the HDMC Global Score significantly predicted variations across the specified health-related outcomes, while accounting for their covariance. Analyses were conducted using IBM SPSS 28.0 (IBM Corp., 2021). Detailed methods and results are provided in SOM.

3. Results

All three HDMCs - Physician's Professional Commitment, The Myth of the Invulnerable Physician, and Physician Stigma Towards Burnout - were significantly associated with most health-related outcomes (Table 1) with varying effect sizes. Professional Commitment and the Myth of the Invulnerable Physician were strongly linked to burnout and depression, but showed moderate to weak associations with health behaviors. Stigma Towards Burnout was strongly associated with depression and showed weak significant associations with burnout and health behaviors. No significant associations were found with alcohol consumption.

Summary estimates ((un)standardized coefficients for the linear regressions and odd ratios for the logistic regressions) are provided in Table 2, with detailed results for each regression available in SOM. For the present, we focus on the relationship between medical culture and health outcomes. A forthcoming study will explore the associations between medical culture and physician characteristics.

All three HDMC scores were significant predictors of both *depression* and *burnout* in physicians, accounting for respectively 24 and 21 % of the variance, when controlling for covariates. Professional Commitment showed the strongest association with depression and burnout. The Myth of the Invulnerable Physician and Stigma towards Burnout were also significant predictors of depression and burnout, although to a lesser extent. After controlling for the covariates, the HDMC accounted for an incremental 16.3 and 17.4 % of the variances in depression and burnout respectively.

With regard the *health-related behaviors*, Professional Commitment was positively associated with presenteeism, self-diagnosis and self-

Table 1
Correlations between the HDMC and health-related outcomes.

	N	ρ_s Physician's Professional Commitment	The Myth of the Invulnerable Physician	Physician Stigma Towards Burnout	HDMC Global Score
Depression (PHQ-9)	990	*0.42***	*0.40***	0.25**	*0.43***
Burnout (BAT-12)	998	*0.37***	*0.35***	0.22**	*0.35***
Help-seeking behavior	982	−0.12**	−0.14**	−0.14**	−0.14**
Presenteeism	983	*0.27***	*0.27***	0.15**	*0.28***
Self-diagnosis	981	0.14**	0.18**	0.09*	0.17**
Self-treatment	981	0.21**	*0.28***	0.11**	*0.24***
Tranquillizers (frequency of use)	976	0.13**	0.11**	0.05	0.12**
Sleeping pills (frequency of use)	976	0.11**	0.07*	0.04	0.11**
Antidepressants (frequency of use)	978	0.12**	0.11**	0.07*	0.14**
Alcohol consumption (AUDIT-C)	984	−0.06	−0.02	0.03	−0.03

Correlations are one-tailed Spearman's rank correlations (ρ). *Correlation is significant at $p < .01$. **Correlation is significant at $p < .001$ level, following adjustment for multiple testing. Correlations indicated in italics are considered as clinically meaningful, as they are of moderate effect size (Cohen's $d \geq 0.5$, Spearman correlation coefficient ≥ 0.24).

Table 2
Summary estimates of the regressions to predict the health-related outcomes based on the HDMC.

Type of regression and provided estimate	Linear regressions: (un)standardized[b] coefficient estimates						Binary logistic regressions: odds ratios (Exp(B))			
Dependent variable Predictors[a]	Depression	Burnout	Help-seeking behavior	Presenteeism	Self-diagnosis	Self-treatment	Tranquillizers	Anti-depressants	Sleeping pills	Alcohol
Gender	0.34	0.06	0.50***	0.13*	0.07	−0.00	0.90	0.93	1.01	0.86
Relationship status	−0.61	−0.01	−0.07	−0.13	0.00	0.09	1.66*	1.53	1.57*	0.77
Parental status	0.79	0.02	−0.01	0.12	0.01	0.02	1.91*	1.62	1.02	1.06
Physician status	1.65***	0.08	−0.17	0.04	−0.16	−0.19	1.03	1.01	1.19	0.61*
Specialty	−0.91**	−0.10*	−0.03	−0.24***	−0.31***	−0.22**	1.67*	0.76	1.10	0.90
Seniority	−0.07	−0.01	0.02	−0.05	0.04	−0.00	1.02	1.03*	1.01	1.00
Working hours	0.06	−0.01	−0.07*	0.02	−0.03	−0.03	1.02*	0.98	0.99	0.99
Professional Commitment	0.29***	0.31***	−0.03	0.23***	0.11**	0.18***	1.70*	1.71*	1.50**	0.82
Myth of invulnerability	0.17***	0.18***	−0.15***	0.12**	0.14***	0.14***	1.26	1.47	1.21	1.10
Stigma towards Burnout	0.10**	0.09**	−0.09**	0.05	0.05	0.04	1.05	1.27	1.11	1.08
Model fitting (F)	29.93***	25.32***	9.03***	13.14***	7.15***	8.41***				
Model fitting (χ2)							40.02***	31.05***	25.21**	26.98**
2 Log Likelihood							611.38	535.87	954.54	1291.01
R^2	0.24	0.21	0.09	0.12	0.07	0.08				
$R^2_{adjusted}$	0.23	0.20	0.08	0.11	0.06	0.07				
Pseudo R^2: Nagelkerke							0.08	0.07	0.04	0.04

[a] The following covariates were included as reference categories (coded 0): female gender, being in a relationship, having children, being a resident, being a specialist, years in practice, and estimated weekly working hours. *$p < .05$, **$p < .01$, ***$p < .001$.

[b] For linear regressions, unstandardized coefficients are reported for categorical predictors (e.g., gender, relationship status, parental status, physician status, specialty), while standardized coefficients are provided for continuous predictors (e.g., seniority, working hours, HDMC). For binary logistic regressions, odds ratios are presented. Comprehensive regression results, including standard errors associated with the p-values for the estimates, are available in SOM.

treatment. The Myth of the Invulnerable Physician was negatively associated with help-seeking behavior and positively associated with presenteeism, self-diagnosis and self-treatment. Finally, Stigma towards Burnout was negatively associated with help-seeking. The explained variances (R^2) for these models were low (< 12 %). Logistic regression analyses revealed that, while controlling for covariates, Professional Commitment significantly predicted the use of tranquilizers, antidepressants, and sleeping pills. The two other HDMC scores were not significantly associated with any type of psychoactive medication use. Problematic alcohol consumption was not significantly predicted by any HDMC. Similarly to the health-related behaviors, the explained variances for these models were low (< 8 %).

A multivariate General Linear Model (GLM) indicated a significant overall effect of the HDMC Global Score on the dependent variables ($F(10, 946) = 24.962$, $p < .001$, Wilk's $\Lambda = 0.791$, partial $\eta^2 = 0.209$), suggesting that the HDMC scores have an overall influence on health-related outcomes. The between-subject effects analysis revealed that the HDMC Global Score had a significant effect on all health-related variables except for alcohol consumption, after controlling for the covariance between the outcomes. The strongest effect size was observed for depression (Partial $\eta^2 = 0.16$). Detailed results are available in the SOM.

4. Discussion

While medical culture fosters positive values among practitioners, certain aspects of this culture may be detrimental to individuals. This study extends existing evidence that some beliefs, norms, and attitudes prevailing in the medical profession are associated not only with burnout, but also in a broader sense with deleterious health outcomes among physicians.

The predictive power of the Harmful Dimensions of Medical Culture

(HDMC) varied depending on the outcome. Among the three dimensions, Professional Commitment showed the strongest associations across multiple domains, including depression, burnout, presenteeism, self-diagnosis, self-treatment, and psychoactive medication use. While professional dedication is of critical importance in the practice of medicine, our findings underscore its double-edged nature (Henderson et al., 2012). If not balanced appropriately, an excessive identification with the medical profession and overcommitment to its demands may compromise personal well-being (Walsh et al., 2019). The significant association between Professional Commitment and psychoactive medication use indicates that physicians with stronger professional commitment may also report greater use of such medications. While the reasons for this association cannot be determined from cross-sectional data, prior studies have noted that physicians may be at increased risk of self-medicating when experiencing high levels of stress (Dumitrascu et al., 2014; Montgomery et al., 2011). The Myth of the Invulnerable Physician, although less predictive, was significantly associated with depression, presenteeism, help-seeking delays, self-diagnosis, and self-treatment. This belief (Thompson et al., 2001), shaped by medical education, the hidden curriculum, and professional socialization (Dyrbye et al., 2015), perpetuates the notion that physicians should be immune to illness and reinforces the perceived incompatibility between the roles of physician and patient. Such attitudes may contribute to delays in seeking appropriate care, as suggested by prior qualitative work (e.g. Thompson et al., 2001). Stigma towards Burnout showed relatively weaker associations with depression, burnout, and the help-seeking behavior. Interestingly - and in contrast to medication use - none of the HDMC scores were associated with problematic alcohol consumption, suggesting that while harmful medical culture influences many health-related behaviors, its impact does not extend uniformly across all classes of substances.

While the regressions revealed that the HDMC scores were associated with most of the outcomes, the explained variance strongly varied across dependent variables, ranging from weak (e.g., use of sleeping pills) to high (e.g., burnout and depression). This finding suggests that medical culture could play a stronger role in physicians' psychological distress than in the health-related behaviors assessed here.

Given the important impacts of work-related psychological distress on the health and welfare of physicians, and by extension, on patient care and the effectiveness of healthcare institutions (Wallace et al., 2009), this study emphasizes the compelling need to address harmful cultural norms within the medical profession (Shanafelt et al., 2019). Targeted interventions are necessary to challenge stigmatizing attitudes, particularly those surrounding psychological distress (Sinsky et al., 2024) and help-seeking (Dyrbye, 2025). Essential measures include normalizing vulnerability through role modeling and by fostering open discussions about mental health during training and throughout professional practice (Hill, 2017). Examining excessive professional dedication to the detriment of one's health can help physicians balance their commitment to their work with appropriate self-care (Walsh et al., 2019). In addition, organizational practices that allow for meaningful recovery - such as optimizing the quality and characteristics of vacation time - are important, as they have recently been shown to contribute to physician well-being and to influence long-term career intentions (Sinsky et al., 2025). Engaging all stakeholders - educators, administrators, and practitioners - in promoting a professional culture that prioritizes well-being is imperative. A shift toward such a culture will ultimately benefit physicians, their patients, and the delivery of high-quality healthcare (Wallace et al., 2009).

We acknowledge several limitations of this investigation. The cross-sectional study design precludes us from making causal inferences, which calls for further investigations with longitudinal designs. The use of limited measures to assess health behaviors was a necessary constraint to avoid an excessively long survey which might have reduced physician response rates. In addition, the study relied on a convenience sample of physicians rather than a representative sample, which may limit the generalizability of the findings. Future research should employ more comprehensive assessments to determine the replicability of the findings, and to explore potential variations across specialties, healthcare systems, and contexts. Finally, there is lacking investigation of the interplay between organizational factors and medical culture in shaping physician health. Future intervention studies targeting the identified cultural dimensions could also provide valuable insights into effective strategies for fostering a healthier medical culture.

5. Conclusion

This study demonstrates that harmful dimensions of medical culture are strongly associated with physicians' depression, burnout and, to a lesser extent, with their health-related behaviors. By identifying these cultural drivers, the present results provide a foundation for targeted interventions to support physician well-being and sustain the healthcare workforce.

Funding

Emilie Banse is a research fellow of the Fonds de la Recherche Scientifique – FNRS (Belgium) – ID 40023611. This fund did not exert any influence or censorship on the present work.

Declaration of generative AI and AI-assisted technologies in the writing process

During the writing process the authors used ChatGPT to improve the readability and language of the manuscript. After using this tool (and upon language review by a native speaker), the authors reviewed and edited the content as needed and take(s) full responsibility for the content of the published article.

CRediT authorship contribution statement

Emilie Banse: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Moïra Mikolajczak:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Marie Bayot:** Validation, Conceptualization. **Anne-Laure Lenoir:** Validation, Conceptualization. **Philippe de Timary:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors declare that they have no competing interests.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jadr.2025.101018.

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