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RESEARCH ARTICLE

Resilience and Burnout in Healthcare Professionals: The Mediating Role of Dispositional Mindfulness and the Role of Grit Among a Hungarian Minority in Romania

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Abstract

Burnout among healthcare professionals represents a critical organizational challenge, yet limited research has examined how personal psychological resources jointly operate in minority work contexts. This study investigated the combined roles of resilience, dispositional mindfulness, and grit in predicting burnout and examined the mediating role of mindfulness in the resilience–burnout relationship among healthcare professionals from a Hungarian minority in Romania. A sample of 152 employees from state hospitals (mean age = 44.18 ± 10.89 years) completed validated Hungarian-language measures of burnout, resilience, grit, and mindfulness between November 2023 and March 2024. Hierarchical regression analyses indicated that resilience, dispositional mindfulness, and grit each contributed uniquely to lower burnout. Resilience was most strongly associated with personal accomplishment, whereas mindfulness was primarily related to reduced emotional exhaustion and depersonalization. Mediation analyses showed that dispositional mindfulness partially mediated the relationship between resilience and burnout, while grit exerted a direct but modest effect. These findings highlight the importance of integrating multiple personal resources into organizational burnout prevention strategies in healthcare settings.

Keywords

burnout, mindful awareness, resilience, grit, healthcare professionals, minority

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INTRODUCTION

The *phenomenon of burnout* was originally identified and described in the field of human services, especially health care (Freudenberger, 1974; Maslach, 1976). The World Health Organization (WHO, 2025) has defined three dimensions in the assessment and diagnosis of the phenomenon: energy depletion, mental detachment, and reduced professional effectiveness. Burnout or professional exhaustion syndrome develops because of prolonged exposure to chronic stressors (Maslach et al., 2001; Hillert et al., 2020), during which the individual becomes mentally and physically exhausted (Ádám et al.,2006). The depletion of personal resources occurs gradually and leads to long-term suffering and a decrease in work performance, although it is possible that the individual only shows signs of the syndrome emotionally, while objective performance may remain unchanged (Csehák & Papp, 2006; Fülöp, 2016; De Hert, 2020). Burnout syndrome is defined as "a prolonged response to chronic emotional and interpersonal stressors at work" (Maslach, 2008, p. 68), during which the individual experiences suffering and loses the capacity for meaningful work.

Health professionals are exposed to significant psychological strain in their daily work, given that they constantly bear the burden of responsibility for human life and health (De Hert, 2020). At least 40% of health workers show symptoms indicative of burnout (Galanis et al., 2021; Győrffy & Girasek, 2015). Győrffy and Girasek (2015) found that the prevalence of burnout among Hungarian healthcare professionals ranges between 30-35%, which is consistent with European data. Burnout syndrome is also a significant challenge globally. Research from many countries and continents shows similarly high rates of professional exhaustion, and all segments of health workers are at risk of burnout.

Healthcare workers are frequently exposed to substantial pressure, given the immense responsibility they bear for the preservation of life and health in their daily practice. These conditions highlight the importance of prevention. The relevance of our study lies in the recognition that the overall quality of the Romanian healthcare system is linked to the mental health and psychological well-being of its workforce, as well as to the support they receive in providing high-quality care (De Hert, 2020; Galanis et al., 2021).

The present study is conceptually grounded in the *Job Demands–Resources (JD–R)* model, which provides a comprehensive framework for understanding burnout in occupational settings (Bakker & Demerouti, 2017; Lesener et al., 2019). According to this model, burnout develops when job demands exceed the individual's available resources, resulting in prolonged strain and emotional exhaustion (Bakker & Demerouti, 2017).

In contrast, personal resources such as resilience, dispositional mindfulness, and grit can buffer the negative effects of job demands and support adaptive functioning (Xanthopoulou et al., 2007; Mazzetti et al., 2018). Recent research has further highlighted the role of personal resources in promoting well-being and reducing burnout in healthcare and other high-demand professions (Han et al., 2019; Saks, 2022). Within this framework, resilience may enhance individuals' capacity to cope with stress, dispositional mindfulness may facilitate emotional regulation and present-moment awareness, and grit may support sustained effort under challenging conditions. Thus, the JD–R model provides a useful integrative perspective for examining how these psychological resources, both individually and collectively, contribute to the prevention of burnout among healthcare professionals.

Grit reflects perseverance and sustained effort toward long-term goals, persistent, and goal-oriented since it is linked to perseverance, enthusiasm, diligence, and dedication toward long-term objectives (Duckworth et al., 2007). Resilience enables individuals to effectively adapt to and cope with stress, challenges, and adversity, allowing them to regain balance and move forward after difficulties or trauma (Győrffy & Girasek, 2015; Duckworth et al., 2020; Miller-Matero et al., 2018). Prior studies have revealed several important relationships among the constructs under investigation. Miller-Matero et al. (2018) found that

individuals with higher levels of grit performed better in demanding medical courses and were more likely to complete their studies within six years of medicine. By contrast, students with lower grit scores were twice as likely to drop out of medical school. Furthermore, research conducted both in healthcare contexts and among student populations more broadly has demonstrated that grit can mitigate levels of burnout. Hewitt et al. (2022) provided detailed evidence regarding the significance of grit for the well-being of healthcare workers, showing that grit scores were inversely related to burnout, contemplation of leaving the profession, and the occurrence of suicidal ideation. Among internal medicine specialists, higher grit scores were associated with a significant reduction in emotional exhaustion. A Romanian study further indicated that grit emerged as an independent predictor of burnout and partially mediated the relationship between occupational stress and burnout (Brateanu et al., 2020). Additional findings reinforce the protective role of grit. Lower grit scores significantly predicted higher levels of post-traumatic stress disorder symptoms, including denial, substance use, detachment, and self-blame (Musso et al., 2019). This correlation was also supported by research done on dentists (Al-Zain & Abdulsalam, 2021).

Dispositional mindfulness, understood as the deliberate and attentive presence in the current moment, fully observing and accepting thoughts, emotions, bodily sensations, and external stimuli as they arise - has been shown to reduce stress, enhance emotional stability, improve attention and concentration, and foster overall well-being and life satisfaction (Blanke et al., 2018; Rowland et al., 2020; Khoury, 2023). Differentiating between dispositional mindfulness and mindfulness practice is important. Regardless of formal training, dispositional mindfulness is a reasonably consistent individual inclination to pay attention to present-moment experiences with awareness and nonjudgment (Baer et al., 2006; Brown & Ryan, 2003). The goal of mindfulness practice, on the other hand, is to gradually develop this capacity through structured interventions like meditation or mindfulness-based programs (Kabat-Zinn, 1994; Creswell, 2017). While mindfulness-based therapies are intended to improve these skills via methodical training, recent research highlights that dispositional mindfulness represents naturally occurring individual differences (Goldberg et al., 2018; Lindsay & Creswell, 2019). In order to investigate naturally occurring individual differences in mindfulness, the current study focuses on dispositional mindfulness as a personal resource rather than the impacts of mindfulness-based therapies.

According to the review by Jaworska-Burzyńska et al. (2016), mindfulness-based interventions reduce burnout among healthcare professionals, with effects observed particularly in the domains of emotional exhaustion and personal accomplishment. The effectiveness of self-focused methods is illustrated by an eight-week mindfulness and breathing exercise program studied among physicians, which demonstrated significant improvements in emotional exhaustion, professional efficacy, and perceived stress (Pflugeisen et al., 2016). In a meta-analysis involving 2,101 healthcare workers, Lomas et al. (2018) examined studies targeting two broad categories of well-being outcomes: (a) "negative" mental health indicators, such as anxiety, depression, and stress; and (b) "positive" well-being indicators, including life satisfaction and emotional intelligence. Overall, the interventions were associated with positive outcomes - though with moderate effect sizes - and the evidence suggests that mindfulness enhances healthcare professionals' well-being, thereby reducing the risk of burnout. Fendel et al. (2021) examined studies involving 925 physicians and found that established versions of mindfulness-based interventions demonstrated greater effectiveness in reducing stress than alternative MBI formats or mindfulness applications. Emerging research suggests that dispositional mindfulness not only directly relates to lower burnout but may also function as a mechanistic process linking personal resources to reduced burnout. Mindfulness is associated with increased emotional regulation and self-awareness, enabling

individuals to observe stressors without excessive reactivity, thereby supporting adaptive coping under pressure (Zhang & Fathi, 2024).

Resilience is a trait that can lower overall levels of burnout in nurses, according to research by Arrogante & Aparaña-Zaldivar (2017). This is especially true for workers working in specialized care units like intensive care. Subsequent studies reinforced these associations, including research by Purvis and Saylor (2019) among neuroscience critical care staff, and by Wang (2022) among palliative care providers. Studies targeting both nurses and physicians have similarly confirmed the relationship between resilience and burnout (Buck et al., 2019; Wang et al., 2022). Abram and Jacobowitz (2021) examined the relationship between resilience and burnout among inpatient psychiatric nurses working in high-responsibility settings and among medical students. Their results revealed a significant inverse association between resilience and burnout in both groups. Notably, students reported much higher levels of burnout than inpatient psychiatric nurses. Nevertheless, the nurse group did not show greater resilience than the student group when age was statistically adjusted. This shows that age did not account for differences in burnout among groups but rather emerged as a greater predictor of resilience than the professional or academic environment. These results suggest that resilience may be more significantly influenced by life experience (as indicated by age) than by psychological adjustment to stress at work alone. Studies conducted during the COVID-19 pandemic have further underscored the importance of resilience in reducing burnout, both among nurses (Jose et al., 2020) and physicians (Di Monte et al., 2020), as well as in healthcare workers more broadly (Duarte et al., 2022).

Personal resources, including dispositional mindfulness, resilience, and grit, have been identified as important factors in burnout prevention, both overall and across specific dimensions of burnout. Evidence indicates that higher levels of resilience are associated with greater mindfulness and are linked to improved psychological outcomes via these self-regulatory capacities (Pangngay, 2024). Although studies directly examining grit and mindfulness are sparse, research on related personal resources and psychological functioning suggests that traits involving sustained effort and goal orientation, such as grit, may bolster mindful attentional control and non-judgmental engagement with stress (Calo, 2024). However, empirical evidence directly linking grit to dispositional mindfulness remains limited, suggesting that grit may operate through alternative pathways rather than mindfulness-based self-regulation. In healthcare education contexts, cross-sectional findings show that students with higher dispositional mindfulness exhibit lower levels of burnout (Zúñiga et al., 2025), supporting the putative role of mindfulness in mitigating job-related exhaustion and disengagement. Mindfulness also enhances adaptive emotion regulation, which has been linked to reduced occupational stress and burnout in high-demand professions (Hidajat et al., 2023; Canu et al., 2019). Collectively, these findings provide a theoretical basis for conceptualizing dispositional mindfulness as a mediator that transmits the protective effects of grit and resilience to reduced burnout among healthcare professionals, forming the basis for the hypothesized mediation model.

Possible mediation pathways linking personal resources to burnout have increasingly attracted attention in recent research, as they may help clarify the mechanisms through which protective factors exert their effects. Although both resilience and dispositional mindfulness have been independently associated with lower levels of burnout (Arrogante & Aparicio-Zaldivar, 2017; Lomas et al., 2018), the processes linking these constructs remain insufficiently specified. Given that mindfulness supports emotional regulation and adaptive responses to stress (Kabat-Zinn, 1994; Zhang & Fathi, 2024), it may represent a pathway through which resilience exerts its protective effect. Accordingly, dispositional mindfulness may function as a mediating mechanism in the relationship between resilience and burnout.

Although grit has also been associated with reduced burnout (Hewitt et al., 2022; Brateanu et al., 2020), it primarily reflects perseverance and sustained effort toward long-term goals (Duckworth et al., 2007). At the same time, emerging evidence suggests

that goal-directed persistence and attentional control may be linked to mindfulness-related processes (Calo et al., 2024). This raises the possibility that mindfulness may also contribute to explaining the relationship between grit and burnout. Therefore, dispositional mindfulness is examined as a potential mediating mechanism in the relationships between grit and burnout.

Linguistic minority healthcare workers may face additional workplace stressors such as cultural incongruence, less institutional representation, and communication needs (e.g., Schouten & Meeuwesen, 2006; Karliner et al., 2007). By concentrating on Hungarian-speaking medical personnel in Romania, the current study expands on previous findings to an understudied cultural and linguistic setting. The study provides contextually grounded findings that may guide future cross-cultural and comparative research on burnout and psychological resources in healthcare settings, even while it does not seek to isolate impacts unique to minorities.

The study's motivation stems from the fact that although burnout and its psychological effects have been extensively studied, there are still a number of important knowledge gaps.

First, previous research has mostly examined grit, resilience, and mindfulness separately, which has limited knowledge of their combined and relative contributions within a single model. Looking at these three personal resources at the same time, the current study fills this gap and enables a more comprehensive evaluation of their distinct and common impacts on burnout.

By testing dispositional mindfulness as a mediator between resilience and burnout, this study contributes to clarifying the psychological processes through which protective factors operate. Second, there has not been as much empirical study on dispositional mindfulness's potential as a mediation mechanism between burnout outcomes and more comprehensive personal resources, even though it has been generally associated with lower levels of burnout. Third, the study provides a differentiated analysis of burnout dimensions, demonstrating that personal resources may exert domain-specific effects rather than uniform protective influence. This advances our understanding of burnout as a multifaceted concept, and the current study tackles these facets.

Research Objectives

Based on prior findings, we expected that grit, resilience, and mindfulness (conceptualized as dispositional present-moment awareness) would work as protective factors against burnout. An additional, practical purpose was also formulated: if grit, resilience and mindfulness are confirmed as protective variables against perceived burnout, this would underline the need to focus and improve these capacities among healthcare personnel. The primary aim of the study was to examine the joint and differential roles of resilience, dispositional mindfulness, and grit in burnout, with a specific focus on the mediating role of mindfulness, in a Transylvanian Hungarian healthcare population. The research may aid in identifying physicians and nurses who are sensitive to burnout, as well as influence the development of viable management measures. Finally, the study aimed to examine how these psychological factors operate jointly within a mediation framework.

Hypotheses

In line with the theoretical framework, prior research, and the aims of the present study, we formulated the following hypotheses:

- **H1:** Grit will be negatively associated with burnout, such that higher levels of grit are expected to correspond with lower levels of burnout among healthcare professionals.
- **H2:** Resilience will be negatively associated with burnout among physicians and nurses.
- **H3:** Dispositional mindfulness will be negatively associated with burnout among physicians and nurses.
- **H4:** Dispositional mindfulness is expected to mediate the relationships between (a) resilience and burnout, and (b) grit and burnout.

Because of the distinct linguistic and cultural background of Hungarian-speaking healthcare personnel in Romania, these assumptions were examined with particular focus to the function of individual psychological resources in mitigating burnout.

METHOD

Design and Procedure

A cross-sectional, correlational research design was employed using an online questionnaire survey. Eligibility criteria required participants to be currently employed within the healthcare system. Data collection targeted healthcare professionals from a Hungarian-speaking minority in Romania. The participants worked at state healthcare facilities in Transylvania, a part of Romania where Hungarian-speaking people are highly concentrated and frequently make up the local majority. A convenience sample was obtained through snowball sampling, and full anonymity was ensured. Participation was voluntary, and informed consent was obtained prior to data collection.

The questionnaire package was administered online and required approximately 20 minutes to complete. No extreme outliers were identified in the dataset. Raw data were processed using IBM SPSS Statistics (Version 26.0). Descriptive statistics (means, standard deviations, and percentage distributions) were used to characterize the sample. To test the study hypotheses, tests of normality (skewness and kurtosis indices), Spearman's rank-order correlations, hierarchical multiple regression analyses, and mediation analyses using the PROCESS macro for SPSS were conducted (Pallant, 2020; Tabachnick & Fidell, 2019).

An a priori power analysis conducted using G*Power (*Faul et al., 2009) indicated that a minimum sample size of 102 participants was required to detect a medium effect size (r = .30) with a significance level of $\alpha = .05$ and statistical power of .80 for correlational analyses. For the regression analyses, *G*Power indicated that, with four predictors, a minimum of 77 participants was required to detect a medium effect size ($f^2 = .15$) with .80 power. Accordingly, the final sample size of 152 participants was sufficient to test the proposed hypotheses.

This study was conducted in accordance with the ethical standards of the Declaration of Helsinki. Participation was voluntary and anonymous, and informed consent was obtained from all participants prior to data collection. No identifying information was collected, and participants were informed of their right to withdraw at any time without penalty.

Participants

The study sample consisted of 152 healthcare professionals (average age 44.18 ± 10.89 years), including 65 physicians (42.8%) and 87 nurses (57.2%). Women made up more than two thirds of the participants. Participants represented a wide range of medical specializations, with the largest proportions working in pediatrics (19.1%), intensive care (13.6%), surgery (11.1%), and family medicine (8.0%), while other specialties were represented in smaller numbers. Most participants were employed as non-managerial staff (67.3%), followed by middle managers (18.5%) and senior managers (8.2%). 30.2% had more than 20 years of experience, and the remaining participants were relatively evenly distributed across earlier career stages. The majority worked 40–45 hours (35.2%) or 45–50 hours (34.0%) per week. In terms of marital status, 59.9% were married or cohabiting, and 45.7% reported having no children. More details are found in Table 1.

Table 1. *Demographic characteristics of the sample (N = 152)*

Categories	Total (n)	Distribution %
Occupation		
Physician	65	42.8
Nurse	87	57.2
Specialization		
Internal Medicine	10	6.2
Dermatology, Radiology	7	4.3
Physiotherapy, Otolaryngology, Traumatology, Urology	2	1.2
Pediatrics	31	19.1
Infectious Diseases, Dentistry	3	1.9
Epidemiology, Neurology, Oncology, Psychiatry, Ophthalmology, Pulmonology, Pathology	1	0.6
Cardiology	5	3.1
Gynecology	6	3.7
Surgery	18	11.1
Family Medicine	13	8.0
Intensive Care	16	13.6
Emergency Medicine	9	5.7
Position		
Senior Manager	13	8.0
Middle Manager	30	18.5
Non- managerial employee	106	67.3
Years of Professional Experience		
0–5 years	24	14.8
5–10 years	23	14.2
10–15 years	27	16.7
15–20 years	29	19.7
More than 20 years	49	30.2

Categories	Total (n)	Distribution %
Weekly Working Hours		
30–40 hours	33	20.4
40–45 hours	57	35.2
45–50 hours	55	34.0
More than 50 hours	7	4.3
Marital Status		
Single	36	22.2
Married, cohabiting	97	59.9
Married, living separately	8	4.9
Divorced	9	5.6
Widowed	2	1.2
Number of Children		
0	74	45.7
1	58	38.5
2 or more	20	12.3

Instruments

In addition to demographic data, the study employed validated, objective self-report questionnaires with established internal reliability. All instruments were administered in Hungarian using previously validated versions. The scales have demonstrated adequate psychometric properties in prior research, and internal consistency coefficients obtained in the present sample are reported in Table 2.The *Maslach Burnout Inventory – Human Services Survey* (MBI-HSS; Maslach et al., 1996) is specifically designed to assess burnout among professionals working in the human services sector. The Maslach Burnout Inventory–Human Services Survey (MBI-HSS; Maslach et al., 1996) comprises 22 items assessing three dimensions of burnout: Emotional Exhaustion (9 items; e.g., feeling emotionally drained or fatigued by work), Depersonalization (5 items; e.g., developing detached or impersonal responses toward service recipients), and Personal Accomplishment (8 items; e.g., feeling competent and effective in one's professional role). Items are rated on a 7-point frequency scale ranging from *0 (never)* to *6 (every day)*, with higher scores on Emotional Exhaustion and Depersonalization and lower scores on Personal Accomplishment indicating greater burnout. Burnout prevalence categories were determined using the standard cutoff scores of the Maslach Burnout Inventory–Human Services Survey (MBI-HSS; Maslach et al., 1996), whereby Emotional Exhaustion scores of 0–16 were classified as low, 17–26 as moderate, and ≥27 as high; Depersonalization scores of 0–6 as low, 7–12 as moderate, and ≥13 as high; and Personal Accomplishment scores of ≥39 as high, 32–38 as moderate, and ≤31 as low, with lower Personal Accomplishment scores indicating greater burnout (Maslach et al., 1996).

Grit Scale is one of the most frequently used measures of grit is the 12-item developed by Duckworth (2009). The scale assesses the degree to which respondents persist in working toward long-term goals, maintaining effort and interest over years despite failures, setbacks, or plateaus in progress. The instrument evaluates grit across two dimensions: (1) Perseverance of Effort: The willingness and ability to sustain effort toward long-term goals, even when facing difficulties or failure (e.g., *"I have achieved a goal that took years of work."*). (2) Consistency of Interest: The tendency to maintain enduring commitment and passion for long-term objectives (e.g., *"I overcame setbacks to conquer an important challenge."*).

Connor–Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) is a widely used measure of psychological resilience, reflecting the ability to successfully cope with stress and adversity. The 10-item version was administered, allowing individuals to evaluate their internal resources and capacities to recover from difficulties (e.g., *"I tend to bounce back after illness, injury, or other hardships."*).

The *Five Facet Mindfulness Questionnaire* (FFMQ; Baer et al., 2006; Szekeres et al., 2024) assesses multiple dimensions of mindfulness as a dispositional trait. It consists of five subscales: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. Items are rated on a 5-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*), with higher scores indicating greater levels of dispositional mindfulness. Example items include "I notice the smells and aromas of things" (observing), "I'm good at finding words to describe my feelings" (describing), "I find myself doing things without paying attention" (acting with awareness; reverse scored), "I criticize myself for having irrational or inappropriate emotions" (nonjudging; reverse scored), and "I perceive my feelings and emotions without having to react to them" (nonreactivity)

Table 2. *Reliability coefficients of the instruments (N = 152)*

Instruments	Min.-Max,	Mean	SD	Cronbach's α
Maslach Burnout Inventory	.73-5.55	2.52	0.81	.845
Duckworth's Grit Scale	2.47-3.82	3.20	0.25	.658
Connor–Davidson Resilience Scale	1.33-4.00	2.98	0.64	.776
Five Facet Mindfulness Questionnaire	2.22-4.52	3.38	0.42	.865

Results

Normality was assessed using the Kolmogorov–Smirnov test, as well as skewness and kurtosis indices (Table 3). Although the Kolmogorov–Smirnov test indicated significant deviations from normality for all variables ($p < .05$), this test is known to be overly sensitive in samples of moderate to large size and may detect trivial deviations from normality (Ghasemi & Zahediasl, 2012). Examination of skewness and kurtosis values, together with graphical inspection, indicated that most variables approximated normal distributions. Spearman's rank-order correlations were therefore used for bivariate analyses as a conservative approach given minor deviations from normality. Regression and mediation analyses were conducted using methods robust to such deviations, including bias-corrected bootstrap confidence intervals implemented with the PROCESS macro for SPSS (Hayes, 2018; Preacher & Hayes, 2008).

Bootstrapping is a non-parametric resampling procedure that does not assume normality of the sampling distribution of indirect effects and has been shown to provide more accurate confidence intervals and greater statistical power than traditional parametric approaches under conditions of non-normality (MacKinnon et al., 2004). Accordingly, the applied statistical procedures were considered methodologically appropriate and robust for testing the hypothesized mediation model despite deviations from normality in the observed variables.

Table 3. *Data distribution results (N=152)*

	Kolmogorov-Smirnov		**Skewness**	**Kurtosis**
Variables		***p***	***df***	***p***
Maslach Burnout Inventory	.065	.002	.478	.590
Duckworth- Grit Scale	.082	.004	.091	-.222
Connor–Davidson Resilience Scale	.092	.003	-.387	-.526
Five Facet Mindfulness Questionnaire	.084	.014	.436	.297

Using the standard cutoff values of the Maslach Burnout Inventory–Human Services Survey (MBI-HSS; Maslach et al., 1996), burnout prevalence was evaluated separately for the three burnout dimensions. Emotional Exhaustion scores between 0–16 were considered low, 17–26 moderate, and scores of 27 or above high. For Depersonalization, scores between 0–6 indicated low levels, 7–12 moderate levels, and scores ≥13 high depersonalization. In the case of Personal Accomplishment, scoring is reversed: scores ≥39 reflect high personal accomplishment, scores between 32–38 moderate levels, and scores ≤31 reduced personal accomplishment.

According to these criteria, 32.9% of participants showed high levels of emotional exhaustion, while 39.5% fell within the moderate range. For depersonalization, 21.7% of participants scored in the high range and 34.9% in the moderate range. Reduced personal accomplishment was particularly pronounced, with 92.8% of the sample scoring within the low personal accomplishment category, whereas 6.5% fell within the moderate range and only 0.7% demonstrated high personal accomplishment.

Overall, while the mean burnout score remained below the midpoint of the scale, elevated burnout symptoms were evident across several dimensions, especially in relation to personal accomplishment.

Spearman's rank correlation analysis detected significant, negative associations between burnout and the examined constructs. Burnout showed a weak negative correlation with grit (r_s (150) = -0.202, $p < 0.05$), and a moderate negative correlation with resilience (r_s (150) = -0.427, $p < 0.001$) and mindfulness (r_s (150) = -0.485, $p < 0.001$). Based on the results of the correlation analyses, after verifying the prerequisites of the linear regression, we implemented a hierarchical regression model, where grit, resilience and mindfulness were included as predictors, and burnout was included as a criterion variable (see Table 5 for the results).

Table 4. *Correlations between Burnout, Grit, Resilience, Mindfulness, and Demographic variables among healthcare professionals*

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1. Burnout	—								
2. Grit	–.202*	—							
3. Resilience	–.427**	–.004	—						
4. Mindfulness Scale	–.485**	–.019	.585**	—					
5. Gender	.133	.036	.018	–.097	.036	—			
6. Age	–.078	.398**	.000	.073	.047	–.046	—		

Note. M = Mean; SD = Standard Deviation.
p < .05. * p < .01. * *

According to the results of the hierarchical regression analysis, all three models showed significant predictive value regarding burnout in healthcare workers. In the first step, grit alone explained 4.5% of the variance (R^2 = 0.045, p < 0.01, β = -0.211). In the second step, the inclusion of resilience resulted in a significant increase in the explanatory power (ΔR^2 = 0.183, p < 0.01), so that the two constructs together determined 22.7% of the variance (R^2 = 0.227, p < 0.001). In the third step, the inclusion of mindfulness resulted in an additional 7.5% increase (ΔR^2 = 0.075, p < 0.01), so the final model explained 30.2% of the variance in burnout (R^2 = 0.302, p < 0.001) (Table 5).

Table 5. *Predictive power of Grit, Resilience, and Mindfulness on Burnout*

Step	**Variables**	**B**	**95% CI LL**	**SE B UL**	**β**	**R^2**	**ΔR^2**
Step 1						.045	.045
Constant	4.664***	3.062	6.265	.811			
Grit	–.668**	–1.16	–.17	.252	–.211**		
Step 2						.227***	.183
Constant	6.109***	4.580	7.630	.771			
Grit	–.615**	–1.06	–.165	.220	–.194**		
Resilience	–.541***	–.721	–.361	.091	–.428**		
Step 3						.302***	.075
Constant	7.631***	5.990	9.260				
Grit	–.634**	–1.00	–.204	.210	–.200**		
Resilience	–.289**	–.500	–.077	.100	–.229**		
Mindfulness	–.653**	–.970	–.329	.160	–.338**		

Note. CI = Confidence Interval; LL = lower limit; UL = upper limit, β = standardized coefficients.
***p < .001. **p < .01. *p < .05.

The hierarchical regression model in all three steps proved to be significant in predicting burnout in healthcare workers. The variance explained by the model increased significantly with the second variable entered, and increased with the third. Grit explains 4.5% of the variance in the burnout of healthcare workers. Grit and resilience together explain 22.7% of the variance, and grit, resilience and mindfulness together explain 30.2%. Based on the results, it can be said that the level of grit, resilience, and mindfulness negatively predicts burnout in healthcare workers (Table 5) and all three have significant contribution. During the dimensional analysis of burnout, the examined constructs showed differential predictive value. In the dimensions of emotional exhaustion and depersonalization, mindfulness proved to be the primary protective factor, while in the performance decline component, resilience showed a dominant predictive value (21%), followed by mindfulness with a more moderate (5%) explanatory power.

Table 6. *Predictive power of Grit, Resilience, and Mindfulness on Burnout dimensions*

Step	Variables	Emotional Exhaustion			Depersonalization			Reduced Personal Accomplishment		
		B	R^2	ΔR^2	B	R^2	ΔR^2	B	R^2	ΔR^2
1	Constant	42.428***			24.91***			29.189***		
	Grit	–6.36*	.031	.031	–5.26**	.057	.057**	–1.827	.008	.008
2	Constant	56.262***			31.88***			38.932***		
	Grit	–5.855*			–5.02**			–1.46		
	Resilience	–5.174***	.016	.129	–2.42***	.131	.075***	–3.64***	.209	.201***
3	Constant	74.149***			41.92***			40.31***		
	Grit	–6.078**			–5.15**			–1.48		
	Resilience	–2.221*			–.677*			–3.41***		
	Mindfulness	–.653***	.024	.080	–4.52***	.205	.073***	–.959	.211	.002

Note. B = unstandardized coefficient; R^2 = explained variance; ΔR^2 = change in explained variance. ***p < .001. **p < .01. *p < .05.

We included the three main variables constructs with the three dimensions of burnout in a single common model, and we observed a diversity in predictors, i.e. mindfulness is protective in the emotional exhaustion and depersonalization dimensions, but loses its predictive power in the performance decline dimension, here resilience has a predictive power of more than 21%, followed by mindfulness with a predictive power of 5% (see Table 6 for the results).

Table 7. *Mediation analysis of the effect of resilience on burnout through dispositional mindfulness*

Path	Predictor → Outcome	*b*	*SE*	*t*	*p*	95% CI [LL, UL]	β
a	Resilience → Mindfulness	0.384	0.043	8.89	< .001	[0.299, 0.470]	.588
b	Mindfulness → Burnout (controlling for Resilience)	–0.642	0.168	–3.82	< .001	[–0.974, –0.311]	–.333
c′	Resilience → Burnout (direct effect)	–0.303	0.110	–2.76	.006	[–0.521, –0.086]	–.240
c	Resilience → Burnout (total effect)	–0.550	0.093	–5.93	< .001	[–0.734, –0.367]	–.436
a × b	Indirect effect via Mindfulness	–0.247	0.071 (BootSE)	—	—	[–0.391, –0.110]	–.195

Note. Unstandardized coefficients (*b*) are reported. Confidence intervals for the indirect effect are based on 5,000 bootstrap samples. CI = confidence interval; SE = standard error.

Table 7 displays the mediation results for the model in which dispositional mindfulness was tested as a mediator between resilience and burnout. The overall model was significant, $F(2, 149) = 26.47$, $p < .001$, $R^2 = .26$. Resilience positively predicted mindfulness, $b = 0.38$, $SE = 0.04$, $t(150) = 8.89$, $p < .001$. Mindfulness negatively predicted burnout when controlling for resilience, $b = –0.64$, $SE = 0.17$, $t(149) = –3.82$, $p < .001$.

The direct effect of resilience on burnout remained significant, $b = –0.30$, $SE = 0.11$, $t(149) = –2.76$, $p = .006$, but was smaller than the total effect, $b = –0.55$, $SE = 0.09$, $t(150) = –5.93$, $p < .001$. The indirect effect through mindfulness was significant, $b = –0.25$, BootSE = 0.07, 95% CI [–0.39, –0.11], $\beta = –.20$, indicating partial mediation. Higher resilience was associated with greater mindfulness, which in turn was related to lower burnout (Figure 1). No significant indirect effect was observed for grit in exploratory mediation analyses.

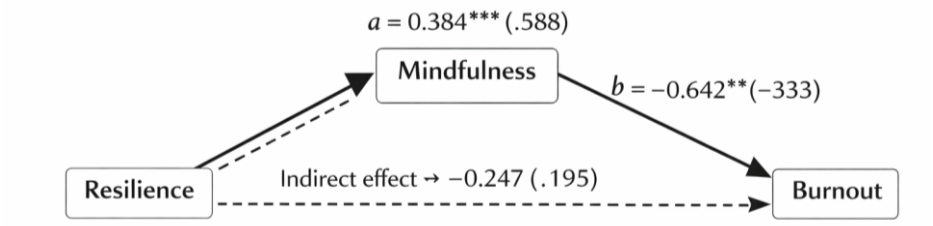

Figure 1. Dispositional Mindfulness as a Mediator between Resilience and Burnout

Discussion

Our study aimed to elucidate the protective roles of grit, resilience, and dispositional mindfulness in relation to burnout among healthcare professionals. In our sample, 32.9% of participants demonstrated high emotional exhaustion, 21.7% high

depersonalization, and 92.8% reduced personal accomplishment according to the standard MBI-HSS cutoff criteria (Maslach et al., 1996). While the prevalence rates for emotional exhaustion and depersonalization were lower than those reported in Central European healthcare samples during the COVID-19 pandemic (Štěpánek et al., 2023), reduced personal accomplishment appeared markedly elevated in the present sample. These values indicate elevated burnout symptoms across several burnout dimensions within the investigated population. The particularly high prevalence of reduced personal accomplishment should be interpreted cautiously as cultural or contextual factors may influence the normative interpretation of this dimension.

Correlation analyses indicated that burnout was significantly and negatively associated with grit, resilience, and mindfulness (Lomas et al., 2018). Exploration of associations among the constructs revealed a strong positive correlation between resilience and mindfulness. Sociodemographic variables (sex, age) did not show significant associations with the constructs under study. Hierarchical regression analyses identified resilience as the dominant protective factor for both the Maslach Burnout Inventory total score and the reduced personal accomplishment dimension (22% and 20% of explained variance, respectively), corroborating observations by Arrogante and Aparicio-Zaldivar (2017) and Wang et al. (2022). Our first hypothesis - that grit is negatively correlated with burnout - was supported, aligning with conclusions reported by Duckworth et al. (2020) and by Hewitt et al. (2022). The significant negative predictive potential of resilience (Arrogante & Aparicio-Zaldivar, 2017; Purvis et al., 2019; Southwick et al., 2014; Wang et al., 2022) and dispositional mindfulness (Fendel et al., 2021; Harrington et al., 2016; Lomas et al., 2018; Lundwall et al., 2019; Rowland et al., 2020;) was likewise confirmed, underscoring the salient role of these personality characteristics in the prevention of burnout.

A dimensional analysis of burnout revealed a differentiated pattern: in the emotional exhaustion and depersonalization components, the predictive potential of resilience was attenuated, whereas mindfulness and grit persisted as significant protective factors - findings that are congruent with prior meta-analytic and empirical work (Harrington et al., 2016; Lomas et al., 2018). The heterogeneity detected across subdimensions likely reflects cultural and moderating effects (Brateanu et al., 2020; Ferreira & Gomes, 2021). Taken together, these findings point to the multidimensional nature of burnout and to the differentiated mechanisms through which protective factors exert their effects.

In our study, alongside grit (Al-Zain & Abdulsalam, 2021; Lee et al., 2021; Miller-Matero et al., 2018; Musso et al., 2019; Park & Kim, 2023) and mindfulness (Fendel et al., 2021; Harrington et al., 2016; Lundwall et al., 2019), resilience exhibited the most pronounced protective potential with respect to overall burnout, a pattern consistent with conclusions from studies conducted during the COVID-19 pandemic (Di Monte et al., 2020; Jose et al., 2020). Our first three hypotheses were supported, and the results were consistent with former findings.

The fourth hypothesis, which proposed that dispositional mindfulness would mediate the relationships between personal resources and burnout, was partially supported. Specifically, dispositional mindfulness significantly mediated the relationship between resilience and burnout, whereas the indirect effect involving grit was not supported. This finding suggests that resilience may be associated with lower burnout partly through higher dispositional mindfulness and adaptive self-regulation. Resilient individuals may be better able to maintain psychological balance and observe stressful experiences without becoming emotionally overwhelmed, which in turn reduces vulnerability to burnout. This interpretation is consistent with theoretical frameworks emphasizing the conservation and effective deployment of personal resources under chronic stress (Maslach et al., 2001). The mediating role of dispositional mindfulness in the resilience–burnout relationship aligns with prior empirical evidence demonstrating that mindfulness functions as a psychological mechanism linking resilience to improved mental health

and well-being outcomes (Pangngay, 2024). Mindfulness promotes nonjudgmental awareness and emotion regulation, enabling individuals to respond more adaptively to occupational stressors rather than react automatically, thereby reducing emotional exhaustion and disengagement (Kabat-Zinn, 1994; Liu et al., 2024). Similar mediation models have been supported in related occupational contexts, where mindfulness transmitted the effects of psychological resources to reduced stress and burnout (Zhang & Fathi, 2024).

In contrast, dispositional mindfulness did not mediate the relationship between grit and burnout. This pattern supports the conceptual distinction between grit as a motivational resource and resilience as an adaptive self-regulatory capacity. Whereas resilience is closely associated with emotional regulation, recovery, and flexibility in the face of adversity, grit primarily emphasizes perseverance and sustained effort toward long-term goals (Duckworth et al., 2020). Although grit has been shown to protect against burnout directly (Hewitt et al., 2022), it may operate through alternative pathways—such as work engagement or achievement motivation—rather than through mindfulness-based self-regulatory processes. Thus, mindfulness appears to be a more central mechanism through which resilience, but not grit, buffers against burnout in healthcare professionals.

Main Findings

The results indicate that resilience and dispositional mindfulness are the strongest protective factors against burnout among healthcare professionals, both showing significant negative associations. Resilience explained the largest proportion of variance in burnout, while mindfulness contributed additional explanatory power and was particularly relevant for emotional exhaustion and depersonalization. Grit showed weaker but consistent negative associations. Mediation analyses further demonstrated that mindfulness partially mediates the relationship between resilience and burnout, whereas no mediating effect was found for grit. Overall, these findings highlight the complementary role of resilience and mindfulness as key psychological resources in reducing burnout.

The present findings can be interpreted within the framework of the Job Demands–Resources (JD–R) model, which proposes that burnout develops when job demands exceed the individual's available resources (Bakker & Demerouti, 2017; Demerouti et al., 2001). In line with this perspective, resilience, dispositional mindfulness, and grit functioned as personal resources that were negatively associated with burnout, supporting their protective role in high-demand healthcare settings (Xanthopoulou et al., 2007). The results also suggest that these resources operate in different ways. Resilience emerged as the strongest predictor of overall burnout and professional efficacy, indicating its importance for maintaining functioning under chronic stress. In contrast, dispositional mindfulness was more strongly related to emotional exhaustion and depersonalization, pointing to its role in emotional regulation (Lomas et al., 2018). The observed partial mediation effect further suggests that resilience may reduce burnout partly through increased mindfulness, highlighting the role of self-regulatory processes (Pangngay, 2024). Overall, these findings support the assumption of the JD–R model that personal resources buffer the impact of occupational stress, while also suggesting that different resources may contribute through distinct psychological pathways. In addition, the burnout profile observed in the sample was characterized by particularly elevated levels of reduced personal accomplishment, suggesting that diminished professional efficacy may represent a central aspect of burnout among healthcare professionals in the present study.

Theoretical and Practical Implications

From a theoretical perspective, the findings support a multidimensional model of burnout prevention, demonstrating that psychological protective factors operate through distinct yet complementary mechanisms. Resilience emerged as a key resource for sustaining

professional efficacy and overall burnout resistance, while dispositional mindfulness played a central role in buffering the affective components of burnout, particularly emotional exhaustion and depersonalization. The observed mediation further suggests that resilience may exert its protective influence partly through enhanced present-moment awareness and adaptive self-regulation, underscoring mindfulness as a critical psychological mechanism rather than merely an outcome.

From a practical standpoint, these results indicate that burnout prevention efforts in healthcare settings should prioritize resilience- and mindfulness-focused interventions. Programs aimed at strengthening resilience may be particularly effective in supporting long-term professional functioning, whereas mindfulness-based interventions appear especially relevant for reducing affective strain and emotional disengagement. Although grit demonstrated a more modest contribution and did not operate through mindfulness, fostering perseverance and goal commitment may still complement broader prevention strategies, particularly early-career healthcare professionals.

Limitations and Future Directions

Several limitations must be noted. First, the study employed a cross-sectional design, preventing causal inferences about the relationships among grit, resilience, mindfulness, and burnout. Longitudinal or experimental studies are needed to determine the directionality of these effects and to assess whether interventions targeting these constructs directly reduce burnout over time. Second, all measures relied on self-report questionnaires, which may be subject to social desirability bias or inaccuracies in self-perception. Third, the sample was limited to healthcare professionals from a specific geographical and cultural context; therefore, caution should be exercised in generalizing the findings to other populations or settings. The internal consistency of the grit scale was modest in the present sample, which may have attenuated its associations with burnout and contributed to the weaker effects observed.

An additional limitation concerns the reliance on a convenience sampling strategy, which may restrict the representativeness of the sample. Healthcare professionals experiencing particularly high or low levels of burnout may have differed in their likelihood of participation, potentially introducing selection bias. Moreover, although the statistical approach employed was robust, future research could benefit from longitudinal mediation designs to more clearly establish the temporal ordering of resilience, mindfulness, and burnout. Incorporating objective or multi-informant indicators, such as supervisor ratings or organizational records, may further strengthen the validity of future findings. An additional limitation concerns the use of a convenience sampling strategy within a linguistic and cultural minority population, which may limit the generalizability of the findings beyond Hungarian-speaking healthcare professionals in Transylvania. Despite being a linguistic minority at the national level, several of the participants worked in areas where Hungarian speakers constitute the local majority. Therefore, depending on the particular sociocultural environment, minority-related occupational stressors, resource availability, and coping strategies may vary. When analyzing the results, this variability should be considered. As a result, the correlations between burnout, grit, resilience, and mindfulness that have been found may not apply to healthcare professionals in different organizational or cultural contexts. The internal consistency of the grit scale was below the conventional threshold, which may have attenuated the strength of the observed associations and contributed to the weaker effects found for grit.

To improve causal inference and external validity, future research should use longitudinal and multi-method designs in addition to attempting to reproduce these results in majority populations and culturally diverse samples. The present study did not control statistically for potentially relevant covariates, such as professional experience or weekly working hours, which may influence burnout levels. While the primary aim was to examine the role of psychological personal resources, the absence of these control

variables may limit the precision of the observed relationships. Future research should incorporate occupational and contextual factors to provide a more comprehensive understanding of burnout. Since burnout is influenced by both individual characteristics and systemic circumstances, future research should examine the relationship between these psychological elements and organizational variables (such as workload, institutional culture, and leadership support). It would also be beneficial to investigate whether resilience and mindfulness work together to lessen burnout in an experimental intervention setting.

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