ARAŞTIRMA MAKALESİ / *RESEARCH ARTICLE*

The Effect of Medical Malpractice Fear and Defensive Medicine Practices on the Professional Well-being of Emergency Medicine Residents: A Survey Study

Acil Servis Asistanlarında Medikal Malpraktis Korkusu ve Defansif Tıp Uygulamalarının Mesleki İyilik Hali Üzerine Etkisi: Bir Anket Çalışması

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ABSTRACT

Aim: *This study aimed to explore the relationship between the fear of malpractice, defensive medicine practices, and professional burnout among emergency medicine residents in Türkiye.*

Material and Method: *The study was designed as a prospective, cross-sectional survey. Emergency medicine residents working in Türkiye who had no ongoing or concluded legal malpractice cases and had not received any psychiatric or psychological treatment within the past year were evaluated. Participation was voluntary. The participants were administered electronic surveys containing sociodemographic information, the Malpractice Fear Scale, the Maslach Burnout Inventory, and the Defensive Medicine Behavior Scale. The collected data were analyzed using IBM Statistical Package for Social Sciences (SPSS) program version 20.*

Results: *A total of 309 emergency medicine residents participated in the study, and 40.1% were female. Of the participants, 60.8% were in the 20–29 age group. The mean score on the Malpractice Fear Scale was 25.35, indicating a high level of fear. Concerning the Maslach Burnout Inventory, the scores for emotional exhaustion, depersonalization, and personal accomplishment were 21.30 (moderate), 10.52 (moderate), and 12.95 (low), respectively. A positive correlation was observed between MF, professional burnout, and defensive medicine practices. However, there was a negative correlation between defensive medicine tendencies and burnout levels*

Conclusion: *In current conditions, emergency medicine residents are driven toward professional burnout due to the fear of malpractice; however, they attempt to mitigate this burnout by adopting defensive medicine practices.*

Key words: *burnout; emergency residents; defensive medicine; malpractice*

ÖZET

Amaç: *Çalışmamızın amacı ülkemizde çalışan acil tıp asistanlarının malpraktis korkusu, defansif tıp uygulama eğilimleri ve mesleki tükenmişlikleri arasındaki ilişkinin araştırılmasıdır.*

Materyal ve Metot: *Çalışmamız prospektif, kesitsel bir çalışma olarak yapılmıştır. Çalışmamızda Türkiye'de görev yapan acil tıp asistanlarından son bir yılda aktif adli-idari soruşturma geçirmeyen, psikiyatrik-psikolojik tedavi veya destek almayan, çalışmaya katılmaya gönüllü olanlar değerlendirildi. Katılımcılara sosyodemografik verilerini ve malpraktis korku ölçeği, Maslack tükenmişlik ölçeği ve defansif tıp uygulaması ölçeğini içeren anketler elektronik yolla ulaştırıldı. Elde edilen veriler elektronik ortama aktarıldı ve IBM Sosyal Bilimlerde İstatistik Paket Programı (SPSS) sürüm 20 ile istatistiksel analizi yapıldı.*

Bulgular: *Çalışmaya 309 acil tıp asistanı dâhil edildi. Bunlardan %40,1'i kadınlardan oluşmakta idi. Katılımcıların %60,8'i 20–29 yaş aralığında idi. Katılımcıların ortalama medikal malpraktis skoru 25,35 (yüksek korku düzeyi) idi. Katılımcıların duygusal tükenmişlik skoru 21,30 (orta düzeyde), duyarsızlaşma skoru 10,52 (orta düzeyde), kişisel başarısızlık skoru 12,95 (düşük) olarak gözlendi. Katılımcıların malpraktis korku durumları ile mesleki tükenmişlik durumları ve defansif tıp uygulama eğilimleri arasında pozitif bir ilişki gözlendi. Ancak defansif tıp uygulama eğilimleri ile tükenmişlik düzeyleri arasında negatif bir ilişki gözlendi.*

Sonuç: *Günümüz koşullarında acil tıp asistanları malpraktis korkusu nedeni ile mesleki tükenmişliğe doğru itilirken geliştirdikleri defansif tıp uygulama eğilimleri ile tükenmişliklerini azaltmaya çalışmaktadır.*

Anahtar kelimeler: *acil uzmanı; defansif tıp; malpraktis; tükenmişlik*

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Introduction

The pressures physicians face due to malpractice risks have driven them to adopt defensive behaviors. Defensive medicine (DM) refers to a behavioral pattern physicians often develop to safeguard themselves from malpractice claims. Defensive medicine can be defined as either the ordering of unnecessary tests and procedures or the avoidance of treatment in patients perceived as high-risk[1]. Defensive medicine practices are divided into two main categories: negative DM (the avoidance of procedures in high-risk patients due to concerns over complications or survival) and positive DM (the excessive ordering of procedures, imaging, tests, or consultations that offer little to no benefit to the patient's medical condition)[2].

Emergency medicine is a specialty characterized by a high-intensity working environment, long hours, and constant variability in clinical cases, requiring physicians to make rapid, accurate, and definitive decisions. Emergency medicine residents and specialists must often make "life-or-death decisions" with minimal clinical information while also functioning as effective team members[3]. While this high-pressure environment can be stimulating, it also imposes significant emotional stress, contributing to professional burnout[4]. Of the various instruments available to measure professional burnout, the Maslach Burnout Inventory (MBI) is one of the most important[5].

This study aimed to investigate, for the first time in Türkiye, the levels of professional burnout, malpractice fear (MF), and defensive medicine practices among emergency medicine residents and to evaluate the relationships among these factors. The findings are expected to provide a deeper understanding of the effects of MF and defensive medicine practices on the professional well-being of emergency medicine practitioners.

Material and Method

Study Design and Participant Selection

This study was approved by the Clinical Research Ethics Committee of xxx University (decision number: 2/98, date: March 29, 2024) and conducted as a prospective, cross-sectional study between April 1, 2024, and August 1, 2024. Survey forms prepared for the study were distributed to participants electronically.

The study targeted emergency medicine residents actively working in public or private universities throughout Türkiye. Emergency medicine residents who voluntarily completed the survey were included, while those who did not respond were excluded. Further exclusions applied to emergency medicine residents who had received psychiatric or psychological treatment or support within the past year, were involved in ongoing or concluded legal malpractice cases, or had faced disciplinary or criminal investigations, as these factors could potentially affect the study's results. The survey was distributed to a total of 1,259 emergency medicine residents, and 519 responded. Among these respondents, 19 residents had ongoing legal malpractice cases, 108 had received psychiatric or psychological treatment or support within the past year, 22 had been subject to workplace investigations, and 61 left the survey incomplete. After excluding these residents, the final sample consisted of 309 emergency medicine residents (Fig. 1).

Scales Used in the Study

1. Sociodemographic information form: A descriptive form was created to collect information about participants' age, gender, duration of residency in emergency medicine, marital status, whether they had children, smoking and alcohol use, whether they had received psychiatric-psychological support or treatment, whether they had been subject to disciplinary or criminal investigations, and whether they had any ongoing or concluded legal malpractice cases.

2. Medical malpractice fear scale (MMFS): First developed by Katz et al.[6] in 2005 to assess MF among emergency physicians evaluating patients with symptoms suggestive of acute coronary syndrome, the Turkish adaptation and validation of the MMFS were undertaken by Uğrak et al.[7] in 2005. The Cronbach's alpha value of the scale was reported to be 0.860 in the adaptation study[7]. The scale consists of six Likert-type questions, each scored from 1 (strongly disagree) to 5 (strongly agree). Based on the total score, MF levels are categorized as low (less than 15 points), medium (15 to <20 points), or high (20 points and above)[6,7].

3. The defensive medicine practices attitude scale (DMBPAS): This scale, developed by Başer et al.[8] was used to measure participants' tendencies toward DM. The Cronbach's alpha value for the scale was reported to be 0.853[8]. The scale consists of 18 questions. The first nine questions assess positive DM practices, the next five questions evaluate negative DM practices, and the last four questions measure physicians' knowledge about DM. The first 14 questions are scored on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), while the last four questions are closed-ended with 'yes' or 'no' responses[9].

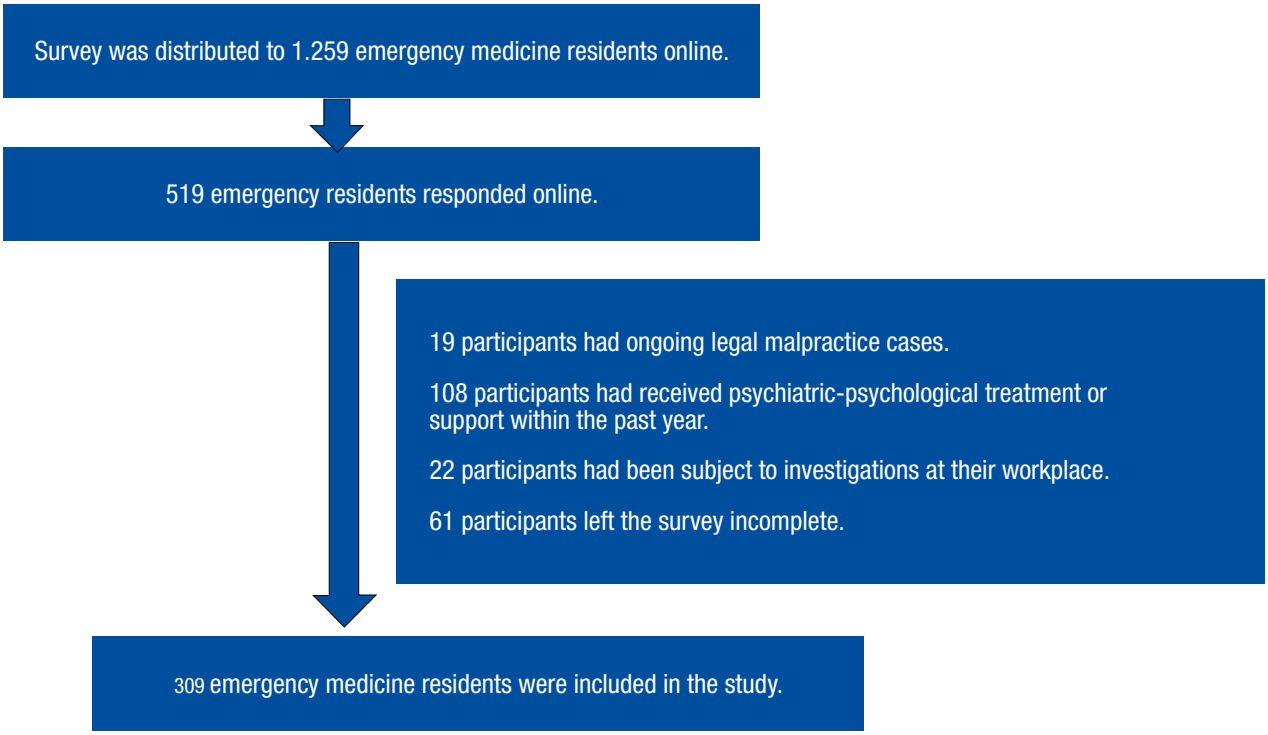

Figure 1. *Flowchart of participants included in the study.*

4. Maslach burnout inventory (MBI): To evaluate professional burnout, the MBI was used. Developed by Maslach and Jackson[10], this Likert-type self-report inventory provides a multidimensional assessment of burnout and is divided into three subscales: emotional exhaustion, depersonalization, and personal accomplishment. The Turkish adaptation and validation of the scale were conducted by Ergin et al., who determined Cronbach's alpha value to be 0.83[11]. The inventory contains 22 items: five for emotional exhaustion, five for depersonalization, and eight for personal accomplishment. High burnout levels are indicated by high scores in emotional exhaustion and depersonalization and low scores in personal accomplishment. Scores range from 0 to 36 for emotional exhaustion, from 0 to 20 for depersonalization, and from 0 to 32 for personal accomplishment. The emotional exhaustion subscale score is determined based on responses to items 1, 2, 3, 6, 8, 13, 14, 16, and 20 in the MBI. When the scores from these items are calculated, a total score of less than 16 indicates a low level of emotional exhaustion, scores between 16 and 27 indicate a moderate level of exhaustion, and scores above 27 indicate a high level of emotional exhaustion. The level of depersonalization is assessed using responses to items 5, 10, 11, 15, and 22. Based on the scores from these items, a total score of less than 6 indicates low depersonalization, scores between 7 and 12 indicate moderate depersonalization, and scores above 13 indicate high depersonalization. Personal accomplishment is evaluated through responses to items 4, 7, 9, 12, 17, 18, 19, and 21. When these items are scored, a total score of less than 31 reflects a low level, scores between 32 and 38 indicate a moderate level, and scores above 39 suggest a high level of personal accomplishment[12].

Statistical Analysis

Based on Liang et al.[13], G*Power 3.1 software estimated that 305 participants were needed to detect a correlation of 0.46 between MMFS and MBI scores with 80% power and a 95% confidence level. Data were analyzed using IBM Statistical Package for Social Sciences (SPSS) program version 20. Descriptive statistics were used, and normality was assessed through the Shapiro-Wilk and Kolmogorov-Smirnov tests, QQ plots, skewness, and kurtosis. Independent-samples t-tests or Mann-Whitney U tests were used depending on normality. Categorical variables were compared using the chi-square test. Pearson's correlation coefficients examined relationships between variables, and Cronbach's alpha assessed reliability. Construct validity was tested using the KMO and Bartlett's tests. The mediating role of decision-making attitudes in the relationship between mental fatigue and burnout was analyzed using structural equation modeling (SEM) in IBM AMOS, with the Bootstrap method applied. A significance level of $p < 0.05$ was used.

Results

When examining the gender distribution of the participants, 40.1% (n=124) were female, and 59.9% (n=185) were male. In terms of age groups, 60.8% (n=188) of the participants were aged 20 to 29 years. In addition, 29.4% (n=91) had been working as emergency medicine residents for two to three years. The sociodemographic characteristics of the participants are summarized in Table 1.

The reliability analysis for the scales used in the study yielded Cronbach's alpha values of 0.875 for the MMFS, 0.898 for the DMPAS, and 0.867 for the MBI. The participants' emotional exhaustion levels on the MBI showed a mean score of 21.30, a standard deviation (SD) of 6.82, and a median score of 22. For depersonalization, the mean value was 10.52, the SD was 3.95, and the median score was 11. Regarding the sense of personal accomplishment, the mean, SD, and median scores were 12.95, 4.17, and 13, respectively. Table 2 presents the mean, SD, and median values for participants' attitudes toward positive and negative DM practices, overall DM score, and MF levels.

Table 1. *Sociodemographic characteristics of participants*

Variable	Groups	n	%
Gender	Female	124	40.1%
	Male	185	59.9%
Marital status	Single	164	53.1%
	Married	145	46.9%
Age	20–29 years	188	60.8%
	30–39 years	121	39.2%
Having children	Yes	59	19.1%
	No	250	80.9%
Type of healthcare institution	Training and research hospital	128	41.4%
	Public university hospital	139	45%
	State hospital	42	13.6%
Duration of emergency medicine residency	<1 year	53	17.2%
	1–2 years	84	27.2%
	2–3 years	91	29.4%
	3–4 years	47	15.2%
	>4 years	34	11%
Alcohol consumption	Absent	132	45%
	Present	177	55%
Smoking status	Non-smoker	135	43.7%
	Smoker	174	56.3%

Analyses on the Mediating Role of Medical DM Practices in the Relationship Between MF and Burnout

The mediating role of attitudes toward DM practices in the relationship between medical MF and burnout was tested using SEM. The model was validated based on goodness-of-fit statistics and hypotheses demonstrating statistically significant relationships between variables. Fig. 2 presents the SEM model showing the mediating role of DM practices in the effect of medical MF on healthcare workers' burnout levels. According to the model, MF directly affects the burnout levels of healthcare professionals, and this effect largely occurs through attitudes toward DM practices.

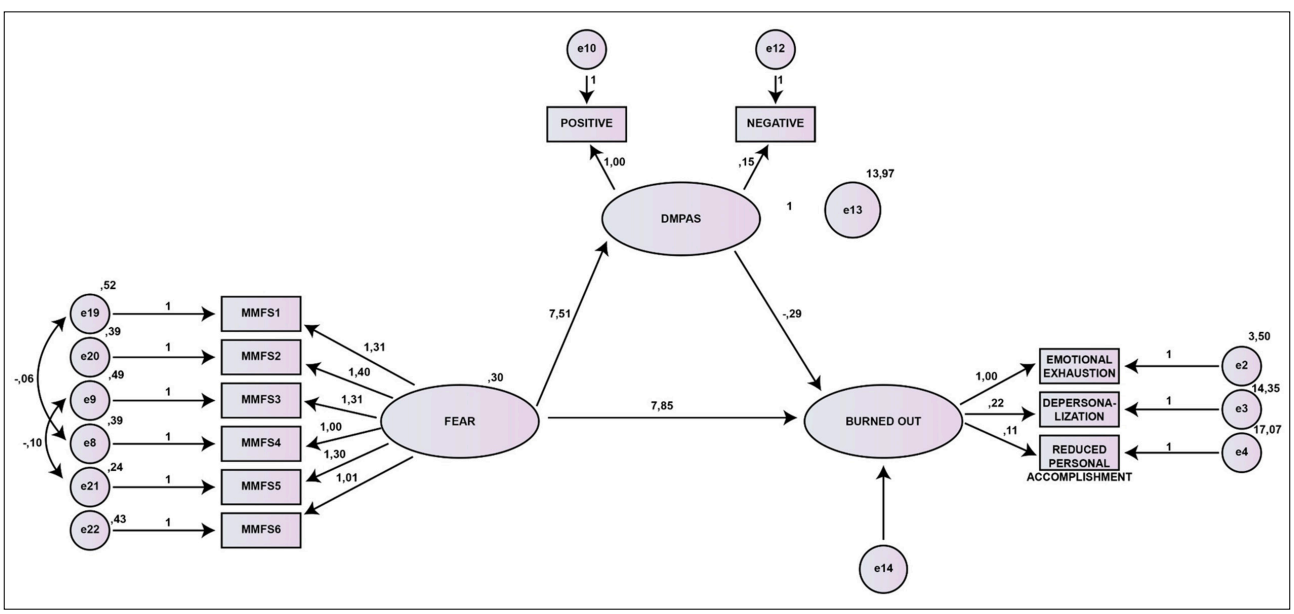

Figure 2. *Structural equation model illustrating the mediating role of attitudes toward defensive medicine practices in the relationship between medical malpractice fear and burnout.*

MF had a strong and positive effect on attitudes toward DM practices, with a critical ratio (CR) value of 10.496, indicating a very strong level of significant relationship. In addition, MF had a direct and positive effect on the burnout levels of healthcare professionals, as indicated by the CR value (5.558), which was notably high and suggested that the relationship was significant. In contrast, attitudes toward DM practices appeared to negatively affect burnout levels. The CR value (-2.103) exceeded the threshold for significance, demonstrating that this relationship was also statistically significant. The relationship between MF, the tendency to engage in MF practices, and burnout levels is summarized in Table 3.

The MMFS showed a moderate positive correlation with the emotional exhaustion subscale of the MBI (r=0.419, p=0.000), a low positive correlation with the depersonalization subscale (r=0.156, p=0.006), a low positive correlation with the personal accomplishment (r=0.135, p=0.018), and a moderate positive correlation with the total MBI score (r=0.381, p=0.000). The correlations between the MMFS scale, MBI, and DMPAS are summarized in Table 4.

Table 2. *Participants' scores on the evaluated scales*

Variable	n	Mean	SD	Median	Skewness	Kurtosis	Min	Max
MBI-emotional exhaustion	309	21.30	6.82	22	-0.458	0.264	4	36
MBI-depersonalization	309	10.52	3.95	11	0.049	-0.123	2	20
MBI-personal accomplishment	309	12.95	4.17	13	0.84	1.319	3	27
DMPAS total	309	50.76	9.64	50	-0.024	-0.182	28	69
Positive DM	309	34.63	5.99	35	-0.321	0.028	18	45
Negative DM	309	16.14	4.94	16	0.151	-0.675	5	25
MMFS	309	25.35	4.11	26	-1.126	1.247	12	30

MBI: Maslach burnout inventory, DMPAS: defensive medicine altitude scale, DM: defensive medicine, MMFS: medical malpractice fear scale. SD: standard deviation.

Table 3. *Results of the model on the mediating role of attitudes toward defensive medicine practices in the relationship between medical malpractice fear and burnout*

				Bootstrap		95% CI		
Hypotheses	Direct effect	SE	CR	Indirect effect	p	LL	UL	Hypothesis test result
MF → DM	7.611	0.725	10.496		0.000**			Supported
MF → Burnout	7.946	1.430	5.558		0.000**			Supported
DM → Burnout	-0.294	0.140	-2.103		0.036*			Supported
MF → DM → Burnout				-0.178	0.000**	-0.478	-0.011	Supported

**p <0.01, *p <0.05, MF: malpractice fear, DM: defensive medicine, SE: standard error, CR: critical ratio, LL: lower level, UL: upper limit, Bootstrap resampling=5.000.

Table 4. *Correlation between the scales*

		MMFS	MBI	Emotional exhaustion	Depersonalization	Personal accomplishment	DMPAS
MMFS	r	1					
	p						
MBI	r	0.381**	1				
	p	0.000					
Emotional exhaustion	r	0.419**	0.856**	1			
	p	0.000	0.000				
Depersonalization	r	0.156**	0.659**	0.390**	1		
	p	0.006	0.000	0.000			
Personal accomplishment	r	0.135*	0.523**	0.165**	0.088	1	
	p	0.018	0.000	0.004	0.123		
DMPAS	r	0.585**	0.167**	0.159**	0.033	0.135*	1
	p	0.000	0.003	0.005	0.569	0.017	

MMFS: malpractice fear scale, MBI: Maslach burnout inventory, DMPAS: defensive medicine behavior scale.

Discussion

This study revealed that MF increased both the tendency toward DM practices and the levels of burnout among emergency medicine residents. Furthermore, it was found that emergency medicine residents with a higher tendency to practice DM had lower levels of burnout. This study is significant as it is the first in Türkiye to evaluate MF and DM practices among emergency medicine residents and explore their relationship with professional burnout.

In modern healthcare settings, MF is widely prevalent among physicians. Naturally, this fear emotionally affects doctors, leading to an increase in professional burnout. A study conducted on orthopedic and trauma surgeons in Türkiye revealed that physicians who experienced malpractice-related professional problems had higher levels of burnout compared to their colleagues[14]. The necessity to make quick and critical decisions and crowded emergency room environments are among the reasons why burnout is higher among emergency medicine doctors[15]. When combined with MF, the increase in burnout becomes inevitable. Our study also showed that as MF increased, so did the level of burnout among emergency medicine residents. Increased MF can lead to more significant issues, such as higher job turnover rates among emergency physicians, reduced quality of care, and an increase in DM practices. These outcomes are only a few of the potential future challenges.

Globally, efforts are being made to address the rising burnout levels among healthcare professionals. A previous study examining burnout and stress among healthcare workers in operating rooms suggested that listening to music during work might be a solution to burnout[16]. Although other attempts have been made to reduce burnout and stress levels among emergency department workers, it has been reported that while some methods have partial positive effects, no definitive solution has been achieved[17]. In Türkiye, no routine interventions have been established to reduce burnout among emergency service doctors, leaving them to fight burnout on their own. In our study, we observed that the fear of malpractise increased the tendency to practice DM. Emergency medicine doctors likely lean toward DM to avoid malpractice. As a result, they may feel a temporary sense of relief, using DM practices as a mechanism to reduce their feelings of burnout. However, an increase in DM practices will bring its own set of challenges. A study found that although emergency physicians were aware that DM tendencies led to prolonged patient stays in emergency rooms, they continued to practice DM to avoid medico-legal issues[18]. In addition to lengthening patient stays, the tendency toward DM results in an excessive number of unnecessary tests being ordered, which is another significant issue in emergency departments. This not only increases healthcare costs but also contributes to overcrowding[19]. Another study revealed that DM practices reduced the sense of job satisfaction among emergency medicine residents[20]. However, practicing DM does not reduce the rate of medical errors[21]. Despite the potential for DM practices to reduce burnout, new approaches should be developed to decrease reliance on DM and promote the well-being of emergency medicine residents. One such method could be implementing state-supported professional liability insurance for doctors to protect physicians from malpractice concerns. In addition, providing continuous stress management training for emergency medicine residents, improving the safety of those working in emergency departments, and introducing new measures to reduce medico-legal fears could help address these challenges.

Limitations

Our study has several limitations. First, we were unable to reach all emergency medicine residents working in Türkiye; therefore, the participants represent only a portion of the target population. In addition, as this was a survey-based study, the results rely on self-reporting, which may not accurately reflect the true feelings and attitudes of the residents. Lastly, the sensitive nature of the survey topics (malpractice and DM) may have caused frustration and/or anxiety in some participants, potentially leading to extreme responses.

Conclusion

Our study demonstrated that MF increased burnout levels among emergency medicine residents, but this relationship was partially mitigated by attitudes toward DM practices. The tendency to engage in DM practices may have a protective effect on burnout. These findings offer important insights into how health policies and management strategies should address MF and attitudes toward DM to reduce the burnout levels of healthcare workers.

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